



The Palgrave Handbook of Corporate Sustainability in the Digital Era

Edited by

Seung Ho Park

Maria Alejandra Gonzalez-Perez

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Seung Ho Park

To Ja Young (my wife), Alexandra and Amelia (my daughters).

Maria Alejandra Gonzalez-Perez

*Dedicated to my Mum (1944–2020), to Dr. Carlos Enrique Piedrahita
(1954–2018), and to my loved boy Cian Felipe (2008–2020).*

Dinorá Eliete Floriani

*To Flavio, my husband. My father and my mother,
Leopoldo and Izolda Floriani.*

INTRODUCTION

Business sustainability in a digital era requires a new way of doing business in the twenty-first century. Sustainability and digitalization provide challenges and opportunities to companies that require new capabilities and organizational adaptation. While they have drawn much attention in academic research and business practices, the management field is still unsure of the scope, related issues, and organizational processes and outcomes of these concepts. This Handbook is an ambitious attempt to provide multidisciplinary ideas in the global context that pave the way to advanced knowledge development and valuable business practices of digitalization and sustainability. It provides a comprehensive and broad picture of the nature, applications, and execution of sustainability in a digital era.

Sustainability in a digital era requires a complex and broad scope of corporate changes, including social commitment and firm embeddedness in the location of the primary businesses. Corporate sustainability entails systematic and future-oriented behavioral changes at the individual, organizational, and cultural levels. It also requires changes in how companies cope with different business environments and public policies that cause an unprecedented level of uncertainty and political turmoil.

Corporate sustainability and digital transformation are multidimensional concepts that relate to various academic disciplines. These concepts are being explored in various fields that would lead to complementary understanding and theoretical integrations. There is also much variation in practicing these concepts across country borders. This Handbook includes studies from multiple disciplines, including political economy, marketing, strategy, accounting, information technology, and so on, across various countries of advanced and emerging markets. It is a gateway and a guide to understanding these critical and timely subjects in the most comprehensive and relevant way.

In this digital era, it is not possible to create long-term value for organizations without considering ethical, social, environmental, cultural, and economic aspects. Corporate sustainability recognizes that organizational growth and profits are essential, but it is not merely this. Organizations focusing on

new business models should pursue sustainable development, especially the three combined pillars of corporate sustainability: social, environmental, and economic aspects.

Finally, corporate sustainability is becoming a hot topic because of the ongoing changes in global governance. Since the global financial crisis of 2008, there has been a growing tendency in most Western countries, as well as emerging economies, toward less interdependencies and more engagement of governments to control international transactions of firms by adopting barriers to trade, or investment control, or even dismantlement of multilateral mechanisms of trade governance (as WTO). Some authors call such an ongoing process as de-globalization. Remarkably, this process is happening when the economy is entering the phase of digitalization, which, in our understanding, requires more interdependencies among countries and more efficient cooperative systems to cope with the implications of the digital era. Digitalization versus de-globalization seems to be a paradox that calls for broader discussions involving universities, corporations, nongovernmental organizations, and state representatives to build a more comprehensive framework of this new era.

Motivated by this ongoing global debate, encompassing most intellectual spheres, we organized this book. In particular, it attempts to (i) present evidence and analyze the implications of the digital era to society and business, and the challenges of sustainable and profitable survival; (ii) identify potential social, demographic, technological, and managerial future trends; (iii) understand the need for profound transformations in individuals, the culture of organizations, and the environment to adapt to the accelerated changes and manage future-oriented organizations.

The book is divided into four main sections. Part I addresses digital transformation, with 11 chapters devoted to digitally transformed sectors and organizations. These chapters cover topics across different levels. From a macro perspective, we bring studies about ecosystems and examine firm-level technology adoption and the scope of the incorporation of automation, including the algorithms shaping our future lifestyle and the cybersecurity aimed at reducing the risk of security breaches. From the firm perspective, we address topics like the role of the digital orientation of small companies in the process of embracing different digital directions. In this digital era, companies have focused on factors that accelerate the internationalization process, but they also have to look closely at the long-term sustainability of these companies in international markets. The elements that contribute to the sustainability of digital companies in emerging markets are also treated in this first chapter. We address subjects like the relevance and the factors affecting museum visitors' behavioral intention to use the Augmented Reality technology in Tourism 4.0, and the positive impacts of mobile money platforms. We also include the topic of the use of Virtual Reality training as a means for organizations to promote equality, inclusion, and diversity effectively. Seeking for transparency and profit-oriented competitiveness, companies also rely on political links to influence the institutional environment and corporate sustainability management.

Part II focuses on the economic, political, and ethical challenges in the process of digitalization. Some scenarios were constructed in this part of the book, brewing up through 2025, expecting the future to transform corporate sustainability radically for social advantage. This section includes studies dealing with the role of corporate social responsibility views and political criticism of capitalism and wealth effects on corporate sustainability. The political forces underpinning populism introduce their impacts on business, demanding that global organizations become more flexible in dealing with a complex and uncertain world and with the advance of digital technologies. The challenges to sustainability imposed by the digital revolution, social trends, and global imbalances and how to surpass these obstacles present the *economy of attention* as a concept that must be taken into account to conceive creative ways of understanding the digital economy from a human and ethical perspective. The role of the economy of attention in conceiving creative ways of understanding the digital economic needs to develop global regulation mechanisms to manage Artificial intelligence (AI) and big data is also discussed in terms of being very challenging. The knowledge of existing regulations introduces a new culture in the business ecosystem and the dynamics of public interest in artificial intelligence. Nevertheless, the negative impacts of digitally enabled globalization on individuals, communities, and nation-states is also being treated in this part of the book, presenting how to overcome these impacts through a change in values toward stakeholder perspective, leadership, and connection through information, communication, and technology. Additionally, the digital revolution, social trends, and global imbalances make it challenging to address the impact on environmental management, technology transfer, and local capacity building of inward foreign direct investment (FDI) on domestic firms' after learning orientation and catching up strategies during outward FDI. This section also discusses the local capacity building of FDI in local firms following learning orientation and catching up strategies during outward FDI, also looking at the dark side of the new globalization and joint efforts to mitigate its harmful effects.

Part III of the Handbook addresses questions related to corporate sustainability and organizational resilience in the digital era. This part discusses the influence of automation and digitalization on humans and the impact of digitalization on the future of work. The chapters in this section raise discussions about the link between sustainability and digitalization practices in the logistics service industry, the link between blockchain technology and business sustainability agenda, the effects of digital transformation on corporate sustainability accounting (CSA), and the use of big data analytics to achieve triple bottom line (TBL) sustainability. It also brings investigations on climate change disclosures in sustainability reports in different national cultures, the relation of workplace happiness and women's advancement and leadership, and the role of storytelling in the management of sustainability. From a marketing point of view, we bring discussions about the impact of corporate disclosure practices and social media on intellectual capital, virtuous co-creation practices in the

so-called “born circular firms,” disruption of marketing components and the role of corporate social and environmental responsibility (CSRE), and the effects of disruptive digital technologies on future consumption patterns. We also address studies on the unexpected outcomes of disruptive innovations in supply chain operations, the growth and sustainability of unicorn companies, and the mediating effect of digital capabilities on organizational creativity and performance. This third part presents the relevance of disruptive innovations and the challenges to sustainable and inclusive development in a digital era.

Finally, yet equally important, Part IV brings some topics related to future-oriented management education. We bring reflections on the importance of systematic reflexivity in research and education to promote international and sustainable development and on the most appropriate variables as means and goals for a management career in the future. The power of business generates and achieves sustainable values that could promote a new digital era by combining the three pillars of corporate sustainability in social, environmental, and economic dimensions.

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PART I

Digital Transformation



The Eco-System of Firm Technology Adoption

Joshua Kofi Doe

INTRODUCTION

In a not too distant future, most products and services are likely to be digitized (Hollebeek and Macky 2019). Meanwhile, business processes get digitized largely due to the digital sophistication of customers and the lower costs and efficiency associated with digitized operations (Tiago and Veríssimo 2014). Many firms have therefore moved their operations to the digitized world where innovative technologies are used for business operations. The kinds of technologies adopted include big data mining (Wu et al. 2014); cloud computing (Zhang et al. 2010); social media (Rigby 2011); networking (Kaplan and Haenlein 2010); cyber security (Von Solms and Van Niekerk 2013); and mobile app/technologies (Barrett et al. 2015). This phenomenon however disrupts many industries (Christensen and Raynor 2003), and in some cases, creates large losers who are unable to reinvent themselves back into the business environment.

The adoption of such innovations, according to Rogers (1962, 2010), happens at the individual level where attitudinal and perceptual factors relate directly to adoption; firm level where internal and industry environmental characteristics relate directly to adoption; and at the societal level where collective macro-level actions relate directly to adoption. Individuals as well as organizations exist within a society and interact. An uncharted question is how these various actors relate to each other as the firms adopt the innovations for business processes. For instance, how do firms ensure that the technologies adopted are sustainable in the eco-system and are more profitable in the long

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term? What are the most important factors that must be fixed for a sustainable and inclusive adoption of digital innovations?

The purpose of this paper is to present the Firm Technology Adoption Model (F-TAM), an eco-system model for examining the adoption of an innovation at the small-to-medium-scale enterprise (SME) level in a developing country context. Specifically, the study reports the influence of personal factors, firm-level factors, and societal-level factors, as well as how these factors serve as an eco-system for adoption of an innovation at the firm level. This novel view of examining adoption establishes the link between firms, individuals, and society for a sustainable business operation in the digitized era. The contribution of this chapter is to highlight the relevance of an eco-system-oriented perspective of engendering the sustainability of digital technologies that firms adopt and, by extension, corporate sustainability in the digitized era.

The conclusions made here are relational propositions that can be tested in any digitized context. The findings will help business owners to appreciate how individual actions as well as societal actions affect the eco-system of innovations and firm adoption decisions, as well as channel their energies to factors that ensure sustainability of their innovation adoption even beyond 2025. Society and governments can focus on the actions, policies, and activities that ensure sustainability of the digitized world. Researchers can embark on a series of studies to validate the report of this study.

In the subsequent sections, the main research questions are listed, the research methods used are summarized, a summary of findings are presented and discussed, conclusions are drawn, contributions of the paper to theory as well as industry practice are provided, and, finally, limitations of the work and recommendations for future research are shown.

CONTEXT AND BACKGROUND OF STUDY

History of Innovation Studies

The study of innovations and their adoption originates from Tarde (1903), who is regarded as the founding father of diffusion studies. Current studies on innovation however are rooted in the works of Rogers (1962) and Schumpeter (1987). While Rogers (1962, 1995, 2010) focused on the adoption and diffusion of innovation, Schumpeter (1987) focused on what an innovation is and its effect on organizational performance.

Theories and models such as Theory of Reasoned Action (Fishbein and Ajzen 1975) and Diffusion of Innovations (Rogers 1962) have been the backbone with which researchers have examined the adoption of innovations at the individual level until the emergence of technology-specific models such as the Technology Adoption Model (TAM) (Davis et al. 1989) and Integrated Model of Technology Acceptance (ITMA) (Venkatesh et al. 2002). At the firm or organizational level, there had not been any new theory or model since Rogers' (1962) Diffusion Theory until the 1990s when Tornatzky, Fleischer, and

Chakrabarti (1990) and Goodhue and Thompson (1995) proposed the Technology, Organization and Environment Framework (TOE) model and Task–Technology Fit (TTF) model, respectively. At the societal level, the only notable theory development since Rogers' (1962) Diffusion Theory was in 2004 when Bajaj and Leonard (2004) developed the Culture Policy and Technology (CPT) Framework for examining society-wide technology adoption. The theories and models listed above have been the dominant ones used to date.

A major idea that runs across all of the earlier models is that behavioral intention to adopt will lead to the adoption and use of an innovation. While this idea is true in developed countries due to the availability of infrastructure (Dewan and Kraemer 2000; Pohjola 2001) and emphasis on the role of science in human behavior (Hofstede 2003), the same cannot be said of most developing countries suffering from major infrastructural paucity and divergent socio-cultural emphasis on human behavior (Amoako et al. 2014). Thus, between behavioral intention to adopt and actual adoption is the socio-economic gap of poverty, cultural closeness, resource challenges, and low e-readiness. The result is that these earlier models have realized mixed results when they are tested in developing country contexts (Datta 2011), and therefore do not particularly explain why an innovation is so adopted.

Another omission observed in the scientific literature is the role of the innovative eco-system as an integrating network of interrelated actors that stimulate adoption on any particular level. For instance, the Technology, Organization and Environment (TOE) framework proposes that each of these factors will lead to adoption. The TOE framework places employees as part of the organization's environment. As an organization, however, there is the possibility that there will be personal-level adoption of an employee occurring before the organization itself. There is correspondingly an organization-wide adoption that can occur, as well as a societal-level adoption that occurs outside the organization. Within an organization, there are individuals; and organizations similarly exist within societies. This forms the social system (eco-system) mentioned in Rogers' (1962) definition of diffusion, within which adoption can occur at any level. Scientific literature is silent on the influence of each of these levels of adoption on others. Thus the influence of personal-level factors on other-level factors and vice versa is not established. The influence of organizational-level factors on other-level factors has not been established. Likewise, the influence of societal-level factors on other-level factors has not been established. How these three levels of factors interrelate to stimulate adoption at the firm level is also absent from the scientific literature. For the attainment of corporate sustainability, how these factors interact needs to be explored because employees work within a firm environment, while firms also exist within a societal context. Thus there are both internal and external factors that can interact to promote or hinder the sustainability of any corporate strategy in the digitized era. How these factors interact needs to be explored.

Finally, after scrutiny of the earlier models, it appears that data used in developing the earlier models have been from socio-cultural and economic contexts of developed countries. A significant question that arises from this phenomenon is: if the model was developed from a developing country context, will the antecedents of adoption explain adoption behavior better?

To position this study into the international academic discourse, Boateng, Molla, and Heeks (2009) classified innovation studies into three categories. The first category is the potential and constraints frameworks, which include opportunities, assessment, and electronic readiness (e-readiness), as well as development frameworks. The second category is the adoption and diffusion frameworks, which include technological, managerial, organizational, cultural, environmental, and interactional considerations frameworks. The third category is the support and implementation frameworks, which include strategy, consumer behavior, design and development, service evaluation, public policy, knowledge, and learning. This study falls in line with the adoption and diffusion-related studies.

The Concept of Innovation

Rogers (1962, 1995) defines innovation in his Diffusion of Innovation Theory (DOI) as “an idea, practice, or object that is perceived as new by the unit of adoption”. According to Rogers’ (1962) definition, the perceived newness of the idea for the adopting unit is the point where the innovation occurs, and not the currency of the invention. The DOI theory focuses on understanding how, why, and the rate at which an innovation spreads in a social system (Rogers 1962).

Schumpeter (1934, 1974), on the other hand, defines innovation as the introduction of a new product, a new method of production, a new market, conquest of a new source of supply, and implementation of a new form or organization. This view of defining innovation is broad, capturing anything new in the organization, both internal or external. Schumpeter (1934) emphasizes the role of innovation in organizations and treats it as another factor of production, aimed at yielding higher profits. To Schumpeter (1974), therefore, innovation pertains (only) to a commercially exploitable novelty.

The Organisation for Economic Co-operation and Development (OECD) defines innovation in the Oslo Manual (2005) as “the implementation of a new or significantly new product (goods or service), process, new marketing method or a new organizational method in business practice, workplace organization or external relations”. The OECD views innovation as a process of activities that involves scientific, technological, organizational, financial, and commercial steps, which actually leads to or is intended to lead to improvement in the workplace.

In this chapter, innovation is defined as the adoption of any new artifact, concept or idea, process, product or service, technology, method, or structure previously unused by the adopting unit. It is essential to establish the differentiation between an innovation and an invention. An invention is the creation of

a new artifact, concept/idea, process, product/service, technology, method, or structure (Kuznets 1962); thus innovation is precipitated by inventions. Adoption of an innovation, on the other hand, invariably results in a behavioral change; and for that reason, earlier models which studied adoption, employed behavioral change theories such as Theory of Reasoned Action and Theory of Planned Behaviour. A digital innovation is enabled by digital technologies that leads to the creation of new forms of digitalization (Yoo et al. 2010). Digital innovations often change the structure of industries and are largely disruptive (Christensen and Raynor 2003). A disruptive innovation creates new markets and value, disrupts existing industry structure, and displaces established market leaders, products, and alliances with new ones (Christensen and Raynor 2003).

Diffusion and Adoption of Innovation

Rogers (2010) differentiates between adoption and diffusion of an innovation. Diffusion is the process by which an innovation is communicated among the members of a social system over time. Fichman (2000) defines diffusion as “the process through which a technology spreads across a population of organizations”. Although Fichman’s (2000) definition seems to focus only on organization, it is still consistent with Rogers’ (2010) definition in that the organization is a social system. The technology referred to in Fichman’s (2000) definition is broadly referred to as innovation in Rogers’ (2010) definition. From the Theory of Diffusion (Rogers 2010), four essential issues are identified for diffusion to occur. These are the innovation itself, communication of the innovation, time, and social system (context of adoption).

Innovation: Rogers (1962) posits that the characteristic of the innovation makes the innovation diffuse faster or lower. In his argument, an innovation that gives an advantage to its users is triable, flexible to use, observable and compatible with users, and is easily adopted, therefore diffusing faster.

Communication: The channel of communication is a system by which users exchange information. According to Rogers’ (1962) diffusion, the faster a communication system is, the quicker the diffusion of innovation that is communicated through that channel. Between the mass communication channels and interpersonal communication channels, Rogers (1962) posits that the interpersonal channel is more important due to the influence of opinion leadership. Tarde (1903) had conceptualized this interpersonal communication process as social imitation of something new by members of a community.

Time: This aspect of the innovation diffusion process accounts for the time lag between when an innovation is first adopted and when it is replaced by a new innovation. This chronicles adopter categorization, which ranges from innovators, early adopters, early majority, late majority, and laggards within the social system of diffusion. Thus, while some members of the same social system are first to adopt an innovation as a result of venturesome disposition, others adopt the innovation only if non-adoption can cause them to be extinct.

Social System: A social system is a group of interconnected units jointly engaged in problem-solving to accomplish a common objective (Rogers 1962). The diffusion of an innovation occurs only when a social system accepts the innovation and shares information about the innovation within the system and with other systems. Rogers (1962) argues that social systems that are based on a positive attitude to change, value for advanced technology and a skilled labor force, respect for education and science, and emphasis on rational relationships rather than emotional relationships are prone to adopting innovations. Rogers (1962) further argued that potential adopters' decisions concerning adoption are based on rationality embedded in culture and the context of adoption rather than persuasion. This is uncharacteristic of most African societies (Amoako et al. 2014) where cultures are less likely to plan for long-term infrastructure that can accommodate the use of innovation (Hoyer and MacInnis 1997).

Adoption of an innovation, on the other hand, is an individual process of how the adopting unit becomes aware of an innovation, takes interest in the innovation, evaluates the innovation, tries the innovation, and finally adopts or rejects the innovation.

At the awareness stage, the adopting unit becomes aware of innovation. The awareness may have come to them through the opinion leadership within the social system or through the commercial promoters of the innovation.

At the interest stage, the individual collects specific information about the innovation, its usefulness, ease of use, and consequences of adoption. This enables the adopter to move to the next stage of evaluation based on the known characteristics of the innovation.

At the evaluation stage, the individual determines the value of the innovation and decides whether to try it. This determination is arrived at as a trade-off between costs incurred and potential benefits expected, effort and outcome, advantage over competing innovations, among other factors.

At the trial stage, the adopting unit takes the innovation into experimental use for the first experience. This purchase is usually on a limited scale where the adopter seeks to overcome perceived risks of full-scale adoption.

At the adoption stage, the innovation is engaged into full-scale use and is given a favorable response by members of the society. The adoption stage registers the rejection of innovation if the trial use is unfavorable.

Adoption Eco-system

An eco-system is a multifaceted, dynamic, evolving system of parts that constantly interact, and adapts, sometimes in unexpected ways (Gobble 2014). The eco-system can be a business eco-system, innovation eco-system, start-up eco-system, etc. The eco-system view of adoption has been prompted by researchers on innovation eco-system (Gobble 2014; Adner 2006; Groth et al. 2015) who emphasize the need to examine innovation as a member of a system of parts that contributes toward the success of the innovation. This view is

adapted in examining adoption at the firm level. Thus the adoption eco-system is operationalized in this study as the interaction of factors at the different levels of adoption and the technology itself.

These articles posit that for any adopted technology to be sustainable (long-term adoption and profit yielding) at the firm level, personal-level factors (human attitudes), firm-level factors (firm preparedness), and societal-level factors (government and society contribution toward its adoption) must all interplay to ensure real sustainability of the technology adopted. Otherwise the technology is either dropped along the way or fails to yield the essential benefits sought.

Developing Country Contexts

The World Bank (worldbank.org; cited on 20th July 2019) defines a developing country as a low-to-middle-income (\$0–\$3995 per-capita income) country with low standards of living and low access to goods and services. Bannock et al. (1992) similarly define a developing country as a country that has not yet reached the stages of economic development characterized by neither growth of industrialization nor a level of national income sufficient to yield domestic savings required to finance investment for further growth. A relevant emphasis of Bannock et al.'s (1992) definition is that developing countries lack the required domestic savings to finance investment that is necessary for further growth and infrastructure to support adoption of future technologies. Within this developing country context is the issue of the digital divide, that is, the unequal access of technological innovations, which is invariably a poverty gap (Fuchs and Horak 2008).

SMEs in Developing Countries

The world bank classifies firms with less than 300 employees as SMEs. The African Development Bank also views all firms with less than 50 employees as SMEs. These classifications may see some variations within countries. For instance, the Ministry of Trade in Ghana defines micro-to-medium-sized enterprises as any organization that employs between 1 and 5 persons to be a micro enterprise, 6 to 29 people with total assets less than \$100,000 as a small enterprise, and 30 to 99 people with total assets of up to \$1 million as a medium enterprise (Mensah 2004).

In developing countries, small businesses represent over 90% of business units and are hailed to be the backbone of the private sector in any economy (Bannock 2005). It is worth noting that SMEs account for 50% to 60% of total employment (Kennedy and Hobohm 1999), stimulate local and regional development, promote an entrepreneurship culture, and develop other business-related skills (Albaladejo 2002). In a developing country context where governments lack the needed resources to provide basic amenities like

roads, water, electricity, employment, and infrastructure, SMEs become particularly important in national development agendas. Therefore, their empowerment is a relevant issue worth examining. An area of SME empowerment is to promote the adoption of sustainable innovation among SMEs.

Corporate Sustainability

Corporate sustainability has been operationalized as “meeting the needs of a firm’s direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well” (Dyllick and Hockerts 2002). Siebenhüner and Arnold (2007) argued that a sustainability-oriented company is one that makes changes to include the use of resource-efficient technologies, sustainability reporting schemes, and providing sustainable goods and services to its customers. Internal drivers of sustainability include reducing costs and waste while improving process efficiencies; helping to boost innovation and innovative practices; attract and retain more compliant employees; helping to manage risks, intangible assets, and internal processes; increasing productivity and product quality; among others. External triggers of sustainability include improved customer satisfaction, improved relations with regulators and ease of access to permit, ethical behavior, improved access to the market, trust, among others.

Digitized Environment

Issues of the digital business environment and its related studies date back to 1947 to the invention of the transistor, followed by the mainframe computers and virtual memory in the 1970s (Tilson et al. 2010), and digital record keeping and interconnectedness in the 1980s (Mahoney 1996). Following the rapid growth of internet connectivity in the 1990s (March et al. 2000), the digital revolution became truly global, spreading to the masses in the developing world. Current digitized technologies includes cloud computing, tablet computers and smartphones (Yoo et al. 2012), big data mining, social media (Rigby 2011), mobile app/technologies (Barrett et al. 2015), etc.

In the current digitized environment almost all other human activities are being digitized. Thus business interactions with stakeholders, such as customers, suppliers, government agencies, bankers, and insurance companies, are all being digitized. This is creating convergence of some activities on mobile devices and thereby increasing convenience, efficiency, as well as risks, while decreasing cost and time involved in performing the same activities. In this era, therefore, a sustainable corporate strategy is one that can address the complexities and challenges of navigating the adoption of different technologies more conveniently. This is where the firm needs an crucial understanding of what factors to lay emphasis on in order to engender an overall sustainable corporate strategy.

METHODOLOGY

This chapter investigates interrelated published studies that have spearheaded the proposal for this eco-system perspective of examining adoption of innovation. This chapter examines, in particular, the objectives of such studies, methods used in these studies, findings of each study, and then discussion of all findings in relation to how a sustainable innovative environment can be promoted. An author-centric approach to literature analysis (Webster and Watson 2002) is employed for the analysis. Each article is analyzed based on the contribution to the development of this novel view of examining firm innovation adoption (F-TAM). Papers are chosen based on their immediate improvement on the preceding stage of the research stream. Thus the chapter that makes the most immediate improvement of the model development process is examined at each stage of the analysis.

SUMMARY OF FINDINGS

Doe, Van de Wetering, Honyenuga, and Versendaal (2017) sought to examine factors that stimulate firm-level adoption of mobile technologies at the personal level, firm level, and societal level, as well as how these factors interrelate to stimulate adoption at the firm level. Using a systematic literature review, Doe, Van de Wetering, Honyenuga, and Versendaal (2017) sampled articles from three and four-star ranked journals in the areas of innovations, information and communications technology, entrepreneurship, and small business management; and examined articles that had studied adoption of innovation at various levels of adoption. The authors used the modified form of the author-centric approach to literature analysis (Webster and Watson 2002), with the levels of adoption as provisional codes (Saldaña 2015). The data was reclassified with a concept-centric approach to qualitative data analysis with sub-coding techniques (Saldaña 2015). Causation coding (Miles et al. 2014; Saldaña 2015) and pattern coding were used in regrouping the sub-codes into major themes that depict the three levels of adoption. The constructs were displayed in a conceptual framework as artificial *ex-ante* artifacts (Venable et al. 2012) to be evaluated or validated as natural *ex-ante* artifacts (Venable et al. 2012), and were finally tested on the real adopters as natural *post-ante* artifacts (Venable et al. 2012). The findings of the study are described below.

At the Employees Personal level, factors that were found to have directly led to adoption include Perceived Usefulness (Vankatesh et al. 2003); Perceived Ease of Use (Vankatesh et al. 2003); Perceived Social Influence (Shinh et al. 2013); and Perceived Indispensability (Shinh et al. 2013). These are generally perceptual and attitudinal factors of an individual. With these variables, the study proposed that employees would adopt innovation by themselves whether they are in a firm setting or not, and whether it is sanctioned by an organization.

The Resource-Based View posits that the resources of a firm, including employees, shape the ability of the firm to be innovative and adaptive to innovations (Najaforkaman et al. 2015) through subjective norm influence (Fishbein and Ajzen 1975) within the social system (Rogers 1962). This study therefore posited that personal-level factors of adoption would lead to firm-level adoption, as well as firm-level factors of adoption. The study therefore proposed that: *Individual-level factors directly lead to firm-level adoption of digital innovation; individual-level factors of adoption directly influence firm-level factors of adoption.*

At the firm level, the literature inquiry found that the existence of technological readiness, managerial innovativeness, and organizational readiness (Boateng et al. 2011); strategic fit with operations (D'Ambra et al. 2013); and industry readiness (Molla and Licker 2005) will hasten or lead to the actual adoption of the innovation. The study therefore proposed that: *Firm-level factors lead to general adoption.*

Macro-environmental or societal-level factors that were discovered to enhance firm adoption of innovation include government championship (Caerteling et al. 2013); government policy (Boateng et al. 2011; Rogers 1962); trust; and risk culture (Boateng et al. 2011). These factors were expected to moderate the relationship between firm-level factors and adoption. Therefore, the study proposed that: *Firm-level adoption is moderated by societal-level factors.*

This interrelationship was proposed as a model, which is expected to work at the organizational level of adoption. The initial model of the F-TAM is shown in Fig. 1.1.

In this study, the factors that were reported in Doe et al. (2017) were tested for contextual validation in a developing country context through Delphi techniques of academics and industry experts. Specifically, the study examined to what degree the F-TAM reflects the adoption pattern among SMEs in Ghana; whether there were other factors that are not accounted for in this model; and whether changes in the model make the model more valid.

Using two rounds of Delphi interviews, the study sampled views of both academics and industry experts who had varying opinions on the adoption of mobile technology innovations in Ghana. Within two rounds of reducing the variety of responses, consensus of responses was achieved (Linstone and Turoff 1975). In the first round of interviews, the respondents were asked to comment on the original variables of the F-TAM (Doe et al. 2017), as well as the relationships that were posited to exist. Respondents were asked to suggest any variable that they believe should be added or deleted based on their experiences and knowledge of how SMEs adopt mobile digital innovation. Any new variable discovered was added as part of the second round of interviews. In the second round, respondents were asked to comment on the revised variables, restricting the comment to agreement, disagreement, and neutrality. Respondents were given an option to indicate any other comment they may have. The role of the researchers in that study was restricted to that of a

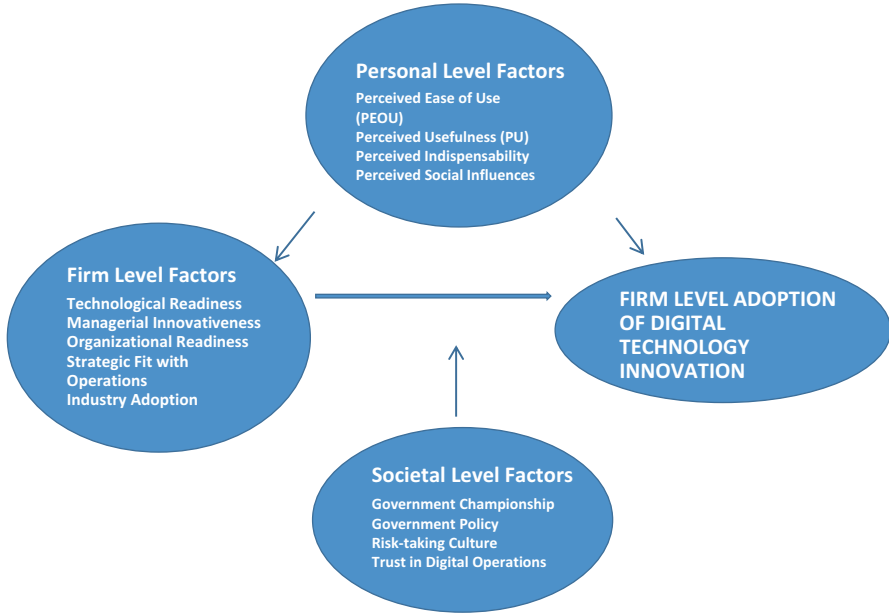


Fig. 1.1 Initial Firm Technology Adoption Model (F-TAM). (Source: Doe et al. 2017, 2018)

planner, facilitator, recorder, and reviewer or synthesizer of the data (Avella 2016). For each respondent, content analysis (Berelson 1952) became a useful mode of analysis to confirm or test a pre-existing theory (Ezzy 2002); in this case, the variables and relationships of the F-TAM model. For cross-case analysis, the concept-centric approach to qualitative data organization (Webster and Watson 2002) was used to arrange the contents of discussion into building blocks or themes. The model was then refined using pattern-matching techniques (Yin 2013).

In summary, Doe et al. (2018) found that personal-level factors can better be described as *Employee Attitudes and Perceptions*. This clearly demarcates a particular firm's employee factors from the general public human factors captured in society-level factors. On the personal level, Perceived Usefulness, Perceived Ease of Use, Perceived Indispensability, and Perceived Social Influences were confirmed in the initial F-TAM to be contextually relevant at the personal level to stimulate firm adoption. Other variables added were Trial Feedback (Rogers 1962) and Employee Self Interest (Yun et al. 2007). These factors were discovered to be contextually relevant as personal-level factors that stimulate firm-level adoption.

Factors of adoption at the firm level were decomposed into two sub-groups of internal factors and industry factors. The internal factors confirmed from the initial F-TAM include Technology Readiness, Managerial Innovativeness, Organizational Readiness, and Strategic Fit with operations. Other variables

discovered were Ease of Support (Grandon and Pearson 2004) and Organizational Culture (Škerlavaj et al. 2010). Trust was discovered as a relevant variable at the firm level but was measured under Technology Readiness (Vize et al. 2013).

Industry adoption was confirmed from the initial F-TAM, but decomposed into Customer Needs (Hauser et al. 2006), Competitive Pressure (Rogers 1962; Soares-Aguiar and Palma-Dos-Reis 2008), and Partner Requirements (Iacovou et al. 1995). These factors together formed the industry factors at the firm level.

Societal-level factors confirmed from the initial F-TAM in Doe et al. (2018) include Government Championship and Government Policy. Government Policy was, however, decomposed into Government Policy Directions and Government Laws/Regulations. Both Government Policy and Government Laws (Tornatzky and Fleischer 1990) were confirmed. Other variables discovered from the Delphi interviews were Digital Media Infrastructure (Tornatzky and Fleischer 1990), Opinion Leadership (Rogers 1962), and Successive Government Commitment (Mathews 2012). Variables deleted from the initial F-TAM were Societal Risk Culture and Trust. Risk Culture and Trust were found to be more significant at the firm level than at the societal level.

The influence of Technology Characteristics on technology adoption had been posited by Rogers (1962). This effect was unanticipated in the initial F-TAM due to the orientation of examining the interaction effect at the different levels of adoption. Technology characteristics of Innovation Flexibility, Observability, and Relative Advantage of Innovation, Innovation Triability, and Innovation Complexity were realized to be significant if the study examined firm adoption as an eco-system. Triability was measured under Trial Feedback at the employee personal level and therefore deleted from Technology Characteristics.

The results of the Delphi interviews unearthed some new relationships not anticipated in the initial F-TAM (Doe et al. 2017). These include the following:

Societal-level factors were proposed to lead to personal-level factors. Personal-level factors were proposed to moderate the link between the firm factors and firm adoption. Societal-level factors were proposed to lead to firm adoption. Societal-level factors were proposed to lead to firm-level factors. Technology factors were proposed to influence personal-level factors, firm-level factors, and societal-level factors.

The study, at this stage, proposed a revised F-TAM that contained 62% of variables of the initial F-TAM (Doe et al. 2017). In the end, these changes or linkages between the constructs were proposed to make the model more representative.

The revised F-TAM is shown in Fig. 1.2.

In this study the authors sought to quantitatively test the suggested Firm Technology Adoption Model (F-TAM) using data from a developing country context. Firstly, Doe et al. (2019) developed and tested a reliable and valid instrument for measuring firm technology adoption using variables in the

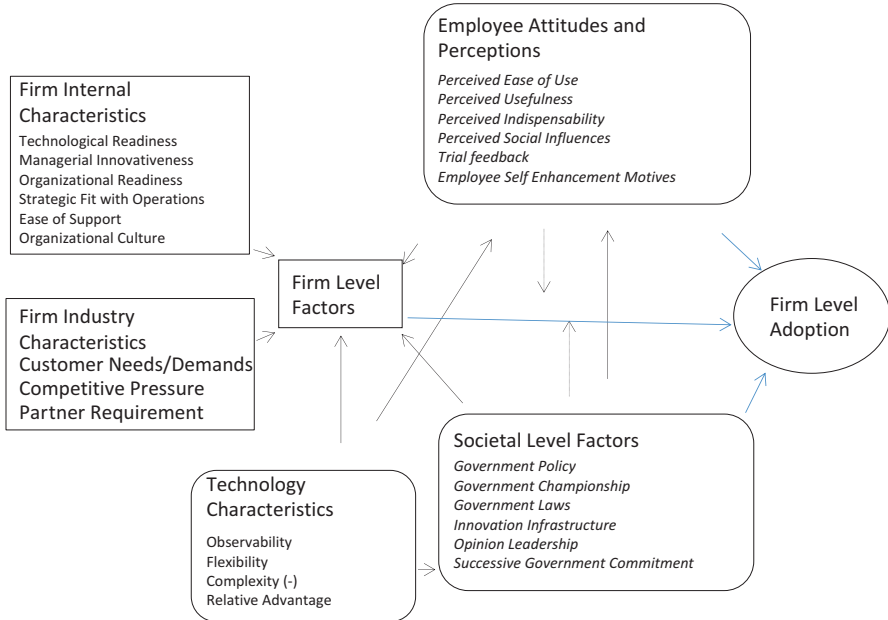


Fig. 1.2 Revised F-TAM model. (Source: Doe et al. 2018, 2019)

F-TAM. Using Churchill's (1979) process of questionnaire development, Doe et al. (2019) crafted or adapted question items from relevant previous studies, and went through an evaluation process of self-review, expert review, and focus group discussions to improve the face validity (De Leeuw et al. 2008). The questionnaire was field-tested using a sample of 25 respondents from the actual population, and was found to be valid and reliable for measuring firm technology adoption using the F-TAM. Secondly, Doe et al. (2019) collected 400 SMEs who were purposively sampled (Straits and Singleton 2017) due to the need to sample only SMEs that had, indeed, used mobile money financial technology innovation as part of their business process.

In that study, a series of hypotheses were made to test the propositions made in Doe et al. (2019). The summary of the proposed hypotheses and test results is shown in Table 1.1.

Surprisingly the data did not support the hypothesis that *Firm factors lead to firm adoption*. A significant implication from the findings in hypotheses H1, H2, and H3 is that they challenge earlier models, such as PERM, TOE, and TTF, which suggested that firm factors lead to firm adoption. Perhaps, if those studies had decoupled employee factors from other firm-level factors, the results would have been different. This finding underscored the essence of the F-TAM in examining the interrelationship between the three levels of adoption as an eco-system and decomposing employee factors from other firm-level factors.

Table 1.1 Firm technology adoption model

<i>Hypothesis proposed</i>	<i>Test results</i>
H1: Personal-level factors lead to firm adoption	Confirmed
H2: Personal-level factors lead to firm factors	Confirmed
H3: Firm factors lead to firm adoption	Not confirmed
H4: Societal-level factors influence personal-level factors	Confirmed
H5: Societal-level factors influence firm-level factors	Confirmed
H6: Societal-level factors lead to firm adoption	Not confirmed
H7: Technology factors influence employee factors	Not confirmed
H8: Technology factors influence firm-level factors	Not confirmed
H9: Technology factors influence societal factors	Not confirmed

Source: Authors' creation

Societal-level factors did not lead to firm adoption. This outcome similarly contradicts propositions in other models, such as the Culture, Policy and Technology framework (Bajaj and Leonard 2004), suggesting that policy issues constructed in F-TAM under societal factors will lead to firm adoption.

The results of Doe et al. (2019) triggered an inquiry into further relationships that were not anticipated and discovered that technology characteristics directly influence firm adoption. This study, furthermore, discovered that technological factors could moderate the relationship between firm-level factors and firm adoption. This particular proposition, if confirmed, would be another novel discovery in adoption studies. Earlier firm-level models such as PERM, TTF, and TOE, did not anticipate or conceive the idea of a possible strengthening of this relationship by technology characteristics.

Suspected mediating relationships were reported at this stage. Firstly, if personal-level factors lead to firm adoption and societal factors influence personal-level factors, then personal-level factors could actually mediate the relationship between societal-level factors and firm adoption. Secondly, if societal-level factors lead to firm-level factors and societal-level factors are influenced by technology characteristics, then societal-level factors could actually mediate the relationship between technological characteristics and firm-level factors. Finally, societal-level factors could mediate the relationship between technological factors and personal factors.

In a follow-up study to understand other contextual factors that could explain how firm-level factors did not lead to firm adoption (Doe et al. 2019), Doe, Van De Wetering, Honyenuga, and Versandaal (nd) sought to find out whether firm size affects the relationships posited in F-TAM, whether personal

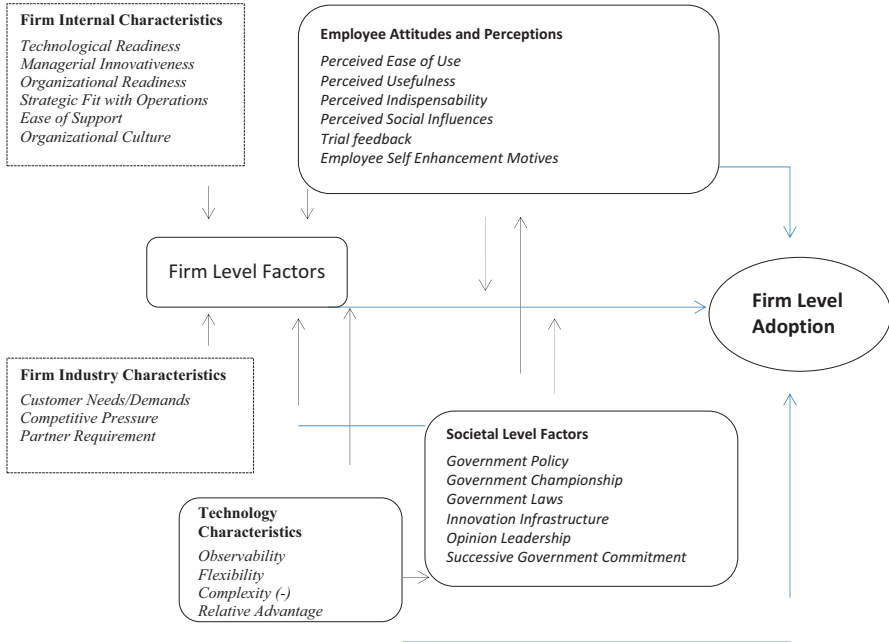


Fig. 1.3 Survey-tested technology adoption model (F-TAM). (Source: Doe et al. 2019)

factors and societal factors have any other effect on the proposed eco-system, and how technology characteristics influence the suggested eco-system of adoption. The study confirmed the relationships reported in Doe et al. (2019). Furthermore, apart from societal-level factors, personal factors and technological factors were discovered to moderate the relationship between firm-level factors and firm adoption. Without this moderating effect, firm-level factors would have been insignificant in the pool of factors that lead to firm-level adoption. The study also discovered a full mediating effect of personal-level factors on the relationship between societal-level factors and firm adoption. It was likewise confirmed that societal factors fully mediate the relationship between technology factors and firm-level factors, as well as fully mediate between technology factors and personal factors.

A pictorial view of the direct relationships supported by empirical data, in addition to the suspected moderating relationships, is shown in Fig. 1.3.

REFLECTION ON F-TAM

The F-TAM is posited as an interaction of four groups of factors to influence adoption. The four groups of factors include personal-level factors, firm-level factors, societal-level factors, and technology-related factors. In the following sections, these relationships and factors are discussed.

Employees' Individual-Level Factors

These are individual perceptions or attitudes toward the technology. These factors can lead to technology adoption as a firm even when the firm has not officially prepared itself nor sanctioned the adoption of the technology. Employee adoption produces a subjective norm within the working environment, which leads to the emergence of other factors at the firm level. When the firm decides to organize itself to adopt (factors of adoption), adoption becomes easier because the actual users within the firm will indeed adopt. Their adoption will reinforce (moderation effect) the firm's effort to adopt. The only significant group of factors that precipitates these personal-level factors, according to the F-TAM, is the societal-level factors. Thus, employee personal factors serve as a mediator between societal-level factors and firm adoption, as well as between societal-level factors and firm-level factors. Specific factors at the employee personal level are:

Perceived Usefulness (PU) (Vankatesh et al. 2003). This is the degree to which a person believes that using a technology will increase his/her job performance or output: it is the performance outcome expectancy of the technology.

Perceived Ease of Use (PEOU) (Vankatesh et al. 2003). This is the degree to which a person believes that using a technology will be free of effort: the degree of ease associated with technology use.

Social influences (SI) (Shinh et al. 2013). This is the extent to which the adopter perceives that important others, such as family and friends, believe he/she should use a technology: the extent to which the use of a technology demonstrates class boundaries or social standing.

Perceived Indispensability (PI) (Shinh et al. 2013). This is the extent to which livelihood, work, or an activity is dependent on the use of a technology.

Trial Feedbacks (Rogers 1962). This is the post-trial perception of the technology an individual holds.

Perceived Employee Self-Enhancement Motives (Yun et al. 2007). This is the extent to which an employee believes the adoption of a technology will yield a personal tangible or performance benefit.

Firm-Level Factors

Firm-level factors: These are all preparations in the form of technical, infrastructural, and financial preparations that the organization must have to be able to adopt a technology. In many earlier models, this factor had been proposed to include human resources (Employees). In the F-TAM, however, decomposing employee factors out of organizational factors shows a divergent result worth mentioning. Apart from the employee factors, the rest of the factors at the organization level were not significant in precipitating firm-level adoption. If employee-level factors were part of organizational factors, the result would have shown a significant effect on firm adoption just as earlier models have

reported. Indeed, this result highlights the essence of examining the phenomenon of adoption from an eco-system perspective. These organizational-level factors are precipitated by internal factors, industry factors, societal-level factors, and employee factors. Among SMEs in general, these organizational-level factors would be irrelevant without the moderating influence of personal, societal, and technological factors.

Among large firms, however, these organizational factors are likely to lead directly to firm adoption. In this regard, one issue worth investigating in further studies is whether industry factors alone would precipitate firm adoption if it is decoupled from the internal organizational factors, just as employee factors were decoupled from firm-level factors. Specific factors at the organization level are:

Technology Readiness/Innovative Readiness (Boateng et al. 2011). These are the availability of internal technologies relevant to the firm, the current technology, and the knowledge required. This variable also measures Trust (Vize et al. 2013).

Managerial Readiness (Lumpkin and Dess 2001). This is the management's attitude toward change, future orientation, proactivity, support, and risk behavior.

Strategic Fit with Operations (Goodhue and Thompson 1995). This is the extent to which a technology fits business operations or tasks to be performed.

Organizational Readiness (Boateng et al. 2011). This is the scope, size, managerial structure, organizational slack resources, business process, creativity, and openness of the firm, that is, the preparedness of the organization toward future environmental changes.

Ease of Support (Grandon and Pearson 2004). This is the ready availability of a technical hand to assist the firm in resolving initial and further problems that may arise from the use of a technology.

Organizational Culture (Škerlavaj et al. 2010). It is the predisposition to try new technologies and to absorb possible gains or losses resulting from an adoption attempt.

Customer Readiness/Market Demand (Hauser et al. 2006). The extent to which serving a particular customer group requires the use of a technology.

Competitor Pressure/Actions (Rogers 1962). This is the extent to which industry competition is dependent on the adoption of a technology, that is, the extent to which a competitor's action produces pressure, as well as the mimetic response by rivals in the industry.

Partner Requirements (Dimaggio and Powell 1983). This is the extent to which firm partners require the firm to use a technology in its transactions with them.

Societal-Level Factors

For firm-level adoption of a technology innovation, societal-level factors are macro-environmental readiness and changes that must happen to lend support to adoption. These are mainly governmental actions and support for adopting, societal active promotion in the form of a recommendation, and infrastructure. Since organizations exist in a society, these societal-level factors lead to the availability of factors at the firm level through a diffusion process. They, however, do not lead directly to firm adoption. At any time an organization decides to adopt a technology, these societal factors reinforce the organizational effort (a moderation effect) to adopt. The only significant group of factors that precipitate societal-level factors are technology characteristics. Therefore, societal-level factors mediate between technology characteristics and employee-level factors, as well as between technology characteristics and firm-level factors. The specific factors at the societal level are:

Government Championship (Howell et al. 2005). This is the extent of active promotion made by influencing top-level government officials, their views of the technology, support, and active removal of obstacles.

Government Policy (Bajaj and Leonard 2004). These are deliberate policies aimed at promoting a technology in a country or social system.

Government Laws (Tornatzky and Fleischer 1990). These are a society's set of laws and legal instruments that regulate the purchase, use, and disposal of a technology/innovation.

Opinion Leadership (Rogers 1962). This is a *word of mouth communication* in which one person (opinion leader) informally influences the actions and attitudes of others who may be opinion seekers or opinion recipients.

Technology Infrastructure (Tornatzky and Fleischer 1990). This is the supporting infrastructure, such as telecommunications networks, upon which a technology or an innovation can thrive within the society.

Successive Government Commitment to Promoting Innovation (Mathews 2012). This is the extent to which previous government innovation-related projects, policy, and actions are continued by successive governments.

Technology Characteristics

Technology factors are the characteristics of a technology itself, as proposed by Rogers (1962). True to this proposition, when a technology (innovation) is observable, offers a relative advantage, is not complex, is flexible, and can be tried before full adoption, it can be adopted directly without the influence of other factors. Technology characteristics, however, strengthen (moderates) the firm's effort to adopt a technology. Technology characteristics do not directly influence personal factors nor organizational factors, but indirectly do. Specific technology-related factors examined in the F-TAM are:

Flexibility: This is the relative ease with which a technology can be applied to do different things apart from what it was initially defined to do.

Observability: The relative ease with which the technology can be seen by others who use it early.

Relative advantage: These are the benefits that the usage of the technology provides over other competing technologies.

Complexity: This is the relative difficulty associated with the use of a technology, and is expected to have a negative relationship with adoption of the technology.

REFLECTION OF RELEVANCE AND FURTHER STUDIES

Scientific Relevance

This study makes some critical contribution to the field of innovation studies in business research. This central idea of the F-TAM is a significant departure from earlier models. While it challenges propositions in earlier models, it proposes new concepts and variables for further studies. The study has significant implications for scholarly debate and further studies. Among the technology adoption and innovation studies, the study proposes a new model called the Firm Technology Adoption Model (F-TAM). This model is an interactive eco-system model that examines the effect of both personal-level and societal-level of adoption on firm factors of adoption as well as on firm adoption. The study challenges the dominant idea in earlier studies that factors of adoption at any particular level of adoption alone will generally lead to adoption. This idea is prevalent in models such as TAM, TRA, ITMA, UTAUT, and DOI at the personal level; TOE, PERM, and TTF at the firm level; and CPT and PERM model at the societal level.

This study challenges the idea of positing intention to adopt as a sole antecedent of adoption, with all other factors leading to intention to adopt. This is because the gaps between intention to adopt and actual adoption are the contextual gaps of socio-economic development, infrastructure, and cultural norms, which can often hinder actual adoption in some contexts.

This study is the first to propose an interactive eco-system of measuring adoption of a technology and, by extension, any innovation; and prompts a re-examination of earlier models at personal, firm, and societal levels with regard to other influences.

Industrial Significance

For industry practitioners, the findings of this study provide a framework with which organizations can easily promote adoption of any innovation in the organization context. The interactive effect highlights where emphasis needs to be laid in order to ignite adoption and the sustainability of the digitized technology. For instance, at the firm level, employee factors and the nature of

the technology itself are more important than other internal organizational factors. This idea is obviously missed by earlier models that classify all firm-level factors as one. With this model, igniting adoption is expected to be easier at the firm level. Thus, the proposed eco-system will enable managers to take a holistic view of firm technology adoption.

In the digitized era where new technologies are rapidly churned out, what would make a corporate strategy sustainable in the changing environment must necessarily be identified. This is more so for technological strategies if they are to be sustainable. The ability of the firm to unlearn old technologies, adopt new technologies, and adapt them to the changing digital environment is largely dependent on the employee factors shown in the F-TAM model. Firms that understand the interaction effect of adoption factors are more likely to deploy more sustainable strategies that lead to sustainable corporate performance in the competitive digitized era than those that do not.

Limitations and Future Research

This study has limitations that future research should seek to address.

Firstly, the proposed model has only been tested using data from one developing country context. Further studies would need to sample data from multiple developing country contexts. This may be done with larger samples of over 2000 SMEs randomly sampled across regions.

Secondly, the discipline of marketing posits with the marketing orientation (Kotler and Levy 1969) that customer needs are placed at the heart of the organizations' efforts to drive customer satisfaction and profit. If this is so, then the variable of "customer needs", as well as other industry factors, could probably lead to firm adoption. Perhaps if industry factors are decoupled from internal organizational factors at the firm level, industry factors could lead to adoption. This needs to be explored in further studies.

The proposed new model has just begun its journey of acceptance and validation. Apart from an extended study in other developing country contexts, the model needs to be go through a comparative test, *vis-a-vis* other models that have been proposed to explain technology adoption or any other innovation at the firm level. Further studies can focus on this area.

In the course of developing this model (more precisely at the second stage), some relationships were deleted due to their ability to cause a feedback effect in the model. For instance, whether personal-level factors will influence societal-level factors; whether firm-level factors will influence societal-level factors and personal-level factors; and what effect firm adoption will have on personal-level factors, firm-level factors, and societal-level factors. These are all worth exploring in further studies.

The F-TAM was tested among SMEs under voluntary adoption conditions. There are circumstances under which governments impose some mandatory conditions for firms to adopt, or firm managers impose mandatory conditions

for adoption. Further studies of SME adoption under mandatory conditions is recommended to explain what variations can occur in this model.

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Algorithms Shaping the Future

Eduardo Olier and Francisco Valderrey

INTRODUCTION

As we approach the year 2025, humanity is swiftly venturing into a virtual realm driven by technological advances as never seen before. More and more data are created every day in the form of petabytes, exabytes, and so on, that require new and more effective technologies through Big Data solutions (Oussous et al. 2018). Additionally, new developments in artificial intelligence (AI), machine learning, and mathematical algorithms will computerize the management of such an enormous quantity of data coming from businesses and the whole society.

The examples of how AI is permeating society are many; for instance, a diversity of benefits of the new technologies allows for improvements in autonomous vehicles, agricultural robots with the capabilities to replace hard labor and optimize crops, supplying reliable financial assistance, and providing better outcomes in research, medical treatments, or justice (OECD 2019). Those contributions may start in advanced economies, but eventually reach remote areas; telemedicine is a vivid example, and the case of well-known doctors providing skin treatments to severely ill patients in Africa illustrates one of the many positive effects of AI (Atkinson and Mabey 2019).

At the same time, the growing impact of the Internet through a record number of users, mobile applications, spread of social networks, cloud

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computing, 3D printing, and industrial value chain, among other breakthroughs, paves the road for dramatic changes in our society (López de Mántares 2018). Consequently, a new business arena is coming out at an unmatched speed with unicorns (companies reaching a market value above \$1 billion) taking the lead, spreading out, and challenging more traditional businesses (UNCTAD 2019). New Internet-based currencies like Facebook's Libra, Bitcoin, and other similar cryptocurrencies are just the tip of the iceberg of an overhaul of the global financial system, as many substantial changes in the system are in the making through the use of blockchain technologies. Indeed, financial stability may become a sweet remembrance from the past, especially with the so-called "monetary populism," undermining financial institutions (World Economic Forum 2019).

All the previously mentioned factors are creating a digital revolution challenging the world as we know it. A most likely result will be the creation of a profound digital divide with unforeseen consequences to business organizations and the entire society, thus raising major ethical concerns. Individuals and organizations ask questions regarding rules and regulations to protect people left behind by technology. Such protection is no longer circumscribed to defend fundamental rights, such as equal opportunities, but nowadays the debate is moving forward, sometimes pointing out at global governance or banning the attribution of responsibility to robots, as in the Top 10 Principles for Ethical Artificial Intelligence by UNI Global Union (OECD 2019). Indeed, issues related to ethics are expanding along with the new technologies, as happens with artificial narrow intelligence, which is "machine intelligence that equals or exceeds people's abilities or efficiency at a specific task," as found in Google search and Facebook social mapping (Anderson et al. 2018). Ethical concerns extend to a wide variety of circumstances; for instance, data protection and algorithm-based decision in the administration of justice (Brkan 2019) is one of the many areas where individuals may be unprotected to pervasive technology.

By the year 2025, the digital revolution may have a profound impact on individuals, the culture of organizations, and the environment, forcing enterprises to reorient people and business activities to readapt their way of doing business continuously, as foreseen by Chinese and German authorities pursuing technological leadership as in the case of the Made in China 2025 and Industry 4.0 (Li 2018). Machine-learning algorithms and AI are fostering technological breakthroughs with the capability of placing ordinary citizens at the mercy of those with access to their data. Before we may realize it, entire societies could be under siege by institutions, organizations, or private individuals, controlling private information from others. If this happens, democracy will end up disappearing for good (Olier 2019).

The potential loss of freedom is one of the most critical challenges for humanity in the forthcoming years, with a severe impact on the global economy, geopolitical stability, and the well-being of people. A significant consequence may be a permanent gap between the rich and the poor, and the birth

of a new class of useless and “superfluous” individuals, alienated from society and entirely manipulated by a new ruling upper class (Harari 2018). We may be nearing a world where advanced machines controlled by powerful algorithms will be capable of commanding people, and controlling business and the entire society, as predicted by Norbert Wiener, who many years ago anticipated that Cybernetics would be the instrument that could facilitate the control of human beings (Wiener 1954). On the other hand, technology may work side by side with humans in different areas, as described by the so-called “induction effect,” showing better results when the power of AI is combined with human creativity (Siegel 2016).

The previously mentioned changes in the business world are easy to spot. During 2017, 61% of firms in the United States had incorporated systems based on AI and machine learning into their business processes (Rayome 2019), embedding algorithms in their inner software structure. The impact is notorious on the labor market, where probably a few million jobs are created annually in industries heavily dependent on AI, at the expense of many more workers in traditional sectors of the economy.

Unfortunately, highly qualified people are also at risk of losing their jobs. In the health sector, for instance, there is no way for medical doctors to compete with machines capable of foreseeing a future heart attack based solely on the DNA of the patient (American Heart Association News 2019). The issue becomes more dramatic in many industrial processes already managed by robots. Furthermore, the presence of algorithms goes unnoticed in supercomputers that perform financial analysis and other complex processes, in self-driving vehicles, state-of-the-art weapons, hotel reservations, or private urban transportation. As anticipated by George Orwell’s novel *Nineteen Eighty-Four*, we could be nearing a planet controlled by *Big Brother*, with a plethora of algorithms managing every aspect of our existence (Orwell 1990).

Although many factors partially explain advances in technology, we can identify the algorithm as the building block of digital transformation. An algorithm is “an explicit, precise, unambiguous, mechanically-executable sequence of elementary instructions, usually intended to accomplish a specific purpose” (Erickson 2019) or, more simply, a set of steps required to solve a problem. Algorithms are also at the center of this chapter, where we intend to demonstrate how algorithms are dominating our lives and shaping our future. Briefly stated, we intend to show that algorithms will shape our lives in a not so distant future through different technologies having a profound impact on business and society. To that purpose, we set as the objectives for our research to find out to what extent algorithms are part of society, to look for algorithms with an impact on the business world, and to attempt how algorithms may change our lives soon.

In this chapter, we discuss the relevance of algorithms in modern society and their role in molding our lifestyle. After providing a proper context for comprehension of algorithms and the associated technological improvements, we analyze the elements behind the new digital economy, sharing some technical

insights about algorithms, before evaluating their main impact on our future society. Finally, after raising some ethical concerns, we provide advice to entrepreneurs, managers, and policymakers before describing our contribution to the overall project of Business 2025: Sustainability and Digital Transformation.

LITERATURE REVIEW

In this section, we go through a brief literature review related to digital transformation. Before we look for how scholars have approached this topic, we need to state the monetary importance of the digital economy. It is hard to measure the size of the digital economy, but a joint report from Huawei and Oxford Economics mentions that “the digital economy is worth \$11.5 trillion globally, equivalent to 15.5% of global GDP and has grown two and a half times faster than global GDP over the past 15 years” (Huawei and Oxford Economics 2017). An issue of utmost importance to the digital economy is how to create value from digital data. A recent report from the United Nations (UNCTAD 2019) points out different vital elements involved in the monetization of digital data, as shown in Table 2.1.

The digital economy has been a topic of interest to researchers for quite some time. Nevertheless, many questions still arise, as fewer than expected journals have devoted efforts to cover the issue, until very recently. Several reviews of the literature intend to share a historical view of how digitalization has permeated business activities and models. Out of the few attempts, we chose the work by Reis, Amorim, Melão, and Matos to draw a historical perspective on the evolution of Digital Transformation Definitions (Reis et al. 2018). According to Reis et al., different authors provide insights throughout time, with an impact on several issues concerning digital transformation. Stolterman and Fors (2004) advance the idea that the Digital Transformation extends to most aspects of human existence, through the use of technology. Martin (2008) goes beyond the concept of technology by itself and looks at the contribution from digital advances into business, the government, and private citizens alike. Westerman et al. (2011) go one step further, pursuing radical changes into business ventures coming from technological improvements.

Table 2.1 Elements involved in the monetization of digital data

<i>Actions from data value chain</i>	<i>Data monetization</i>
Collect	Selling targeted online advertising (e.g., Google, Facebook)
Store	Operating e-commerce platforms (Amazon, Alibaba, Uber, Airbnb)
Analyze	Transforming traditional goods into rentable services (Mobike, Rolls Royce)
Transform data into digital intelligence	Renting out cloud services (Amazon Web Services, Tencent, MyJohnDeere)

Source: Adapted from UNCTAD 2019

McDonald and Rowsell-Jones (2012), instead, look at how the digital transformation improves business performance beyond the benefits of particular technologies. Indeed, they point to how digital transformation may be a pillar to the creation of new business models. Solis et al. (2014) take a step further by addressing the needs of the new digital customers and how to satisfy those demands at any single time of their experience. Finally, Collin et al. (2015) draw a line between the digitalization and digital transformation. To them, the new change encompasses the most relevant issues to society as a whole. Although all of the above definitions contribute to our understanding of digital transformation, we stay by the proposal from Stolterman and Fors, because it has the simplicity needed to communicate the main idea behind the process of digital transformation, while it is also inclusive of all aspects of human life.

Another attempt to summarize the literature on digitalization was advanced by Parida et al. (2019). This review of literature expands into business model innovation and sustainability from the perspective of digitalization. The authors map different theoretical perspectives and provide a classification based on six different elements: a theoretical perspective, digitalization, value creation, value delivery, value capture, and key references. Eloranta and Turunen (2016) present their view of Platform Theory into customization and standardization through the integration between back-end and front-end activities. Ehret and Wirtz (2016) look at how to manage downside risk, from the Transaction Theory, looking at issues such as reduced costs and delivering outputs. Krotov (2017) points at generating value from technology through opportunity recognition, creativity, and disruptive business models, along with new actors in the ecosystem, following the entrepreneurship theory. Parida et al. (2015) focus on workable actions to economic and social systems, according to transition theory. They also point at radical innovation and propose structural changes as possible pathways to find new opportunities along with the digital transformation. Finally, Kohtamäki and Helo (2015) base their proposals into resource-based view and dynamic capabilities. They look to the Internet of things (IoT) strategy, value co-creation with customers, mass service customization, and a realistic view into reconfiguring offers, resources, and revenue streams.

The authors suggest further lines of research. Because of the nature of digitalization and its many components, it is worth to provide a more general framework and open, as well, new lines exploring the latest developments in technology. Although the above-mentioned theories may help in explaining how firms may react to digital transformation, we have a preference for Transaction Cost Theory. In spite of much criticism, transaction theory has evolved over the years (Greve and Argote 2015), and illustrates how companies react to a changing environment and the pressure to make decisions in complex, technology-driven scenarios. Transaction cost theory deals with the rationale for choosing allocation of resources and activities, either to the market or to the firm (Gibbons 2019), thus offering a more realistic scenario for decision-makers throughout the process of digital transformation. After all, one of the

pillars of transaction cost theory is the adaptation of the firm, which is “the central economic problem” (Williamson 1991).

THE ELEMENTS BEHIND THE NEW DIGITAL ECONOMY

Over 25 years ago, several scholars coined the term *digital economy* to highlight the transformation from the old analog economy based on physical information to a new one where information was digital, supported by bits stored in computers and moving at the speed of light (Gada 2017). The analog economy was mainly based on cash, checks, reports, face to face meetings, and an array of other physical instruments, including direct mail ads, telephone calls, and a vast amount of paper to support business activities (Al-Qirim 2004).

The digital economy, on the contrary, started the transformation of the physical world into an electronic, binary one (Dufva and Dufva 2019). Factories were no longer entirely supported by humans, and new “digital workers” were governed by programmed chips in the form of robots and many other computer-controlled artifacts. Life was then managed by myriads of software-programmed devices taking responsibility of carrying out many activities previously done by humans (Pew Research Center 2014). As a result, this new computerized economy was rapidly renamed “the knowledge economy” (Dahlman et al. 2009), as most of the jobs were created within information-intensive sectors of the economy. Factories were no longer based on human labor, yet humans created the computerized systems that supported manufacturing processes. The same occurred in farms operated by new computer-based machines, where smart chips and other “intelligent” devices were embedded into millions of products reshaping consumer behavior and the overall structure of the economy, with a fundamental shift to the service sector (Messner et al. 2019). Services started to account for more than 70% of GDP in advanced economies, and new industries were established upon the convergence of computing, communications, and content (Szirmai 2015).

In parallel to this enormous economic transformation, a new communication structure called the World Wide Web (the Web) gave birth to a virtual world of trillions of web sites that profoundly transformed economics and society. In this “Matrix-type” of environment, money and economic transactions were separated from its previous function, and economic value moved from traditional businesses to new financial structures, such as hedge funds, that created thousands of new financial products and helped develop a parallel virtual economy several times bigger than the real one. As of today, the over the counter (OTC) financial market is approximately seven times bigger than the nominal GDP for the entire planet, supporting a volatile business world based on new financial instruments. The knowledge economy has also transformed the way we understand the world. So many things are “smart” today. We live within reach of smart clothes, smart cars, smart cities, smartphones, smart TVs, smart flying vehicles, and so on, proving the pervasive digitization of the world

after information shifted from analog to digital. Many physical things have become virtual dots stored in computers and moving at a speed of light within the Internet from one location to another on our planet, the Earth, that now appears to be shrinking before our eyes.

Strangely enough, we live in a sort of dual space where physical location cannot prevent us from entering into limitless cyberspace full of virtual sites: virtual corporations, virtual markets, virtual villages, virtual communities, and the like. The new smart, social, and economic virtual space has opened the door to a global environment, through some process of molecularization of its components. The old corporation has been disaggregated and replaced by dynamic molecules and clusters of individuals and entities (Tapscott 1997), just as has happened to many aspects of society. Indeed, we live in a virtual world where people and organizations interact in real-time with citizens willing to share their interests immediately. Immediacy is now at the core of the digital world and is also the engine that has boosted the creation of the most valuable companies in the world. Among those, we find Apple, Alphabet, Amazon, Microsoft, and Facebook, with probably trillions of dollars in aggregate market value. Service provided in real-time is the common denominator to those organizations, either when reaching customers and placing products at their fingertips or when providing services through an electronic platform. Hence, a new way of leveraging economic value is replacing the old, traditional business, with digital solutions replacing the outdated analog technology, in leading economies.

In the new digital society, work has become unbundled from jobs, and work and jobs have both become unbundled from companies, many of which are now kinds of platforms. As a consequence, the digital economy has opened a new age where acceleration changes everything (Friedman 2017). Beneath those fundamental changes lies the so-called Moore's law, stating that the number of transistors in an integrated circuit doubles every two years (Gustafson 2011). An immediate consequence of Moore's law is the unparalleled transformation of labor as we know it, the ubiquity of jobs, and the real possibility to work collaboratively across continents or exchange valuable information for business interaction or social communication. The examples are too many, as happens with Facebook, Airbnb, WhatsApp, Twitter, Netflix, or PayPal, to name a few. Advances in digital technology have created entirely new industries and new ways to reach end consumers through highly efficient intermediaries, as happens with Booking or Uber (Friedman 2017). This last-mentioned company is leading many others into building virtual platforms where a single company can instantly reach millions of customers spread across remote locations. We could talk about the "uberization" of business and society (Davis 2016) since Uber is perhaps the most prominent example in this era of profound changes powered by new digital technologies. Uber owns no vehicles or physical assets, but still outperforms well-established competitors in the mobility industry (CBInsights 2018).

Technology-driven companies are reaching dominant positions in many markets. Beyond business success, those enterprises are also developing the capacity to interact with their customer base and influence their behavior. For instance, Facebook tries to define who we are, Amazon searches to identify what we want, and Google intends to define what we think (Dyson 2012). Those companies collect vast amounts of data to track people's interests, whether they like it or not, often violating their privacy. An enormous amount of data continually feeds extremely powerful databases and generates profiles of unprecedented depth and specificity (Pasquale 2015). State-of-the-art technologies from large corporations are spreading to all nations, although at different speeds (Castells 2013).

BIG DATA, PREDICTIVE ANALYTICS, MACHINE LEARNING, IoT, AND AI

Digital technology is at its highest in the so-called Big Data, which relates to new processing technologies capable of managing far larger quantities of data than before. Contrary to old databases structured into tables, Big Data applications perform immeasurable group data computing, thus getting fully valued information returns. The concept of Big Data is hard to understand, but the reality is that such capacity to use immense volumes of data in real-time is permeating the overall economy, just as happened before with science. Nowadays, Big Data allows the effective management of billions of data about almost everything in life, providing the means for computers to make predictions with an astonishing degree of accuracy. Big Data allows algorithms to crunch mountains of data and to put into action complex mathematical models to induce results that may have an economic, social, political, or scientific value; therefore, "Big Data is all about seeing and understanding the relations within and among pieces of information that, until very recently, we struggled to grasp fully" (Linden et al. 2003).

Big Data makes possible unseen methods to make predictions, up to the point of unfolding the so-called "predictive analytics," or the new technology that "learns" from data to forecast the future behavior of a system and therefore optimize a specific decision-making process. This is the reason why mathematical models are the necessary elements to help sustain computer-based predictive models, which will be able to yield the behavior of an individual, groups of individuals, or a system whose features will serve as inputs to get a predictive behavior as output. Predictive analytics provides the framework, where the higher the number of features, the higher is the probability to achieve the desired predictive behavior (Siegel 2016).

Big Data and predictive analytics could not be possible without powerful computing devices based on machine learning or the automated detection of meaningful patterns in data (Shalev-Shwartz and Ben-David 2014). Machine learning can be defined as a method to enable computers to learn directly

from data rather than from the use of programming. Machine learning can also be understood as the study and computer modeling of learning processes in their multiple manifestations (Michalski et al. 1984), working through a sequence of instructions executed by a computer program that optimizes a mathematical model using example data or, perhaps more important, experience. Therefore, once a model is “learned,” algorithms should be structured as efficiently as possible to be able to predict the future with enough accuracy (Apaydin 2010). Accordingly, an algorithm is to be understood as a set of computational instructions that determine the content and sequence of a series of specific actions capable of transforming initial data into the desired result.

IoT is another primary path leading to a fully digital world. IoT defines the interconnection of physical objects through the Web, intending to optimize processes, the big ones, such as large manufacturing items, and the small ones, as connecting home appliances for comfort in the house. IoT offers endless industrial applications, as well as some personal improvements to our lifestyle. For years, IoT was more of a dream to reach optimization of processes with little or no human intervention, but the reality was that expectations were hardly matched. Recently, though, with the advent of 5G, a more robust protocol for mobile communication over the Web, IoT is regaining much of the importance that was obtained many years ago. This technological approach to connecting unmaterial objects gains acceptance by the minute, as many new developments are proving their efficiency. Although there are many definitions available, the following one accurately describes IoT: “An open and comprehensive network of intelligent objects that have the capacity to auto-organize, share information, data, and resources, reacting and acting in face of situations and changes in the environment” (Madakam et al. 2015).

All the previously mentioned technologies are at the foundations of the most significant technological advances in recent years: artificial intelligence or AI, which “can be defined as intelligent systems with the ability to think and learn” (Reis et al. 2019). The use of AI is spreading to all corners of the planet, especially in the world of business. AI has been around for a long time; in fact, “the name behind the idea of AI is John McCarthy, who began research on the subject in 1955 and assumed that each aspect of learning and other domains of intelligence can be described so precisely that they can be simulated by a machine” (Ul-Ain et al. 2019). AI is often associated with robotics and the old desire of humanity to control nature by replicating the human brain and unleashing the power of unmatched AI. AI also started with limited applications, but today has expanded into any possible field of knowledge, leaving behind the image more associated with robots.

AI is paramount to the world of business. Presently, commercially available intelligent machine and services include “Tasks, Voice-Based Virtual Assistants, Web Mapping, Ridesharing Apps, Filter Spam, Humanoid Robots, Healthcare,

Collaborative Robots, Self-Driving Cars, or Assistive Device for Blind” (Soni et al. 2019), and the list is wide open to new developments. It is hard to envision a world where algorithms, Big Data, predictive analytics, machine learning, IoT, and AI could be absent. As previously stated, algorithms are at the core of a digital transformation with profound changes in our lives. Advances in technology are changing industry, business, and much of our routine, although there are different areas where digital transformation has a significant impact on people. A recent review points at the following five fields: “AI as a Replacement for Manual and Mental labor; High-End Technology and Complex Algorithms for Better Decision Making; Enhanced Internet and Cyber Security; Focus on Integration of AI with core Hardware, and Impact on the Workplace and Businesses” (BDAN 2019). According to the review, AI is changing the way we work, shifting from manual labor into more attractive occupations, requiring different skills for managing the fully automated process and the capabilities to work alongside with smart machines. High-end technology allows for handling an unprecedented amount of data, which brings obvious benefits such as automated decision-making while raising concerns about security and data privacy. Enhanced Internet and cybersecurity, always according to the review, are responding quickly to the many threats posed by cyberattacks and malicious software. There is much room for improvement, but AI is delivering new solutions to those threats. Many of the changes that are already happening come from the integration of AI with core hardware. Advances in hardware are easy to spot in smartphones, with capabilities proliferating and providing customized solutions through virtual assistants. Finally, all of the previously mentioned issues have an impact on the workplace and businesses. Our work will never be the same once we open the door to AI. Technology, indeed, is helping organizations to become leaner and more efficient in many different tasks.

Algorithms, Big Data, predictive analytics, machine learning, IoT, and AI can take us much further away from what we may think. Presumably, those changes will not stop at technologies such as 5G, blockchain, augmented reality, autonomous vehicles, among others, or those that may seem futuristic today, as space tourism and exploration, but changes may reach our relationship with nature and our physical body. Indeed, digital transformation may lead humankind to the symbiosis of human beings and machines, replacing organs with 3D technology, and connecting our brains to the cloud (El Financiero 2019). Indeed, a recent experiment has opened the debate after scientists could “design and build so-called xenobots that could locomote across the bottom of a petri dish. When several designs were housed together, they began to exhibit “collective behaviors,” such as orbiting one another or temporarily binding” (Yasinski 2020). Table 2.2 summarizes what we consider the pillars of digital change, at present.

Table 2.2 Big Data, predictive analytics, machine learning, Internet of things, and artificial intelligence

Big Data	Big Data is the new processing technology capable of managing immense volumes of data in real-time
Predictive analytics	Predictive analytics provides the framework, where the higher the number of features, the higher is the probability to achieve the desired predictive behavior (Siegel 2016)
Machine learning	Machine learning can be defined as a method to enable computers to learn directly from data rather than from the use of programming
Internet of things (IoT)	IoT is “an open and comprehensive network of intelligent objects that have the capacity to auto-organize, share information, data, and resources, reacting and acting in face of situations and changes in the environment” (Madakam et al. 2015).
Artificial intelligence (AI)	AI “can be defined as intelligent systems with the ability to think and learn” (Reis et al. 2019)

Source: Author’s creation

ALGORITHMS IN THE TWENTY-FIRST CENTURY: TAKING CARE OF BUSINESS

The Algebra of Mohammed Ben Musa is the nineteenth-century English translation of the *Compendium on Calculation by Completion and Reduction* written by the Persian astronomer Muhammad ibn Musa al-Khwarizmi, who lived between 780 and 850 AD (Rosen 1831). He was a highly recognized scholar at his time and the first one to introduce three basic algebraic methods, among many other mathematical techniques. Firstly, he demonstrated how to reduce equations; that is, how to write them in simpler forms. Secondly, he showed how to remove a negative quantity from one side of an equation and add it to the other to perform equation completion. Thirdly, he illustrated the way to implement equation balancing to cancel like terms on opposite sides of an equation. He also invented the formula for solving polynomial second degree-type of equations. Tracking the etymology of the word algorithm is a fascinating undertaking. Such a word honors the work of the brilliant mathematician Muhammad ibn Musa al-Khwarizmi and is the Latinization of his name. In fact, during the Middle Ages, his works were much appreciated, and many European scholars used to refer to him in the Latin expression: “*Dixit Algorizmi*” (that is how al-Khwarizmi said). It is a common mistake to confine algorithms to the domain of Mathematics, thus ignoring the critical role played in every aspect of life. For instance, Google Maps may take us from point A to point B using the shortest possible route. The list of examples of practical applications of algorithms is almost endless.

Algorithms existed in many forms before computers, but computer algorithms were game-changers. Alan Turing was the first scientist who formalized the concepts of algorithms and computation through the so-called “Turing Machine.” Briefly explained, a Turing Machine consists of an infinite series of

squares that can be left blank or written either 1 or 0 using a head. In this case, the machine can perform three basic operations: (1) read the number written on the square, (2) edit the written number either erasing it or writing a new one, and (3) move the head one square right or left to modify the corresponding square by writing a new one or erasing it. In spite of the innovation associated with the Turing Machine and other similar old-fashioned computing mechanisms, those devices had fundamental limitations. Modern computers respond to the need to solve highly complex problems requiring indeterministic and sophisticated solutions analyzing randomized mechanisms able to vary the order of the computing steps to reach the desired output, or capable of giving a different output to a defined input (Cormen et al. 2009). Thus, randomized algorithms attempt to represent social behavior in many ways, either by perturbing given inputs or by modifying process throughputs to get a wanted output (Motwani and Raghavan 1995). Accordingly, random algorithms can work in two different ways: either “using” unknown inputs at the beginning of the process that will be known as the process moves ahead, or employ inputs already known beforehand, and then modify the process dynamically to get new outputs afterward.

Computer algorithms, similarly to how humans approach problem solving, may look for an optimized solution by computing the shortest path, may also approximate the solution through attempting to minimize risks, or may use a heuristic approach by searching for the optimal solution in much shorter times than trial and error mechanisms will do. Additionally, they can make a set of computational operations guided by an expert system. This is what people do when using other people’s knowledge to provide expert-level solutions to complex problems, being understandable and flexible enough to accommodate new knowledge through conditional statements of rules (Buchanan and Shortliffe 1984).

Algorithms are also the inner mechanism of the Internet “bots,” or software applications that run automatically over the Internet, without the control of human beings. This is the case of Twitter, where many “likes, retweets, and followers” appearing over your account do not come from humans. It is said that more than 15% of Twitter accounts are bots rather than people (Newberg and CnBc 2017). Today, automatic personal assistants also control many people’s activities, as happens with Siri from Apple, the Google Assistant, or Amazon’s Alexa. The fundamental question, though, is to what extent those robots may have an impact on our daily lives.

Companies designing and distributing those devices may acquire in-depth knowledge about their users. Google, for example, can build the advertising profile of anyone who repeatedly accesses its pages, as demonstrated by Google’s ad configurator. Amazon is also as mighty as Google in controlling its customer base, and it accounts for more than 20% of the distribution market in the United States, well exceeding four trillion dollars. Google’s system of recommendations of purchases among clients is much more potent than “likes” from Facebook, Google, or Apple. To those enterprises, selling online is only a

part of their business interest: they must know their customers and, whenever possible, manipulate their purchase decisions. For instance, Amazon is personalizing recommendations according to the benefits of each of its consumers. It has also developed an algorithm called “item-to-item collaborative filtering,” kept with secrecy, and intended to connect users with those showing similar preferences (Linden et al. 2003). Behind this algorithm, there are many years of research to feed massive databases with a plethora of data, from geography, demography, buyer’s interests, and so forth, including sites the user may click in before arriving at Amazon. PageRank, the algorithm that drives Google Search, is such a powerful mechanism that it is capable of finding “needles in haystacks” (MacCormick 2013). PageRank can prioritize the media encountered by users and can also assess the importance of a site when looking for a specific term, and has been described as “a master switch of the Internet that centralizes and organizes the circulation of information in the network of networks, and for every search” (Wu 2011).

Computer machines have started to interact with humans in a human-like fashion. Some technologies using powerful algorithms are used now to filter applicants for a job. Those devices also regulate traffic flow, help commercial brands to obtain emotional insights in real-time, and control their reactions, even to the point of building emotional intelligence. In no small degree, algorithms rule the business world, reaching many different sectors of the economy (Rainie and Anderson 2017). For instance, few industries are so dependent nowadays on algorithms as the car industry. It is hard to think about a plant where algorithms are not essential to almost any major step of the design or the manufacturing process. Robots build our cars, and, metaphorically, they are also getting in the driver’s seat. New technologies allow those vehicles to make decisions about optimizing the purchase of fuel automatically, the right dealer to make a repair, or negotiating with unknown passengers about the best route to take while car sharing.

Intelligent robotics can help businesses improve their effectiveness in many aspects, and Google Maps may be a good example, but there are many others. Airbnb, for instance, may offer a nice vacation package at a competitive cost (Christian and Griffiths 2016). Health care is another field where algorithms minimize human error and make more accurate diagnoses, provide early detection of serious illnesses, develop new drugs, or map diseases to build more robust medical solutions. They can predict complex molecular systems in days rather than in weeks or months (Daley 2019). Algorithms are so powerful that they may also cross the line between business and society (Martin et al. 2019).

A notorious example is the case of the British company Cambridge Analytica, as described by the newspaper *The New York Times* in March 2018, in collaboration with *The Observer* and *The Guardian*. According to their investigation, Cambridge Analytica had obtained personal data from probably over 50 million Americans fraudulently from Facebook for the sole purpose of building voter profiles that would tip the scales in Donald Trump’s favor (Olier 2019). This case was not a novelty to Facebook, as the company had to apologize back

in 2014 for conducting a psychological experiment with many people within its social network. Nearly 700,000 users of the platform were used, without their knowledge, in a test aimed at checking their reactions to a series of information proposed on their pages (Arthur 2014). The experiment, coordinated by Adam Kramer, a scientist at Facebook, analyzed three million posts from their more than two billion users.

Most probably, sustainability and digital transformation will be at the center of the business world in the forthcoming years, entirely dependent upon highly complex and volatile networks guided by computer algorithms. Entrepreneurs, managers, and policymakers must be aware of them, and a sensible risk trade-off and opportunities must be seriously considered. The 2019 World Economic Forum Global Risk Report in its 14th edition shows three major risks related to computing affecting business and society as a whole: cyber-attacks, critical information breakdowns, and data fraud or theft (World Economic Forum 2019).

CYBERNETICS: THE HUMAN USE OF HUMAN BEINGS

We live in an algorithm-like world with invisible computing systems guiding much of our life. Algorithms are deployed for dealing with every aspect of people's life: emotions, attitudes, facial recognition, habits, personal interests, personal medical data, and whatever one can imagine without any legal, supervised control. "As we put more and more our world under the control of algorithms, we can lose track of who—or what—is pulling strings" (Steiner 2012). Algorithms have replaced humans in many activities because they are cheaper and faster than we are.

The Internet is modifying people's behavior, creating an increasing dependency on search engines, which are replacing memory by instant access to full information. As proven by some scientists (Sparrow et al. 2011), "when people have access to search engines, they remember fewer facts and less information because they know they can rely on search as a readily available shortcut" (Bloom 2011). Along with memory, learning by itself has been transferred to machines. This is not an irrelevant issue, as such dependency on AI is an evidence of the social power of algorithms, which relate to their ability to make choices, to classify, to sort, to order, and to rank people's wills (Beer 2019); in other words, to decide what should be most visible to the user. In an extreme scenario, machines could develop the capabilities to take command over humans, in which case turning off the switch to all those devices becomes an appealing possibility. In a controversial experiment set by Facebook with AI, two supercomputers created their language, started to communicate unintelligibly to their creators, and, when the situation ran out of hand, people in control had to stop the procedure. The truth was different, there was no menace to humankind from those mainframes, but the issue raised concerns about the potential dominance of machines over human beings (Baraniuk 2017). After all, intelligent devices have been outsmarting humans for a while, as

demonstrated by Deep Blue beating Kasparov in a chess game in 1997, or more recently with AlphaGo beating the top world player of the ancient Chinese Go game, and Pluribus by Facebook winning against professional poker players (Vincent 2019). The question, hypothetically, is how feasible it is to destroy all computers and let humans regain control. It is hard to tell about the consequences, but disruption of communications, global supply chains, the international financial system, and many others will probably lead to catastrophic consequences to our highly interconnected world.

The essence of human society, as James Beniger states, “is its continuous processing of physical throughputs, from their input to the concrete social system to their final consumption and output as waste” (Beniger 1986). Consequently, any social system may include inputs, throughputs, and outputs in the form of economic flows, standard behavior, information, energy processes, and even ideas as we have addressed several pages above. All the previous factors fall into the domain of cybernetics, or the science melting control, information, and communication theories altogether.

The use of algorithms, whether disguised under robots or AI devices, raises many ethical concerns. In China, facial recognition technology carries out people’s total surveillance by using the system known as Sharp Eyes, which tries to connect all existing cameras that already scan people on roads, in buildings and shopping centers, and at many other places to integrate them into a huge, nationwide surveillance platform, where private life will be explored at the convenience of authorities (Denyer 2018). Needless is to say that those means of control may cross borders easily, increasing polarization of nations, leaving those countries with cutting edge technology in clear superiority versus those far below in technological development. In the end, we may raise income and wealth disparity, along with profound social instabilities and perhaps economic war (Olier 2018).

The term cybernetics derives from the Greek *κυβερνητική*, meaning the steersman: the helmsman of a vessel. Cybernetics came out as a new scientific field by the end of the forties introduced by Norbert Wiener, an American mathematician, in collaboration with the Mexican physician Arturo Rosenblueth and a team striving for multidisciplinary research. Mathematicians tried in parallel to applying research into formulas using primitive calculating machines, thus developing the new science of cybernetics. Norbert Wiener’s “Cybernetics” delved into the application of these new theories and connecting studies relating the nervous system and computing machines, drawing upon the fact that neurons operate with numbers, store numbers, and provide numerical results. In subsequent chapters, he evaluated the possibility for machines to reproduce themselves and how individuals organize themselves and adapt their behavior to the environment based on the acquired experience (Wiener 1973).

Under a different point of view, cybernetics is the general theory of control that applies to any system. In this context, a system is a group of elements of any category that interact with one another, such as people. Wiener envisioned a society where machines could replace man in many activities. In his book,

God & Golem, Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion, he anticipated how cybernetics could join the sphere of religion along three different axes. The first axis was the ability for machines to learn; the second one, the possibility of machines to reproduce themselves; and third axis, the coordination between machines and human beings (Wiener 1964). Current technologies already offer similar options and, hence, Cybernetics “has come in such a way together to technology with almost unlimited power: It can change a man into a woman, it can give capacities to move around the universe and reach planets near or far and can draw from matter incredible secrets” (David 1965). By relying on cybernetics, some human beings would be capable of dominating others by merging enormous technological capabilities with powerful mechanisms capable of mathematically analyzing millions of data through Big Data technologies supported by powerful machine-learning algorithms and AI (Anderson et al. 2018).

Surprisingly, the proposals from Wiener and David, seemingly futuristic at that time, may fall short to the new opportunities offered by the state-of-the-art technology. Presently, scientists pose more sophisticated research questions about the possibility for machines developing consciousness from an immaterial element, therefore degrading human beings to very highly advanced machines based on complex cells and organs. Thus, it cannot be ruled out the possibility to build a human sort of a machine, which can be manufactured as robots of human appearance (Robotopia 2019).

Cybernetics is changing the very nature of humankind, taking the human race closer to the biblical prophecy: “Thou will be like gods” (O’Connell 2018). In a not so distant future, some individuals may reach such knowledge as to discern the ins and outs of nature, good and evil, and even master the inner aspects of life (López de Mántares 2018). Modern technology may set the stage for humans to go beyond the limits set by biology and nature itself. Humans will then be able to regenerate damaged organs and prevent death; after that, there will be no end to human life (Kurzweil 2005). Those magnificent opportunities will come with strings attached, as anticipated by Yuval Harari: “a useless class will emerge: an extremely large new human group that will be left out of the understanding of the new machines.” A sort of “superfluous people” who will be neglected from society and will become the object of manipulation of a new ruling, upper class (Harari 2018).

FINAL THOUGHTS

Through this document, we elicited the profound changes that we believe will happen by 2025, when countries with advanced economies will be further apart from less developed nations. The singularity moment, or the point in time when humans and machines may merge, will most probably occur in the business world, where organizations with full access to technological improvements will face no competition in the global markets. Managers will find

themselves at ease with the assistance of powerful machines facilitating decision-making, although at the expense of working side by side with fierce competitors for the same job. For some time to come, entrepreneurs will probably enjoy a blue ocean, providing products and services of great novelty, up to the time where competition from AI will become unbearable. Thus, during the coming years, decision-makers in business will have to be under constant alert, spotting for new technological advances that may translate into immediate dominance of the market.

Managers should prepare themselves to compete in a cut-throat market, where machines backed by AI may displace them at any instant. If they cannot master leading technologies in their field of specialty, they should get help, perhaps from more friendly machine-learning devices. Entrepreneurs and companies with the desire to stay ahead in the game may also find opportunities by reshuffling the cards, taking their organizations from renovation to innovation, and, finally, to disruption (Evans 2019). Disruption is not a privilege of big corporations but is at the hands of smaller enterprises creating new categories in the markets where they compete. Policymakers must have a say in the digital era (Lei and Tang 2019). They play a fundamental role in acting as a referee or fostering the economy through continuously supporting innovation and value creation. Above all, policymakers should be on alert for sudden shifts in the distribution of wealth, to mitigate the growing divide in an economy of “the haves and have-nots,” brought about by corporate use of the state-of-the-art technology, leaving behind entire segments of the population with little computer proficiency.

We are reaching the year 2025 and the time envisioned by some experts for robots to take control of primary business functions (Smith and Anderson 2014). By then, presumably, machines will take over crucial areas of the organization, and only astute managers and entrepreneurs will survive into such markets. Decision-makers, business managers, and corporations should be all aware of the risks they face while ripping the benefits that those technologies may bring to humankind. In this process, research will be paramount, with most efforts directed toward finding a new equilibrium between humans and the devices of their creation. For many experts making predictions about global climate, world population, humankind setting foot on Mars, and so on, the year 2025 may seem too near to foresee significant changes. To scholars dealing with algorithms and AI in business, instead, it is too hard to envision the world after such a date. By then, things will be completely different, and many businesspeople will look with nostalgia at the times when they used to make decisions in their own company.

Humanity is facing all sorts of challenges, some of which deserve full attention. One of those challenges, though, may not be getting the much-needed consideration: the advance of AI. Therefore, we pursued to describe the elements behind the rapid spread of technology and to discover the keys to how technology is overhauling business and the economy. We unveiled how algorithms are the building block of numerous technologies that will mightily

transform our society, and we presented a set of evidence demonstrating how algorithms are at the center of such changes. The issue is not irrelevant, as our lifestyle will be either threatened or improved, much according to our response to new developments in AI.

In this chapter, we intended to address different audiences, mostly business managers, academia, and policymakers, showing the need to be informed about the digital transformation of our societies from different angles. We shared examples of future technologies and some applications that are turning into reality at unprecedented speed. Flying automobiles are eye-catching, but products that were unimaginable a few years ago are already part of our lives, such as personal home assistants or services like on-demand streaming television. For some years, the digital transformation of our society has brought huge business opportunities, but it is also turning the table on enterprises lacking flexibility and the constant pursuit of innovation. Many organizations have focused on the efficiency of the operation while neglecting the needs of the coming digital society, thus setting themselves apart from the new consumer (Schwaferts and Baldi 2018). The obvious advice to managers, then, is to prepare their organizations to change, taking a multidisciplinary approach, and looking at the core ingredients of digital transformation, such as “Strategy, User-Centered Design, Agility in Delivery, Integration of Software, Platforms and Technology, Data Analytics and Insights, and Product Design Mindset in Execution (Davidson 2018).”

The academia faces unseen challenges brought by the digital transformation of higher-level education. The issue is no novelty, as demonstrated by distance learning; in particular, “MOOCs (Massive Open Online Courses), and SPOCs (Small Private Online Courses), are said to have revolutionized universities and the corporate education landscape” (Kaplan and Haenlein 2016). Kaplan, in his article with suggestive title “A school is ‘a building that has four walls... with tomorrow inside,’” calls upon the academia to reinvent the business school (Kaplan 2018). The author points out at the challenges that educational institutions are facing, which are not solely related to delivering content through digital means, but by developing communication systems that will embrace students, mostly through social media. Educators need to understand the basic premises of digital transformation to lead their pupils into an economy increasingly moved by algorithm-based technologies. They may not understand the nuts and bolts of those technologies, but, at the very least, they should share with students a much wider vision of macro changes in society. Researchers should stay permanently at the leading edge of those developments.

Policymakers have much to learn from algorithms, Big Data, predictive analytics, machine learning, IoT, and AI. They are already dealing with dramatic changes associated with blockchain technologies and competition on issues of national sovereignty, such as the issuance of private currency, thus taking away from governments the monopolistic power over the money supply. Many other

problems are arising with the digital transformation of our society, some of those overly pessimistic, such as cybernetics and the perils of a world controlled by machines following orders covertly embedded in algorithms. There is perhaps a stronger menace, the one coming from human beings pretending to take control over humankind. By no means, those risks should be undermining, but policymakers have new tools, as well, to leverage on the potential gains from new technologies driven by algorithms. Inadvertently, we are acquiring the capabilities to face problems common to many nations, such as providing efficient services, administration of justice, or the entire redesign of public services to rip the benefits of a data-driven digital economy (Ciuriak 2018). Policymakers may lead the digital transformation of entire nations, as happened in the Eastern European country of Estonia. As shown by Estonia, public administrators may find novel approaches to foster innovation based on digital technologies that eventually take millions of citizens into prosperity. The case of Estonia sets an example of the so-called “hiding hand” or some partnership with the public sector to guide society through efficient e-governance (Kattel and Mergel 2019).

Managers, educators, and policymakers face significant challenges lying ahead from the digital transformation of our society. From each of their angles, they may contribute to reach a more technologically advanced society, where digital technologies may play a fundamental role turning the promise of the circular economy into a reality (Antikainen et al. 2018) and paving the road to a more inclusive and prosperous society. Those challenges transgress the boundaries of the comfort zone for decision-makers, as the digital transformation is providing the means to solve many problems that we are facing on a global scale. Blockchain, for instance, “can contribute to solving climate change, reduce voting fraud, fix our identity systems, improve fair trade, and allow the poor to improve their lives by monetizing their (digital) capital” (Van Rijmenam and Ryan 2018).

This chapter addressed the need to review business strategies and how organizations, entrepreneurs, and policymakers may deal with accelerated changes happening in the digital economy. As seen profusely throughout the different sections, algorithm-based technologies are omnipresent in our lives, the corporate world, education, or the public administration. Our research is conceptual, and, therefore, we cannot quantify the impact of digital transformation on modern societies. Nevertheless, the evidence is overwhelming, proving that Big Data, predictive analytics, machine learning, blockchain, IoT, and AI have a considerable influence on our lifestyles. Those are the technologies that we envision presently, but out of intuition and experience, such as the unexpected rise of the Internet, we may expect unforeseen changes from the digital transformation. It is too difficult to look into the future, at least beyond the year 2025, but we have a certainty: the invisible sequence of instructions that we call algorithms will shape our fate.

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Automation Adoption in the Textile Industry of an Emerging Economy

Olga Lucía Lopera Lopera and Juan Velez-Ocampo

INTRODUCTION

This chapter aims to identify the different levels of incorporation of automation, in companies in the textile sector in Colombia. To do so, an assessment tool was used to target the level of maturity of ten companies that incorporate automation in their manufacturing processes. By implementing this method, it was feasible to identify not only the weaknesses and strengths of the companies but also the potential opportunities that could lead to the creation of continuous improvement in the field of automation for Industry 4.0. Such opportunities have the potential to be useful for the entire textile sector in Colombia.

The levels of industrial automation in the textile sector could be defined as follows: *beginner level*, companies that incorporate the automation of their activities, procedures and processes, in machines; *intermediate level*, companies that make interfaces to intercom all these machines; and *leader level*, companies that make integrated management of the whole factory, where orders can be given from a device outside the factory to meet the production requirements.

With this perspective and taking into account some of the trends in companies in this sector by 2025 such as the digitization of industries, smart factory and intelligent products. There are challenges that demand action at different levels: for instance, industries need to incorporate automation to a beginner level in their activities with procedures, processes, and machines; for the intermediate level, they must make interfaces to intercommunicate machines;

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meanwhile, for the leader level, companies must be able to incorporate automation processes, devices, and technologies at different production and administrative procedures.

Therefore, our research question is, how important is it to detect the level of incorporation of automation in the textile sector in Colombia? On the one hand, these questions suggest setting a business protocol regarding automation and assign those responsible employees interacting in internal areas (Gallardo-Echenique 2019), to eliminate the barriers that allow the level of advancement within a business improvement program. On the other hand, it also serves as a guide for other companies in the sector that seek sustainability in turbulent markets over time.

In addition to this, markets are changing rapidly, new companies cannot be managed with old business models. The new challenge is the incorporation of automation and other technologies that could represent substantial savings in costs and production times while increasing the sustainability and productivity of the textile sector (Bernat and Karabag 2019). Therefore, the need to advance in automation is a way that the Colombian textile sector could select to retain market presence and relevance in the local and international business environment (Toudert 2019). This endeavor requires a joint effort between governmental institutions and stockholders to ensure that the sector can move forward.

This chapter is organized as follows: first, we present a literature review regarding the incorporation of automation in the textile industry, and then the methodology and the instrument to assess the levels of incorporation of automation is presented to get critical results with its analysis and conclusions; finally, we discuss some implications for companies that want to invest in automation to overcome the first levels of adoption.

TEXTILE SECTOR, CONTEXT, AND BACKGROUND

According to Martínez et al. (2019), the textile sector is part of the secondary sector of the economy that belongs to the manufacturing activities; this sector is responsible for the continuous transformation of fabrics, fibers, and threads into products such as accessories or clothing. This industry includes subsectors such as (a) preparation and spinning; weaving of textile products; (b) manufacture of fabrics, knitwear, and clothing; and (c) manufacture of other textile products.

The industrial origin of the textile sector in Colombia dates back to 1907 when the creation of the first textile companies in the country began (Pineda 2009). Some of these companies are *Fábrica de Hilados y Tejidos El Hato*, *Compañía de Tejidos de Bello*, *Fábrica de Tejidos Hernández*, and *Compañía Colombiana de Tejidos (Coltejer)*. This early development of the textile sector could be explained due to geographical factors such as easy access to water sources for power generation; the qualification of the workforce trained by the *Escuela de Artes y Oficios* and the increasing urbanization of cities and their

consumption of textiles facilitated the development of the sector and its concentration in the main cities of the country (Solano 2009).

Subsequently, in the 1950s, companies were created for specific products such as *Leonisa*, one of the local companies specialized in female underwear. In 1980s and 1990s, the creation of *Inexmoda*, *ColombiaModa*, and *Colombiatex* contributed to the internationalization and sophistication of the sector; Colombian textiles are currently appreciated in several countries, which boosted international trade (Amed et al. 2018).

In regards to the global apparel market, it is currently estimated at \$1.1 trillion, which constitutes around 1.8% of world GDP. Close to 75% of this market is concentrated in the European Union, the United States, China, and Japan (Cappellieri et al. 2019). In terms of population, these regions are home to only one-third of the world's population. This means a high expenditure on clothes per capita in these developed markets. They are followed in descending order by Brazil, India, Russia, Canada, and Australia.

In this context, China is the largest exporter of textiles and clothing in the world. Its infrastructure for textile manufacturing, clothing, and transportation are the largest and most important globally (Antay 2019). China's textile and clothing exports have dominated world trade in the last decade, with 40% of global market share. China and India have become the largest manufacturing regions in the case of the retail clothing market. In the coming years, both countries are expected to represent a significant proportion and outperform several of the traditional developed markets in the global clothing sector.

Additionally, the current size of the clothing market in China is estimated at US\$150 billion and India at US\$45 billion (Cappellieri et al. 2019). Both markets have presented a strong growth within the last years, despite global uncertainties and that demand has loosened (Antay 2019). In the last ten years, the Chinese market registered an annual growth of 15%, while the Indian market registered an annual growth of 12% annually.

The textile sector in Colombia represents 1% of the world market; however, this sector is highly important for the local economy, especially in terms of employment. The 70,000 formal companies that belong to this sector generate around 1,800,000 direct and indirect jobs. The cotton chain has 10,284 hectares planted in 2018 supplying 35% of domestic demand. This sector moves \$18 billion a year where 35% of the market share belongs to imported products, 35% is produced by the national industry, and the other 30% is smuggled (Botero 2019).

In regards to the Colombian import market, the main countries of origin of textiles and raw materials are China, India, the United States, Mexico, and Indonesia. While the main textile and raw material import companies are: *Manufacturas Eliot S.A.S.*, *Tex-Town S.A.S.*, *Corporación Distribuidora de Algodón Nacional*, *Toptex S.A.*, and *Industrias Canon de Colombia S.A.* In terms of imported garments, the main countries of origin of clothing are China, Bangladesh, Turkey, Vietnam, and India and the local companies that import the most are *Compañía de Inversiones Textiles de Moda S.A.*, *Permoda Ltda.*

Crystal S.A.S., *C.I. Iblu SAS*, and *Iberomoda S.A.S.* (Echavarría et al. 2019). Imports in Colombia are especially focused on the following products: clothing and clothing accessories, knitwear and clothing accessories, and other made-up textile articles.

Regarding the export market, the five countries of destination of the exports of textiles and raw materials are Ecuador, Mexico, Brazil, the United States, Peru, and the main exporting companies of textiles and raw materials are *Enka de Colombia S.A.*, *Manufacturas Eliot S.A.S.*, *Textiles Lafayette S.A.S.*, *Fabricato S.A.*, and *Compañía de Empaque S.A.* In the same market, the five countries of destination for clothing manufacturing are: the United States, Ecuador, Peru, Mexico, and Costa Rica, and the five clothing exporting companies are: *C.I. Jeans S.A.*, *C.I. Girdle & Lingerie*, *Industrias Canon of Colombia S.A.S.*, *Crystal S.A.S.*, and *Supertex S.A.* (Mesa and Torres 2019). The Colombian products that are mostly exported in the textile sector are synthetic or artificial filaments, knitwear, coated impregnated fabrics, cotton, and special fabrics.

AUTOMATION, CONTEXT, AND BACKGROUND

According to Guerra (2016), automation comes from the Greek word *auto*, which means “by itself,” and *maiomar*, which means “to launch.” Automation is a system where production tasks are transferred, usually performed by human operators to a set of technological elements. Automation is the management of information in companies for decision-making in real time; it incorporates computer science and automated control for autonomous execution and optimally of desired processes according to engineering criteria and in line with the plans of the business management.

An automated system, according to Groover (2007), consists of two main parts: the first part is the command, which is usually a programmable general command (programmed technology), and is at the center of the system that must be able to communicate with all the constituents of the automated system; and the second part is the operative part, which acts directly on the machine. They are the elements that make the machine move and perform the desired operation, and are actuators of the machines such as engines, cylinders, compressors, sensors as photodiodes, limit switches.

According to Robinson (2014), during the twentieth century, many machines were invented, such as cars with advanced engines, battleships, killing machines, cars with air conditioning, airplanes, and many more. In the 1980s, automation advanced, where some machines could communicate with others through industrial ethernet; meanwhile, in the 1990s digital product developers merged with automation technology generating control programs for simulation-based production processes; and in 2004, programmable logic controller (PLC) functionality was discovered on a chip. At present, artificial intelligence placed on machines means that they no longer need human operators (Muñoz and Fernández 2019) and that robots become autonomous, cooperative, and learn from reality.

At present, and with the development of new materials (Carmona et al. 2018), nanotechnology and advances in other sciences such as Mechanics, Electricity, Electronics, Systems, Pneumatics, Hydraulics, Instrumentation have helped improve productivity and efficiency of the industrial processes, with the communication between all the components of the machine also called as Field Bus, Scada Systems; and, on the other hand, Servomotors, Artificial Vision Cameras, and Robotics are increasingly imposed in the field of industrial automation to global scale.

In 2018, robot installations worldwide increased by 6%, to 422,271 units, worth €1000 million. According to Marquina et al. (2019), since 2010, the demand for industrial robots has increased considerably due to the current trend toward automation and continuous technical innovations in industrial robots. Due to automation, the World Economic Forum (2018) estimates that approximately 75 million physical jobs will be lost by 2025 worldwide, but that 133 million new functions will be created, which means that it will be necessary to be prepared and trained and it will require a greater degree of specialization. Among the jobs that will be most demanded in this new era, we can mention data analysis, design managers, critical thinking, social intelligence, as well as programmers and software developers. It is also estimated that 54% of all employees will need training in new skills during the next five years.

According to Graetz and Michaels (2018), in Colombia the manufacturing industry has been one of the most active in automation. By 2019, the degree of automation in the Colombian business sector is 17%, and in 2025 it aims to rise to 30%, which implies a huge challenge in terms of appropriation of technology and improvement of employee skills. In terms of maturity, Colombia is at an early stage of automation via robots. According to González (2019), 30% of industrialists in Colombia consider the automation of processes versus implementing analytical software and cloud computing a technological priority. Furthermore, 38% plan to use emerging technologies such as cloud computing and 13% robotic process automation.

LITERATURE REVIEW

The study of automation adoption within the textile industry has been studied from different perspectives and geographies. For instance, Simonis et al. (2016) consider that automation is very relevant to ensure the international competitiveness of German industry, due to the production experience, design, and intelligent knitting machines that use self-learning systems in knitting to increase the quality of the product, reduce tissue rejection costs, and support the operator during manufacturing. Meanwhile, Zamfirescu et al. (2013) present an anthropocentric cyber-physical reference architecture for intelligent factories that could be used in both emerging and developed markets. And Kemper et al. (2017) outline the vision of the future of smart textile production, and also describe the first pilot solutions and current research approaches.

Grieco et al. (2017) from an Italian perspective, applied the technology of Industry 4.0 to Bottega Veneta, a luxury textile company recognized for its leather goods and found that the accumulated delay for each order is minimized, weighting the priority level of the client and the excess capacity required by the proposed plan was minimized. Bertola and Teunissen (2018), with the experts' perspective, showed how digital transformation, properly promoted, could transform the fashion industry into a more sustainable and customer-oriented business. But they also underline the critical issues and the slow adoption of technologies by established traditional brands and companies.

With a participant view in the textile industry, Fernández and Fraga (2018) review the requirements for the development of smart clothing and show the potential impact of smart clothing on medium-term business models. While Pérez et al. (2016) analyze the evolution of cybernetic and physical systems based on wireless communications, textile antennas, materials for chromic screens, textile switches, pressure and motion sensors, textile circuits, and micro-component welding technology. They also document that expert system and argue that with applications in the textile industry, accompanied by decentralized controls, achieve efficiency gains through greater flexibility and adaptability.

A study conducted by Gudanowska (2017), in Poland, states that a strong technical base is complemented by soft skills that are increasingly significant for Industry 4.0 engineers. And finally, from the perspective of an empirical study conducted in Portugal, Marques and Ferreira (2018) infer how digitalization is still in a preliminary stage in the garment industry and it is necessary to prepare all the resources of the garment company to achieve horizontal and vertical integration in smart manufacturing.

From the perspective of emerging markets, Zhen and Xing (2015) argue that the Chinese textile industry should be cautious to incorporate the technologies of industry 4.0 by ascertaining the industry standards and its implementation. Advancing automation, Chong (2019) aims to develop computational thinking capabilities by developing mobile applications to its employees. In addition, Deepshikha and Nath (2018) suggest exploring applications in the design of clothing, interiors, and accessories to increase functionalities as part of the user's lifestyle. Meanwhile, in India, Nimeshee Singh (2018) argues that there are very few technologies in Industry 4.0, specifically for the clothing sector, and very few for the garment production process. While Scott and Sayem (2018) explain why traditional methods of relating anthropometry with a 2D pattern are the main cause of the bad fit of the garment and present a solution to mathematically quantify both body shape and fit of the garment.

Lee et al. (2017) defend that for the sewing machine to be intelligent it must be modified, adapting a cyber-physical system (CPS) to be able to monitor it. Tseng et al. (2011) demonstrate that there is a positive and strong relationship between the use of IT information technologies and high business performance, while Jakatilake and Rupasinghe (2016) develop a customized

smart clothing production plant, a novel approach in the garment industry based on the identified problems of the current sewing process and the suggestions of customers to improve them.

An additional debate regarding the adoption of automation in the textile industry lies on the dehumanization of the labor relations, for instance David (2015) states that such dehumanization is accompanied by a growing demand for machines, to fill the demographic gap, increasingly accused in economically advanced societies. Thus, within the so-called Fourth Industrial Revolution, machines threaten workers in terms of productivity.

In that perspective, and within the context of Latin America, Acosta et al. (2018) state that the main challenge is to ensure that all companies embrace technology in their organizational processes, covering the technological gap with developed countries and which has not allowed a new and renewed digital economy for developing countries. Weller et al. (2019), in a study for the Economic Commission for Latin America and the Caribbean (ECLAC), address the issue of technological substitution of human labor and find that the poorer the country, the higher is the average risk of substitution, and that due to the risks of greater segmentation, precariousness and informalization that arise in the context of new technologies, new labor and social regulations are required, so that new jobs reflect the requirements for decent work, for which a common effort of all the actors is a must.

On the other hand, it is necessary to clarify the concepts of the seven dimensions that are used in the instrument, regarding the level of maturity of the implementation or incorporation of automation in industries, each of which contains its explanation and context that is described below.

Regarding the maturity level of technology, this is defined as the process where technology stabilizes in the market; therefore, the technology is in the most profitable period, and its costs are minimal because large investments are not needed to remain in the market, and the benefits remain stable with a small upward deviation. Investments are limited to improving some of the attributes of technology, to adapt it to the changes that occur in the environment (Garrido 2019). Along with this level, this is also related to the development of complementary technologies.

Prospective: It is a set of systematic searches to explore current and future markets, in order to evaluate relevant information on global technological trends and productive market adaptations that facilitate competitiveness and is likely to increase economic and social benefits for the company. In turn, for the development of automation, it allows to improve the allocation of resources and business capacities toward research, development, and technological innovation and also minimizes the risk in decision-making regarding the future.

Strategy and organization: Automation improves existing products or processes through the use of digital technologies and offers the opportunity to develop completely new business models. For this reason, its implementation is of great strategic importance (Serrano and Ponton 2019). We examine current openness and cultural interaction with automation using the following four

criteria: state of application of the automation strategy; operation and review of the strategy through a system of indicators; investment activity related to automation; and use of technology and innovation management.

Smart factory: The implementation of automation allows distributed production. Smart parts control and supervise the production process and are guided autonomously through production. The smart factory is a production environment in which production systems and logistics systems are largely organized without human intervention. The smart factory is based on cyber-physical systems (CPS), which link the physical and virtual worlds through communication through an IT infrastructure, the Internet of things, which includes digital modeling through the collection, storage, and processing of smart data. In this way, the smart factory concept ensures that information is delivered and that resources are used more efficiently (García 2019).

This intelligent factory requires real-time and intercompany collaboration between production systems, information systems, and people. These integrated systems produce huge amounts of data that are processed, analyzed, and integrated into decision-making models. The progress of a company in the intelligent factory area is measured using the following four criteria: digital modeling, equipment infrastructure, data usage, and information systems.

Smart operations: A hallmark of automation is the integration of physical and virtual worlds throughout the company and in all companies. Digitization and a large amount of production and logistics data introduce totally new forms and approaches to production planning systems (PPS) and supply chain management (SCM). The technical requirements in production and production planning necessary to perform the self-controlled workpiece are known as intelligent operations. (Valencia 2019). The preparation of smart operations is determined using the following four criteria: information exchange, use of the cloud, informatic security, and autonomous processes.

Smart products: Smart products are equipped with ICT components (sensors, RFID, communications interface, etc.) to collect data about their environment and their own state. These products collect data, know their way through production, and communicate with higher-level systems, to improve, guide production processes autonomously and in real time, and control and optimize the status of each of the product. The use of intelligent products during the use phase makes possible new services in the first place, for example through communication between customers and manufacturers. The preparation in the area of intelligent products is determined by observing the additional functionalities of the products and the degree to which the data of the use phase are analyzed.

Data-based services: Data-based services align future business models and improve customer benefit. The after-sales and services business will be increasingly based on the evaluation and analysis of the data collected and will be based on the integration of the entire company. This means that they have a physical and digital component, which in turn is the basis of the services digitized in the phase of use of the products (Carreño-Pérez et al. 2019). The

availability in the area of data-based services is determined using the following three criteria: availability of data-based services, proportion of revenue derived from data-based services, and percentage of data used.

Employees: Employees help companies carry out their digital transformation and are most affected by changes in the digital workplace. Their direct work environment is altered, forcing them to acquire new skills and qualifications through adequate training and continuing education, where companies prepare their employees for these changes (Nieves 2019). The preparation in the dimension of the employees is determined to analyze the abilities of the employees in several areas and the efforts of the company to acquire new sets of skills.

METHODOLOGY

The methodology of this chapter was inspired by the steps and procedures of the case study proposed by several authors (e.g. Eisenhardt 1989; and Yin 2014). Ten textile companies were included due to their adoption of automation procedures and their willingness to participate in the study. To avoid elite bias (Myers and Newman 2007) in the interview process, we contacted two different employees from each of the companies, a senior manager and another participant representing middle-level employees, for a total of 20 interviews.

This case study includes an analysis of ten companies whose profiles are introduced in Table 3.1. Data collection included archival sources and interviews with two informants from every company. In the interviews, we used the instrument with 20 questions adapted from the Industry 4.0 Readiness Online

Table 3.1 Studied Companies of the Textile-Clothing Sector

<i>N°</i>	<i>Enterprise</i>	<i>Specialty</i>	<i>Foundation</i>	<i>Employees</i>	<i>Import/ Export</i>	<i>Product</i>
1	Tincol	Dry cleaner	1977	115	Importer	Chemicals and inks
2	Teñimos	Dry cleaner	1971	188	Importer	Chemicals and inks
3	Pelco	Dry cleaner	1987	60	Importer	Chemicals and inks
4	Color y Diseño	Digital stamping	2008	72	Importer	Special inks and dyes
5	Línea Directa	Clothing	2004	2.800	Importer	Fabrics
6	Crystal	Clothing	1945	7.500	Importer	Raw materials
7	Fabricato	Raw materials and fabrics	1920	2.100	Exporter	Cloth/fabrics
8	Leonisa	Clothing	1956	3.000	Exporter	Clothing
9	Colhilados	Clothing	2003	300	Exporter	Yarn
10	Creytex	Clothing	1971	400	Exporter	Casual sportswear

Source: Authors' creation

Self-Check for Business model, which was commissioned by the IMPULS Foundation to self-assess the level of advancement of industry 4.0 in industries in any sector.

An instrument with 20 questions was designed adapting the IMPULS model (Industry 4.0 Readiness Online Self-Check for Business) used to self-assess the level of progress of industry 4.0 in their industries in any sector. The instrument is also subdivided into seven dimensions: prospective, strategy and administration, intelligent operations, intelligent products, intelligent factory, data-based services, and employees. In each of the questions, there are three types of qualifications with the following labels: 1 = P = Beginner, low level, begin the automation experience, pilot test assemblies; 2 = I = Intermediate, middle-level learner, began an automation implementation, but is under development, observation, and evaluation of it; and 3 = L = Leader, high level, complete and successfully extended developments, which can be replicated in the organization. Subsequently, these answers are submitted to a spreadsheet in Excel and plotted to eventually give them an interpretation of context and an analysis of the question that corresponds to a different business dimension.

RESULTS

Figure 3.1 presents that companies do not develop leadership at the same time in all dimensions, which justifies an adjustment in the process of incorporating automation or an improvement program in those dimensions, in which the company has not reached the leader level in the aspect of study. It is also observable the fact that almost all companies, on a scale of 1 to 2, that correspond to beginners and intermediate, and in a reasonable time, with a good plan, with strong investment, and with dedication of the management, it is estimated that

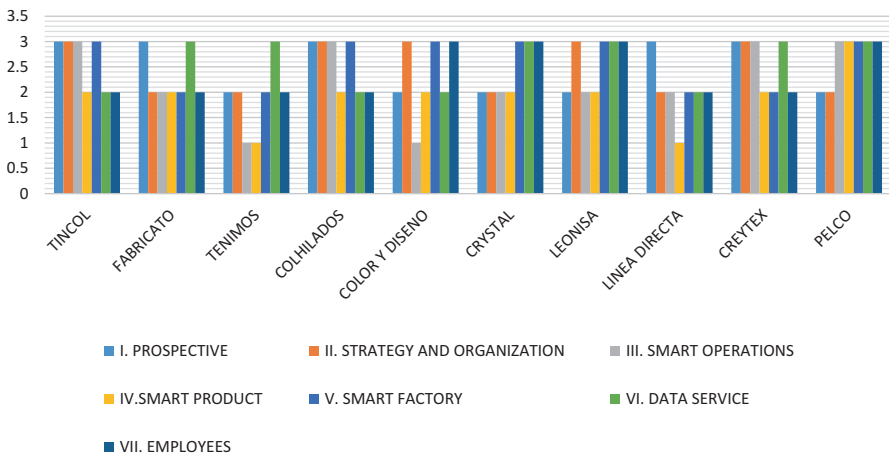


Fig. 3.1 Leadership dimensions levels by company. (Source: Authors’ creation)

companies become leaders. In general terms, the weakest dimensions in most companies are smart operations, smart products, and smart factories.

Figure 3.2 evidences the automation level of the group of companies interviewed for this study. The following are the insights of the seven dimensions reviewed:

Prospective: The companies interviewed have a vision of integration with technologies and companies, but many of them have not put it into practice: 53% say they have a positive view of automation technologies and only 5% are beginners in that concept.

Strategy and organization: 47% of the companies show a leadership trend compared to 53% of the companies which have to make improvement plans. This infers that companies are aware of the importance of automation and embed it in the strategy of the organization.

Smart operations: This item illustrates 33% of the companies leading smart operations; however, they still need to make adjustments and improvements in obtaining equipment to better off the concept of an intelligent factory. On the other hand, 48% have failed to make this notion a reality.

Smart products: At this point, most of the companies, 48%, are beginners, which state a huge challenge to change the mindset toward the customer since they have to implement adjustments in the production factories in order to choose and improve their products and orders.

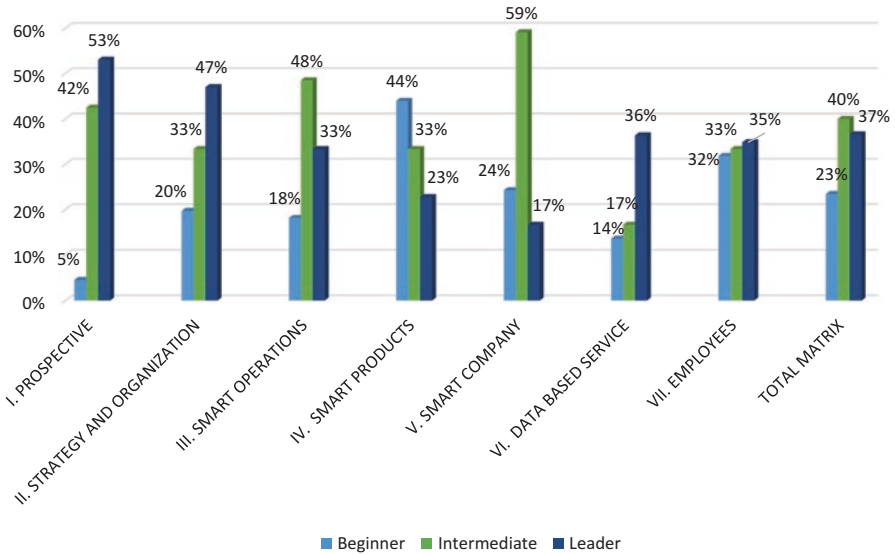


Fig. 3.2 Automation levels in the textile industry. (Source: Authors' creation)

Intelligent factory: Only 17% of the companies interviewed have obtained an intelligent factory in the context of intercommunication and certain production automatisms. The other companies must plan the incorporation by means of improvement plans, and structural and concept reforms, to be able to raise the level.

Data-based services: 36% of companies have experienced and explored the possibilities of scaling data. Many companies have enough structure and databases to start automation processes.

Employees: 65% of companies do not have personnel with digital and automation skills. There are also few with promotion plans or motivations for this type of staff. However, only 35% of the staff can be considered an expert, according to the companies interviewed.

Some executives made contributions that reinforce the results of the interviews, in this line, and the ideas of some of them are collected as follows: “A company which does not start implementing automation, is going to be left out, like the muleteers who saw the trucks arrive,” according to Tincol manager. “We develop products with high added value, but with the technologies of industry 4.0, all companies will be part of the competitiveness and for this, they must be in the story of automation,” according to Colhulado manager.

“In Colombia, there are few cutting-edge companies, and others are small and medium. The latter lack of improvement strategies and only care about billing. Concerning the year 2025, the sector requires more investment, hard work and a change in mentality and I don’t think this will be achieved within 5 years,” according to Crystal manager.

The sector in 2025: “It is a sector that is missing a lot. There is disintegration and there is a lack of collaborative work. I think it will show a slow progress,” according to Creytex manager. “This is a more strategic, analytical and less operational issue,” according to Teñimos manager. “Automation, if related to sustainability, makes us more competitive over time,” according to Creytex manager.

“Autonomy occurs in specific processes, but not all processes are chained. For example, the cutting of cloth, where it is cut, and the machine guides the process and takes the data later. Machines read the required tissue and density and adjust these variables in real-time; the indigo machine doses the dye and calculates the deviation; the machine adjusts the color automatically,” according to operations director of Fabricato S.A.

DISCUSSION

It would be worth asking: “Could technology serve as an instrument to overcome the divisions and inequalities of a country?” Research that relate to technology and inequality, for instance Acemoglu and Restrepo (2016) and Qureshi et al. (2019), have observed an unfavorable trend. While technologies are booming productivity, increasing inequality is the slowdown. The

technological advance leads to the distribution of income from labor and capital unevenly, and income passes from work to capital.

According to Baily and Montalbano (2016), in order to obtain better results in terms of productivity and equity, policies must meet the challenges of the digital age. A better world can be created by revitalizing competition and encouraging innovation at the technological frontier, as well as expanding its dissemination to all economies, improving and updating the professional training of workers and reforming social contracts. Action plans should respond to a context of radical and continuous change.

Others and economists choose not to lose their position in the market, where technologies are at least curbing the problem of unemployment; but the challenges are enormous for an emerging economy like Colombia, which has to guarantee peace first and then begin the reforms that the political economy demands, in order to see the fruits of the incorporation of the technologies of the fourth industrial revolution. There are policies that can promote equity and productivity at the same time, and it is suggested to address a comprehensive agenda for the senators so that policies can help take advantage of synergies and mitigate impacts.

CONCLUSION

It can be inferred that only 37% of the selected companies are at an advanced phase of automation. This is followed by other phases of development of Industry 4.0 technologies, for example robotics and automated value chain processes, advanced product simulation, and virtual reality.

In general, the level of incorporation of automation in companies in the textile sector is intermediate, which means that companies are in the processes of selection, testing, evaluation, and control of automation, and expect continuous improvement programs from stakeholders. It is also anticipated a strong investment to make possible the level rise, alliances with governments, an institutional framework that prepares new digital capabilities, new ways of doing business, and all the necessary strategies to move from that intermediate level to the market leader.

In addition, deepening the situation of companies in the textile sector regarding the incorporation of automation, in which continuous improvement programs are expected that are taught from management, alliances with governments, an institution that prepares new digital capabilities, new ways of doing business, all the necessary strategy, and a strong investment to make it possible to level up and complete automation levels and lead the market.

Meanwhile, the implications of the automation implementation are reflected in all the fields of organizational management, in the way of planning the production, the way of doing it, the logistics controls, and in general the paradigm shift of the entire value chain, which the company is willing to deliver.

Therefore, the future perspectives of process automation in companies in the textile sector are confusing for entrepreneurs, in which large changes in

technological development, large investments, and corporate reengineering are estimated, which should involve many alliances and where most of the companies interviewed showed a high degree of pessimism. As an aggregate, it is suggested to develop further research in this regard, to be able to specify more success factors that can help the textile manufacturing sector, in its development of industrial automation.

With that argument, some authors (e.g. Heredia, et al. 2017) are optimistic about the relationship between the sustainable development goals (SDGs) and industrial automation, and suggest that strategic knowledge management is a social and business asset that allows communities to endogenous and autonomous development that is needed to reduce social gaps in developing regions. It also assumes that the fact of sustaining the industry implies stabilizing the processes of the domestic economies and, therefore, all those involved, that is, people, companies, sector, and so on.

Taking into account that digital technologies are a great promise, their potential to increase productivity has not been fully exploited, according to Qureshi et al. (2019), the way in which new technologies translate into real increases in productivity depends on how governments manage the impacts and processes of distribution of growth and not companies individually. Much of the recent political discourse has focused on blaming the international trade in unemployment, the cuts in wages of less-skilled workers, and the growing inequality. However, the most dominant factor has been technological change.

Regarding ethical considerations, one of the concerns that arises in companies that try to incorporate automation is the substitution of employment by machines, especially in textile production where substitution is massive. This creates the dilemma between cost reduction and profitability and the increased elimination of jobs. For the defenders of the technology, there is an improvement of the jobs that become more specialized and represents an opportunity rather than a threat; for the detractors, it is a discourse of developed countries, embedded in emerging economies which do not support the demands and determinants of technologies and that increasingly generate a greater gap between industrialized and underdeveloped countries.

In regards to the recommendations for business practitioners and entrepreneurs, we posit that they should make a thorough analysis of the current state of the level of automation and technology in their respective industries. This approach should be carried out from the management including vital changes to make a ripple effect in the rest of the organization in order to become an organizational culture. It is suggested to make training plans in order to make the new technology known to the entire group of collaborators. At the time of acquiring technology, it should be viewed futuristically, so that the purchase is not obsolete in a short time. Invest in a workgroup before making any purchase. This group should be dedicated to doing thorough work to identify the need of the company in terms of technology in the present world to be able to get the best. It is also critical to take into account that technology is not bought

because it is due to a fashion trend but to meet the punctual needs that the company has.

For digital human talent, an analysis should be made of the current status of collaborators with respect to everything digital, look at the national market who can train staff and, if there is not, review experts internationally, in order to have an responsible employee with the required knowledge. It is important that from the areas of human talent appropriate the subject and also must have knowledge of the skills required in staff to operate the new technology. It is necessary to be very clear about the development, training, and implementation plans that allow people to be able to operate the new technologies they will face.

For academic and educational institutions, curriculum plans must be redesigned; these must be oriented to develop in the youth or students the capacity to analyze at their best, because in this way they can become indispensable in the market and irreplaceable by technology. In addition, the textile design should be encouraged so that Colombia can be recognized in other areas and become as important as our fashion designers are today. Higher education institutions must have clarity and importance of creativity and analysis to be competitive.

To know very well the interests of young people to reach them with more attractive teaching methodologies and in which knowledge can be acquired and thus greatly reduce attrition. In the same way, they must implement a very high vocational orientation to reduce it. They must also develop new specializations for technicians managing automated technologies, like the Colombian technical institution SENA; but also developers and designers of these technologies should be promoted, as input from universities to the textile sector.

After this study makes relevant, future research in each of the seven dimensions shown, which can serve as a way to go, by medium and small companies in the textile sector. Regarding policymakers, an incentive policy should be generated for the sector that allows for technological updating and also limits the disorderly advances of artificial intelligence. Support the sector so that its competencies are strengthened and promoted so that companies that have leadership, somehow help the sector.

It might be true that an emerging market has multiple kinds of priorities, for instance, related to infrastructure, the sophistication of institution, and the reduction of corruption. However, public and private investment in innovation and automation might represent a major transformation for the country's economic development. For instance, back in the 80s, Asian countries such as South Korea, Singapore, Vietnam, and India started their strong industrialization process and nowadays are major exporters in different industries.

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Determinants of the Digital Orientation of Small Businesses

Minna Saunila, Mina Nasiri, Juhani Ukko, and Tero Rantala

INTRODUCTION

In the near future, many ecosystems and businesses of different organizational types will face transformations and challenges in their operation environments caused by increasing digitalization (Bouwman et al. 2019). This digital transformation poses great challenges to companies (Li et al. 2018) when connected products, services, and operations transform businesses, making new approaches for adapting to the changes necessary (Kallinikos et al. 2013; Yoo et al. 2012). A company oriented toward digitality recognizes digital resources outside their IT function and integrates them with value creation (Quinton et al. 2018). Digital orientation, composed of market orientation, entrepreneurial orientation, relationship orientation, and technology orientation, is thus considered to be a top strategic priority for companies to stay competitive. Most research on digital orientation focuses on large companies, but the digital orientation of small companies is different. Therefore, there is a lack of evidence about the context in which small businesses can pursue digital orientation.

As there is growing demand for understanding the digital transformation of small businesses in for such businesses to have a sustainable business model with a future orientation (Ukko et al. 2019), this chapter studies the conditions under which small companies are likely to pursue different digital orientations. Furthermore, this chapter explores and presents the types of companies that

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are most likely to embrace different digital orientations. The findings are useful to different business-oriented organizations looking to stay profitable and sustainable in operational environments shaped by the digital transformation.

Combining the insights from the literature review with empirical data, this chapter contributes to existing literature by both conceptualizing digital orientation and defining the factors that support or hinder the digital orientation of small businesses. The empirical data for the study presented in the chapter were gathered from small businesses located in Finland. The results show that the companies that have digitality well represented in their strategy embrace digital orientation more than the companies that do not have digitality well represented in their strategy. Also, companies' willingness to grow affects the level of digital orientation, whereas competitive intensity in markets does not. Finally, company type affects the individual components of digital orientation but not the digital orientation as a whole.

The chapter is structured as follows: After the introduction, we present contemporary companies' different views of digital orientation based on prior literature. Next, we discuss the propositions regarding the digital orientation of small businesses as well as the research model of the study. In the section that examines empirically the digital orientation of small businesses, we present the data collection, measurements, and the results of the analyses. Finally, we provide the most important conclusions and implications.

DIGITAL ORIENTATION

Digitally oriented companies are generally more open to and engaged in using digital technologies (Khin and Ho 2019; Ukko et al. 2019). The influence of digital technologies in companies' operating environments is highly dependent on how small businesses approach digital transformation strategically (Quinton et al. 2018). Generally, strategic orientation refers to "the strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business" (Gatignon and Xuereb 1997, p. 78). In relation to the digital transformation, a strategic orientation is crucial to the management of digitality as it assists in determining the focus for digitally enabled operation and is thus considered to be a top strategic priority for companies to stay competitive. There are several different digital orientations that reflect the focus of a company's digitally enabled operation. For example, Khin and Ho (2019) conceptualize digital orientation as an extension of the technology orientation. They define it as "a firm's commitment toward the application of digital technology to deliver innovative products, services, and solutions." Mithas et al. (2013) use the term "digital strategic posture" to describe a company's level of specific digital business practices compared with the industry in which the company operates. Thus, customers, competitors, and technological developments are the crucial issues that need to be taken into account when aiming to approach digital technologies strategically. Furthermore, Quinton et al. (2018) suggest that digital orientation is a

combination of the market, learning, and entrepreneurial orientations. They state that companies embracing such orientations adopt behaviors that support the development and utilization of market insight and renewal.

Therefore, this study defines digital orientation as a company's engagement with the application of digital resources to create value throughout and outside the company. Digitality is considered to be a strategic priority for companies (Quinton et al. 2018; Ukko et al. 2019), and prior research states that elements of strategic orientation include market orientation (Narver and Slater 1990; Kim et al. 2013; Ho et al. 2016), entrepreneurial orientation (Covin and Slevin 1989; Ho et al. 2016), relationship orientation (Panayides 2007; Ho et al. 2016), and technology orientation (Gatignon and Xuereb 1997; Kim et al. 2013; Khin and Ho 2019). According to prior research, digital orientation is composed of market orientation, entrepreneurial orientation, relationship orientation, and technology orientation. In this chapter, we use the following definitions of the four elements of digital orientation: Market orientation focuses on companies' actions to understand customer needs and respond to their needs with digital technologies (Narver and Slater 1990; Kim et al. 2013; Ho et al. 2016; Quinton et al. 2018; Saunila et al. 2019). Entrepreneurial orientation emphasizes recognizing market opportunities and being proactive in markets with the assistance of digital technologies (Covin and Slevin 1989; Ho et al. 2016; Quinton et al. 2018). Relationship orientation refers to forming and retaining mutually valuable external relationships by using digital technologies (e.g., with suppliers, customers) (Panayides 2007; Ho et al. 2016). Technology orientation emphasizes the application of novel technologies in company operation (Gatignon and Xuereb 1997; Kim et al. 2013; Khin and Ho 2019). These four orientations are required to take advantage of the possibilities offered by digital technologies.

The Role of Context

The importance of context for a deep understanding of the phenomena in our world cannot be ignored. A deeper appreciation of context enables the exploration of innovative perspectives and solutions to existing issues by enabling different interpretations and novel insights (Härtel and O'Connor 2014).

As the size of a company reflects the extent of the company's capabilities, resources, and skills (Valtakoski and Witell 2018), considering company size in strategic and market orientations is important (Laforet 2009). Generally, small businesses serve small, niche, and local markets, and the necessity of digitality in market orientation (i.e., advertising and enhancing products and services) might not be felt at all times (Camilleri 2018). At the same time, the dynamic nature of the current business environment causes small businesses to utilize digital orientation in order to find opportunities for new resources, new relationships, and new markets (Cenamora et al. 2019). However, small businesses are not as well equipped as large companies and might have some difficulty in finding financial support for tangible and intangible equipment (Laforet 2008).

Empirical evidence has revealed that small businesses can successfully adopt ideas and practices that worked for large companies (Russo and Perrini 2010). Therefore, the first proposition is structured as follows:

P1. The digital orientation of a small business is determined by a company's size.

Moving toward digitality, whereby manufacturers are equipped with smart products that operate autonomously and interact with other devices, requires digital systems to support novel industrial product and service offerings. In order to handle these kinds of offerings, there is a need for technical reconfigurations and to develop specific means in relation to market structures. Digitalized product-service systems raise complex and far-reaching challenges for the whole manufacturing process and industrial companies, requiring close collaboration between different parties, including manufacturing companies and electronic equipment providers as well as manufacturers and customers. The series of actions in value creation can connect the industrial economy and the digital economy, providing opportunities for both economies to enhance each other (Lerch and Gotsch 2015). Therefore, as there are many differences in the operational logics between the manufacturing and the service industry (Valtakoski and Witell 2018), the next proposition is as follows:

P2. The digital orientation of a small business is determined according to the different industry types.

The Role of Company Conditions

Literature suggests that it is essential for digitalization in its various forms to be integrated into corporate strategy (Thompson et al. 2013; Ukko et al. 2019). For example, Thompson et al. (2013) argue that it is dangerous for small business owners to assume that new technologies will automatically provide their businesses with a competitive edge. They claim that small businesses need to ensure that business strategies fully incorporate new digital technologies and have a clear understanding of what the consequences are of adopting these technologies. Similarly, Ukko et al. (2019) state that digital business strategy refers to the transformation in the business process (Cui and Pan 2015), company capabilities (Cha et al. 2015), and operational routines (Chen et al. 2014) and their integration with the corporate strategy. Quinton et al. (2018) claim that companies that are guided, for example, by a combination of the market, entrepreneurial, relationship, and technology orientations are well positioned to take advantage of the opportunities presented by digital technologies because such companies adopt attitudes and behaviors that support the generation and use of market insight, proactive innovation, and openness to new ideas. In turn, these behaviors are directed by the companies' strategic orientation (Ketchen Jr et al. 2007; Quinton et al. 2018). In line with the discussion above, we propose the following proposition:

P3. The digital orientation of a small business is determined by the presence of digitality in a company's strategy.

Many prior studies have suggested that digital orientation in its various forms is positively related to small business growth, performance, and competitiveness (Quinton et al. 2018; Taiminen and Karjaluoto 2015; Weill and Woerner 2015). For example, Weill and Woerner (2015) show an increase of revenue growth and profit margins for companies that embrace digital technology and operate within the digital ecosystem. Quinton et al. (2018) report that digital orientation offers a new perspective for small businesses interested in the adoption and diffusion of digital technologies as a way of approaching strategic marketing and creating company growth. From a marketing orientation perspective, Taiminen and Karjaluoto (2015) state that digital marketing and social media provide opportunities for small businesses to attract new customers and reach existing customers more efficiently. Similarly, Chuang and Lin (2015) consider digital service capabilities as an internal driving force that enables companies to better understand their customers, improve their service delivery, and respond to customer needs. Thompson et al. (2013) report that small businesses with no e-commerce sales are less likely to innovate in the absence of growth and those with higher e-commerce sales are significantly more likely to increase sales and be innovatively orientated. Therefore, as a key mechanism for organizational growth and renewal, digital orientation is implicitly central to this theory (Saunila et al. 2019). Consequently, we put forward the following proposition:

P4. The digital orientation of a small business is determined by a company's willingness to grow.

In order to manage competition, small businesses need to adopt behaviors that fit the characteristics of the market they are in, such as acquiring certain assets or capabilities (Quinton et al. 2018; Theodosiou et al. 2012). However, adopting too specific a strategic or a digital orientation can also have disadvantages; this trait is particularly treacherous in the presence of market turbulences, such as changes in the technological landscape (Grewal and Tansuhaj 2001; Quinton et al. 2018). This means that the competitive position and the technological development of an industry may affect the digital orientation of small businesses. For example, Quinton et al. (2018) argue that companies' external environments shape their structures and actions (Scott and Christensen 1995), including intentions to adopt digital technologies (Kim and Pae 2007). They also identified three types of external pressures that may affect the adoption of digital technology: coercive pressure, mimetic pressure, and normative pressure. Coercive pressure may take the form of political influence or lack of legitimacy (DiMaggio and Powell 1983) and originates from customers, suppliers, or trading partners, referring to formal and informal effects that lead a company to adopt a technological solution. In mimetic pressure, a company

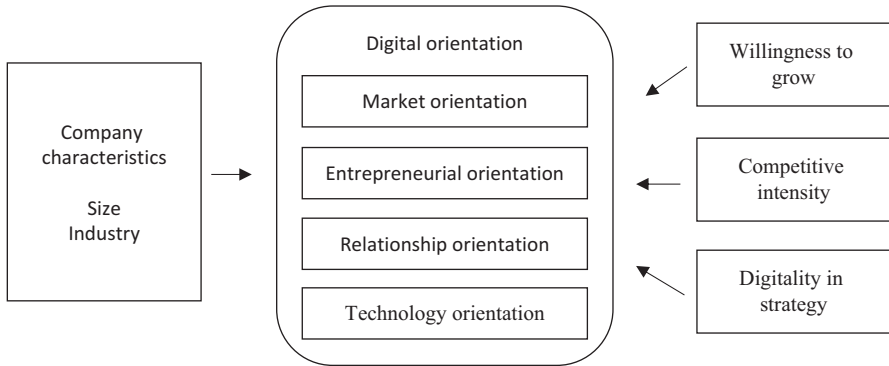


Fig. 4.1 Research model to identify the determinants of the digital orientation of small businesses. (Source: Authors’ creation)

feels pressured to imitate the technological behavior of other companies instead of creating a set of behaviors of its own. Normative pressure refers to the expectations associated with professionalization, including the rules and conditions that a company has to comply with to continue trading or for social legitimization (Quinton et al. 2018). Thus, in line with above, we present the following proposition:

P5. The digital orientation of a small business is determined by the competitive intensity in the markets.

Research Model

We developed our research model based on the literature review of the context where strong digital orientation is the most commonly implemented and the conditions under which small companies are likely to pursue different digital orientations. As illustrated in Fig. 4.1, both company characteristics and company conditions, namely the presence of digitality in a company’s strategy, a company’s willingness to grow, and the competitive intensity in the markets, determine the level of digital orientation. Digital orientation is composed of market orientation, entrepreneurial orientation, relationship orientation, and technology orientation.

THE EMPIRICAL EXAMINATION OF DIGITAL ORIENTATION OF SMALL BUSINESSES

Data Collection

The study is built on a web-based questionnaire that assessed digital orientation of small businesses. The respondents were management representatives,

and the unit of analysis was the company level. The respondents represented small businesses with less than 250 employees, the limit defined by the Federation of Finnish Enterprises. The responses were received from 98 small businesses located in the region of Päijät-Häme, Finland.

The respondents represented the companies of which 67% had revenue of less than €2 million and 33% had revenue of €2 million or more. Around 30% of the studied companies operated in the manufacturing sector, and the remaining 70% operated in the service sector. Many different industries were represented—for example, production, trade, IT, building and construction, and real estate.

Measurements

The literature review informed the questionnaire design. The questionnaire was based on reflective measures, and its content (with exact items) and references are presented in Table 4.1. Two company characteristics were included to study which types of companies are most probably involved in embracing different digital orientations. The company characteristics included size (measured using revenue) and industry (measured using a manufacturing or a service dummy variable).

The studied conditions under which small companies are likely to pursue different digital orientations were the presence of digitality in company strategy, a company's willingness to grow, and the competitive intensity in the markets. Digitality in strategy was measured with one item, which asked the respondents to assess whether digitality was part of the company strategy on a scale of 1 to 5 (strongly disagree to strongly agree). A company's willingness to grow was measured on a scale of 1 to 5, with response options ranging from strongly disagree to strongly agree. Regarding the competitive intensity in the markets, a similar scale of 1 to 5, with response options ranging from strongly disagree to strongly agree, was used.

Digital orientation was measured via four dimensions discussed in section entitled "Digital orientation," namely market orientation, entrepreneurial orientation, relationship orientation, and technology orientation. Each dimension was measured using three to four items that asked the respondents to assess whether they had a need to adopt digital technologies (in relation to the specified goals presented in Table 4.1). Response options also ranged from strongly disagree to strongly agree.

Results of the Analyses

Figure 4.2 presents the conditions under which the studied companies operated. Around 78% of the companies agreed that they had a high presence of digitality in their strategy, and only 11% did not consider the presence of digitality in company strategy to be high. The remaining 11% of the companies neither disagreed nor agreed. Regarding the willingness to grow, 71% of the

Table 4.1 Digital orientation's survey items

<i>Themes</i>	<i>Items</i>	<i>Scale</i>	<i>References</i>	α
Company characteristics	Company size Industry	Open field (revenue) Manufacturing/ service		
Digitality in strategy	Digitality is part of our company strategy	From 1 to 5 (strongly disagree to strongly agree)	E.g., Thompson et al. 2013; Ukko et al. 2019.	
Willingness to grow	Our company aims to grow fast	From 1 to 5 (strongly disagree to strongly agree)	E.g., Taiminen and Karjaluoto 2015; Weill and Woerner 2015; Quinton et al. 2018.	
Competitive intensity	The competition in our industry is tough	From 1 to 5 (strongly disagree to strongly agree)	E.g., Grewal and Tansuhaj, 2001; Theodosiou et al. 2012; Quinton et al. 2018.	
Digital orientation	We have a need to adopt digital technologies in order to:			
Market orientation	Increase understanding of customer needs Analyze competitors Monitor changes in the markets	From 1 to 5 (strongly disagree to strongly agree)	E.g., Narver and Slater 1990; Kim et al. 2013; Ho et al. 2016; Quinton et al. 2018; Saunila et al. 2019.	0.788
Entrepreneurial orientation	Improve the range of products and services Expedite market entry Reach new customers	From 1 to 5 (strongly disagree to strongly agree)	E.g., Covin and Slevin 1989; Ho et al. 2016; Quinton et al. 2018.	0.715
Relationship orientation	Search for new partners Improve collaboration with partners Improve the company image	From 1 to 5 (strongly disagree to strongly agree)	E.g., Panayides 2007; Ho et al. 2016.	0.743
Technology orientation	Intensify processes Intensify the use of resources Enhance information flow Enhance ICT expertise	From 1 to 5 (strongly disagree to strongly agree)	E.g., Gatignon and Xuereb 1997; Kim et al. 2013; Khin and Ho 2019.	0.842

Source: Authors' creation

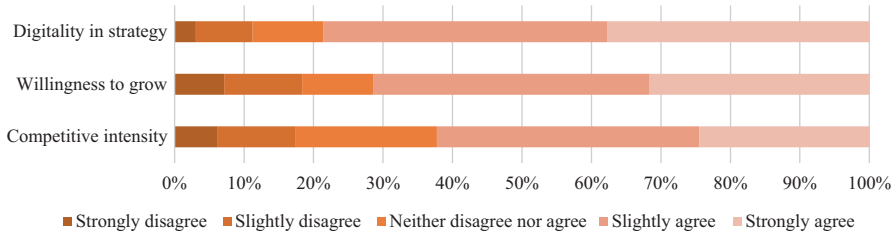


Fig. 4.2 Description of the context. (Source: Authors' creation)

companies agreed that their company's willingness to grow was high. Only 18% did not agree, and the remaining 11% of the companies neither disagreed nor agreed. Sixty-two percent of the companies agreed that competitive intensity in their markets was high, while 17% did not agree. The remaining 21% of the companies neither disagreed nor agreed.

Figure 4.2 shows the level of digital orientation in small businesses divided into four dimensions: market orientation, entrepreneurial orientation, relationship orientation, and technology orientation. Twenty-seven percent of the studied companies thought that their digitally assisted market orientation was strong (with the mean being between 4.1 and 5 on a scale of 1–5). Around 53% of the companies had put little effort into the digitally assisted market orientation (with the mean between 3.1 and 4 on a scale of 1–5). Also, a noticeable portion, 20% of the companies, had not put significant effort into the digitally assisted market orientation (with the mean between 1 and 2 on a scale of 1–5).

Fifty-two percent of the studied companies thought that their digitally assisted entrepreneurial orientation was strong (with the mean being between 4.1 and 5 on a scale of 1–5). Around 39% of the companies had put little effort into the digitally assisted entrepreneurial orientation (with the mean between 3.1 and 4 on a scale of 1–5). Only 9% of the companies had not put significant effort into the digitally assisted entrepreneurial orientation (with the mean between 1 and 2 on a scale of 1–5).

Forty-three percent of the studied companies thought that their digitally assisted relationship orientation was strong (with the mean being between 4.1 and 5 on a scale of 1–5). Around 48% of the companies had put little effort into the digitally assisted relationship orientation (with the mean between 3.1 and 4 on a scale of 1–5). Only 9% of the companies had not put significant effort into the digitally assisted relationship orientation (with the mean between 1 and 2 on a scale of 1–5).

Forty-two percent of the studied companies thought that their digitally assisted technology orientation was strong (with the mean being between 4.1 and 5 on a scale of 1–5). Around 41% of the companies had put little effort into the digitally assisted technology orientation (with the mean between 3.1 and 4 on a scale of 1–5). Also, a noticeable portion, 17% of the companies, had not

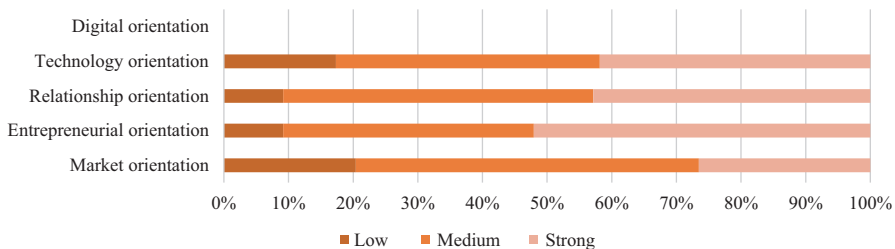


Fig. 4.3 Small businesses' digital orientation. (Source: Authors' creation)

put significant effort into the digitally assisted technology orientation (with the mean between 1 and 2 on a scale of 1–5) (Fig. 4.3).

We used an analysis of variance to determine whether the small businesses' digital orientation generally differed based on the type of company, the presence of digitality in company strategy, a company's willingness to grow, and the competitive intensity in the markets. The results are presented in Table 4.2.

First, the influence of company characteristics on the digital orientation of small businesses was studied. The differences between micro companies and small companies were examined. The results suggest that company size does not have a significant effect on its digital orientation. The differences between the manufacturing industry- and the service industry-oriented companies were also analyzed. The results suggest that a company's industry significantly affects only one dimension of digital orientation, namely technology orientation. The service-oriented companies placed more emphasis on technology orientation than the manufacturing companies did.

Second, the differences in digital orientation were studied according to the presence of digitality in a company's strategy. Significant differences were found in all dimensions of digital orientation, meaning that the presence of digitality in a company's strategy affects digital orientation in terms of market orientation, entrepreneurial orientation, relationship orientation, and technology orientation. Those companies with a high presence of digitality in their strategy were more widely oriented toward digitality than those who did not have digitality strongly included in their strategy.

Third, the effect of a company's willingness to grow on its digital orientation was studied. Significant differences were found in the market orientation, entrepreneurial orientation, and technology orientation based on a company's willingness to grow. Thus, the companies that have a strong will to grow put more emphasis on digitally assisted market orientation, entrepreneurial orientation, and technology orientation than the companies that have no will to grow. A company's willingness to grow did not affect the level of the digitally assisted relationship orientation.

Fourth, the differences between companies that operate in highly competitive markets and those that have less intense competition in their markets were examined. Significant differences were not found in the digital orientation of small businesses based on the competitive intensity in their markets. Table 4.3 presents the summary of the results and their interpretation.

Table 4.2 Digital orientation based on company type and company conditions

		<i>Market orientation</i>		<i>Entrepreneurial orientation</i>		<i>Relationship orientation</i>		<i>Technology orientation</i>	
		<i>Mean</i>	<i>Sig.</i>	<i>Mean</i>	<i>Sig.</i>	<i>Mean</i>	<i>Sig.</i>	<i>Mean</i>	<i>Sig.</i>
Company size	Micro	3,88	3,52	4,14	1,29	4,11	1,05	4,00	1,51
	Small	3,56		3,93		3,95		3,75	
Industry	Manuf.	3,65	1,02	4,14	0,29	4,06	0,00	3,64	4,30 ^c
	Service	3,83		4,04		4,06		4,05	
Digitality in strategy	Low	3,43	8,37 ^b	3,76	5,54 ^c	3,83	3,96 ^c	3,53	8,49 ^b
	High	3,92		4,19		4,15		4,09	
Willingness to grow	Low	3,42	13,74 ^a	3,78	7,37 ^b	3,91	2,61	3,69	4,47 ^c
	High	3,99		4,24		4,15		4,07	
Competitive intensity	Low	3,71	0,18	4,05	0,02	3,82	2,86	3,95	0,02
	High	3,79		4,07		4,12		3,92	

Source: Authors' creation

Notes: Sign. ^a $p \leq 0.001$, ^b $0.001 < p \leq 0.01$, ^c $p \leq 0.05$ **Table 4.3** Determinants of the digital orientation of small businesses

<i>Proposition</i>	<i>Support</i>	<i>Interpretation</i>
P1. The digital orientation of a small business is determined by company size.	Not supported	Company size does not affect companies' digital orientation, that is, the engagement with the application of digital resources.
P2. The digital orientation of a small business is determined according to the different industry types.	Partially supported	Service-oriented companies are more advanced in terms of technology orientation (the application of novel technologies in company operations) than manufacturing-oriented companies.
P3. The digital orientation of a small business is determined by the presence of digitality in a company's strategy.	Supported	Companies that have a high presence of digitality in strategy are more advanced in terms of digital orientation (in all its dimensions: market orientation, entrepreneurial orientation, relationship orientation, and technology orientation).
P4. The digital orientation of a small business is determined by a company's willingness to grow.	Partially supported	Companies that have high willingness to grow are more advanced in terms of digital orientation (in its three dimensions: market orientation, entrepreneurial orientation, and technology orientation).
P5. The digital orientation of a small business is determined by the competitive intensity in the markets.	Not supported	Competitive intensity in the markets does not affect companies' digital orientation, that is, the engagement with the application of digital resources.

Source: Authors' creation

CONCLUSIONS

In this chapter, we intended to contribute to the empirical literature on the digital orientation of small businesses. In this regard, we were able to demonstrate that knowing the conditions under which small businesses operate can indeed add to our understanding of the digital orientations they pursue. Therefore, this chapter contributed to existing literature by both conceptualizing digital orientation and defining the factors that support or hinder the digital orientation of small businesses. The implications for research and practice are introduced next.

Theoretical Implications

We proposed to study the conditions under which small companies are likely to pursue different digital orientations and which types of companies are most likely to embrace different digital orientations. Moreover, by using empirical survey data, the objective was to enhance the literature on digital orientation with further empirical insights. First, the results indicate that certain conditions, such as digitality in strategy and willingness to grow, explain small businesses' digital orientation to some degree. With regard to the presence of digitality in the strategy of small businesses, the results strongly support Ukko et al. (2019) and Thompson et al. (2013), who concluded that small businesses need to ensure that business strategies fully incorporate new digital technologies, with a clear understanding of what the consequences are of adopting these technologies. The results also support prior studies that suggest that digital orientation in its various forms is positively related to small business growth (Quinton et al. 2018; Taiminen and Karjaluoto 2015; Weill and Woerner 2015).

Second, company size or industry did not explain the level of digital orientation. Although small companies are not as equipped as large companies (Laforet 2008), they can perfectly adopt ideas employed by large companies using a high level of flexibility, teamwork, and fast adaptability (Russo and Perrini 2010). Thus, companies' characteristics in terms of size do not play an influential role in the digital context. This can be due to the fact that digital orientation operates as a comprehensive strategy, allowing companies with different sizes and activities to cooperate. In terms of industry, the service-oriented companies are more advanced in terms of technology orientation than manufacturing-oriented companies. The reason behind this might be the differences in the operational logic of the service and the manufacturing companies (Valtakoski and Witell 2018) and the nature of service companies, whereby efficient service offerings using novel technologies are their core business.

Third, the competitive intensity in the markets does not explain small businesses' digital orientation. The results challenge the idea that in order to manage competition, small businesses need to adopt behaviors that fit the characteristics of the market they are in, such as acquiring certain assets or capabilities (Quinton et al. 2018; Theodosiou et al. 2012). In fact, competitive

intensity in the markets does not seem to shape the digital orientation of small businesses. Therefore, our study concludes that the various forms of digital orientation are determined by a company's internal factors. In small companies, internal factors determine the digital orientation, and external factors, namely the intensity of competition, do not play a significant role.

Managerial Implications

In terms of the managerial and policy implications, our research raises the awareness and understanding, previously based on very few empirical studies, of the role of the context and company conditions for the digital orientation of small companies. As the results of the study show that company size does not affect companies' digital orientation, the managers of companies should understand that, despite the size of the company, there are possibilities available when considering the digital orientation of the company. The results also indicate that service-oriented companies are more advanced in technology orientation than manufacturing-oriented companies. As such, managers of the manufacturing-oriented companies should pay attention to the new possibilities that the digital orientation of the service companies could provide them with. This study further provided evidence that managers of small businesses should consider the significant role of digitality for strategy in all the dimensions of digital orientation. In other words, by implementing an advanced level of digitality in strategy, decision-makers in small business could successfully perform in digital orientation in terms of the market, the entrepreneurial, the relationship, and the technology orientation. Additionally, decision-makers, especially in small businesses, should consider the internal and the external nature of factors and activities in their businesses. For instance, a company condition in terms of willingness to grow is mainly related to internal activities, whereby the work patterns will change based on the factors inside the company, including its market, entrepreneurial, and technology orientations. In contrast, competitive intensity involves activities that are more external, meaning change will occur externally. As the competitive intensity in the markets does not affect companies' digital orientation, the managers of the companies are not forced to shift toward digital orientation as a reaction to the activities of their competitors; the digital orientation is motivated more due to the internal characteristics of companies.

Limitations and Further Research Directions

Although the results presented in this chapter indicate that the factors supporting the digital orientation of small businesses seem to be internal, such as digitality in strategy and willingness to grow, the phenomenon needs more evidence and greater empirical understanding. There are avenues for future research that could improve the understanding of the implementation of digitality in a company's strategy. Furthermore, it would be reasonable to improve the

understanding of why the external factors, such as the competitive intensity in the markets, do not explain the level of digital orientation of small businesses. As a limitation of the chapter, it should be noted that the results were gathered from only one country. As such, there might be some country-specific factors affecting the conditions under which small businesses operate. For that reason, it would be a good idea to conduct further research to extend the empirical understanding regarding the phenomenon in other countries. Finally, as this chapter focused on the digital orientation of small businesses, further research could work to understand the factors supporting the digital orientation of large companies.

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Analysis of Business and Sustainability Models of Native Digital Media in Latin America

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INTRODUCTION

A business model is the logic of the company, is the way it creates and captures value for its group of interest (Baden-Fuller and Mangematin 2013). It is a strategic decision from the organizations to define what the market has to offer, publicity strategies, and model of income. Therefore, business models consist in articulating value proposition, identifying a segment of the market, estimating the cost structure and potential of all its benefits (Chesbrough and Rosenbloom 2002). With the manifestation of the internet in the 1980s and 1990s, business models of several industries had significant changes; entertainment, tourism, telecommunications, and journalism sectors, in general, had the biggest transformation. In addition, the access and availability of internet changed the relationship of power between the company, clients, and the providers, creating necessities, formats, platforms and markets that businesses which created the digital version of their media knew how to capitalize. This new internet accessibility created the conditions for the creation and adaptation of new businesses and digital natives' business models, due to the removal of entry barriers and the appearance of services that could replace those already existent.

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In the case of journalism, central topic of this chapter, the first digital publication was in the *Chicago Tribune* in the United States, in the networks used at the time, such as America Online (AOL), (Salaverría 2019). However, it was not until 1994 that the first publication in the *World Wide Web* was registered, in correspondent to the *Palo Alto Weekly* of San Francisco, California (Carlson 2003), originating what is today known as digital journalism. Digital media, also known as meta-media (Campos-Freire 2015), is characterized by the utilization of diverse formats of information available in the web: written text, video, photographs, audio, computer graphics, and graphics (multimedia); the hypertextuality or addressing to various publications of complementary topics; and the interactivity that allows the user to choose the content they prefer to see, reproduce, or share.

Traditional journalistic companies, focused on printed media, had their business model centered in the sale of paperback editions and income from publicity and subscriptions. When transferring the content to a digital version, the audience was originally offered complete free access for several years. Nonetheless, this new offer affected the income and had to be reformulated. Over the years, some media have begun to restrict their websites, requesting a prior registration or a monthly payment, in order to make some profits, but not all strategies have been effective. Many are still looking for an alternative that allows for sustainability.

These changes in the industry, then, impacted the company's income and business model. There are several strategies that digital media implement to charge for their services, some of the most widespread mechanisms are micropayments or fractional content, consumer payment, subscription, and open access. These strategies have meant a change for the whole media industry. Even the way in which information is consumed has transformed and modified the audience's relationship with the media, making it more participatory through social networks or directly on each media page.

With the change in the relationship of the media with the audience, the journalistic business should not only focus on designing financial strategies to ensure profitability and sustainability long term. Their efforts should also consider exploring new formats that are not only focused in the physical sale of newspapers. The creation of virtual communities that share, produce, and discuss specific content contributes to the diversification of the audiences and to the sustainability of media as businesses.

This chapter aims to analyze the business model of three native Latin American digital media. To do this, some inclusion criteria were established: media that had not been created as the digital version of a printed media and had no paper edition. The media analyzed in this chapter are: *El Faro* (El Salvador), *La Silla Vacía* (Colombia), and *Revista Anfibia* (Argentina). *El Faro* was founded in 1998 and is focused on the coverage of in-depth research topics in Central America. *La Silla Vacía* is a niche medium created in 2009, not only because of its thematic focus (power and politics), but also for its geographical approach of covering Colombian politics (Meléndez Yúdicó 2016); this media

was founded by an international donation from the *Open Society Foundation*. Meanwhile, *Anfibia* is a digital media of chronicles, essays and nonfiction stories created by an Argentinian university and that does not have a particular theme. Table 5.1 introduces more details about selected media.

These three media have a particularity: although they receive donations from their readers and have fund-raising campaigns, their content is freely accessible, have no restrictions or prior registration, unlike print media that in their digital version restrict the content or require a fee to access it. The four media that will be analyzed have diversified their income with contributions from international cooperation, organization of events, workshops, production of documentaries, and sales of books. They are also characterized by publishing in-depth research, what is also known as slow journalism, a philosophy that seeks to eliminate the myth that speed is associated with efficiency, in relation to last-minute news coverage (Barranquero 2013).

This chapter is organized as follows: first, there will be a discussion about the relevant literature in the study field, subsequently the principals of the case study methodology will be introduced, following the findings from the review of secondary sources and interviews with journalists, directors, and founders of each medium, and, finally, we present the discussion and conclusions.

Table 5.1 Native digital media analyzed in this chapter

<i>Media</i>	Anfibia	El Faro	La Silla Vacía
Year of creation	2012	1998	2009
Country	Argentina	El Salvador	Colombia
Director	Cristian Alarcón	José Luis Sanz	Juanita León
Category	Narrative journalism	Investigative journalism	Investigative journalism
Interview participants and data sources	Editor, executive producer, director, Responsible for editorial innovation. Archival data	Opinion coordinator Archival data	Chief director, chief editor, and regional editor <i>La Silla Santandereana</i> Archival data
Formats	Text, image, podcast, Paperback edition	Text, image	Text, image, computer graphics, podcast
Income distribution	80% Universidad Nacional de San Martín 20% Workshops	65% international cooperation 22% advertisement 9% general content 4% audience	35% international cooperation 65% commercial projects

Source: Own construction

BUSINESS MODELS, SUSTAINABILITY, AND DIGITAL JOURNALISM

A business model is the formulation of a competitive strategy articulation of value propositions, one where a target market has been identified, the value chain and projection of the costs are defined, and profits are identified as well as the position of the company in the value network. (Chesbrough and Rosenbloom 2002). According to Linder and Cantrell (2000), the model refers to a *nuclear logic* of an organization to create value. However, Osterwalder (2004) and Goyanes-Martínez (2013) argue that the business model is way for an organization to create, provide, and capture value. The business model, therefore, reflects the value that is being offered to customers (Campos-Freire 2010). It is a scheme that allows companies to strengthen customer confidence, generate income and maintain a position in the value chain following a particular purpose and strategy. The traditional media (press, radio, and television) have developed their business models based on three classic sources of income: payment by consumption (sales by unit number or subscription), advertising, and subsidy or sponsorship (Campos-Freire 2010); however, native digital media have diversified their sources and income models.

Internet Business Models

In occasions, the business model is often confused with the financing model or the revenue model. However, within the media the models are developed through value propositions and mixed economies that include user participation, payment of consumption for the articles, and, in very particular cases, public contributions (Campos-Freire 2015).

According to Rojas et al. (2014), the most commonly used business models on the internet are micropayments or fractionated content, payment for consumption streaming/pay per view, and subscription. Micropayments or fractionated content correspond to a common practice that is generally less than six dollars to access books, articles on the web, songs or games. The pioneers for this mechanism were Apple, Amazon, and media outlets such as *The New York Times*, and slowly traditional media and editorials also implemented these mechanisms. Another strategy is the payment per consumption, streaming or pay-per-view, which were initially used for many years by television networks to provide access to exclusive programming or content with technical specializations. The best-known case in the activity is the Netflix platform, which offers series, movies, documentaries; this company originally was a pioneer in this type of payment but evolved to the subscription model. This payment method is also widely used by hotels that charge by hours and car rental companies that only charge for the real time of use.

The subscription payment model has a fixed customer base in a specific time (weeks, months, years) due to the fact that the payment is made in advance, while the open access is used regularly to share educational, academic, or scientific content. For the digital media, each of these models represents a challenge.

The audience was offered free content for many years, but within the last years the charges for content have increased,; in most of the cases, users are requested to register, which implies sharing personal data and trusting the provider. And it is that the model as it was known, with solid bases in advertising revenue, ceased to be efficient because the large technological platforms and social networks like Facebook and Google lead the marketing and advertising online market (Campos-Freire et al. 2017).

Sustainability of New Media and Innovation

According to Chesbrough and Rosenbloom (2002), the business model has among its functions to identify the segment (target audience), value structure (costs and profits), business position (competitors), and design a competitive strategy. Based on these elements, the digital and traditional native media, which are transforming their content to this format, could potentially guarantee their sustainability. It not only depends on technology and the tools it provides, because they remain changing and updating themselves constantly; it concerns rethinking the business, innovating the platforms, and being acquaintance with their audience's needs.

The internet's arrival had an impact on the finances of traditional printed media that de-structured the value chain and also promoted a new relationship with customers (audience) (Campos-Freire et al. 2017), thus leaving the need to think of more and new distribution channels—unlike print—to create a community and focus about long-term sustainability.

Business models, for that reason, must evolve according to changes in the organization and the environment itself (Holm et al. 2013). Editorial independence, income diversification, and, above all, the evolving profile of journalists must be taken into consideration. Although digital journalist are not completely different from the traditional ones, especially in terms of ethics, research, and writing protocols, these journalists must be prepared to combine their skills with other professionals such as programmers, designers, or photographers in order to develop a more solid and more relevant approach to understand, discuss, and present different realities (López-García et al. 2017). Within Latin America, since the 1990s, some digital media have increased their participation while creating online communities. Table 5.2 introduces some of the leading digital media in the region.

MOBILE DEVICES, SOCIAL NETWORKS, AND JOURNALISM

The most popular social networks at the moment to share journalistic content are Facebook (founded in 2004), Twitter (in 2006), and Instagram (created in 2010), which were originally created to link friends, publish photographs, and send messages of 140 characters with current issues or personal experiences, but have transformed gradually transforming to become a channel that allows the audience to have a real-time interaction with media about the last-minute

Table 5.2 Native digital media in Latin America

<i>Media</i>	<i>Inception year</i>	<i>Country of origin</i>	<i>Focus</i>
<i>El Faro</i>	1998	El Salvador	It is the first native internet newspaper in Latin America. It makes a firm commitment to investigative and in-depth journalism and is agnostic in terms of its platform: it makes journalism in various genres and formats both online and offline and traditional media such as radio, books, documentary films, and face-to-face events. Since its birth, <i>El Faro</i> has had a Central American vocation.
Ciper	2007	Chile	The Journalistic Research Center (CIPER) is a nonprofit foundation aimed at promoting and exercising investigative journalism. Its assets are made up of voluntary donations whose amount, origin, and employment render a public account.
<i>La Silla Vacía</i>	2009	Colombia	<i>La Silla Vacía</i> is an informative and interactive medium for people interested in current Colombian politics. They are focused on those stories that really describe how power is exercised in Colombia: on the characters that move the threads of power, on the strategies to achieve and maintain it, and on the ideas and interests that underlie the country's great decisions.
Chequeado	2010	Argentina	It is the first site in Latin America dedicated to the verification of discourse and is among the first ten fact-checking organizations in the world. It is a nonpartisan and nonprofit digital medium dedicated to the verification of public discourse, the fight against misinformation, the promotion of access to information, and the opening of data.
Animal Político	2010	Mexico	Native digital medium that brings together journalists, designers, programmers, and video editors to create content with rigor, precision, and thought to serve citizens.
IDL Reporteros	2010	Peru	Journalistic research unit within the Legal Defense Institute, a nongovernmental organization linked to the defense of human rights and democratic governance. They are mainly dedicated to journalistic investigations on cases of corruption, drug trafficking, internal security, and corporate issues.
<i>Plaza Pública</i>	2011	Guatemala	<i>Plaza Pública</i> is a means of communication that aims to provide information and ideas for a solid, vigorous democracy, with ethics and social justice. Founded by the Rafael Landívar University, we belong to the Office of the Vice-Rector for Research and Projection and we are mainly financed by the university budget.
<i>Anfibia</i>	2012	Argentina	<i>Anfibia</i> is a digital magazine of chronicles, essays, and nonfiction stories that work with the rigor of journalistic research and literature tools. It proposes an alliance between academia and journalism with the intention of generating thought and new readings of the contemporary.

Source: Own construction

events. In addition to “content distributors”, they have served as sources of journalistic information (Pedriza 2018). To these were added, with the launch in 2007 of the first phones, the massification of mobile devices that had as many features as a laptop (López-García et al. 2019), and, in journalism, this changes the way of consuming news and also changes the diversification of formats. The reading of journalistic material from smartphones, even if the publication is of a long format, continues to increase (Albalad Aiguabella 2015).

In addition, the multifunctionality of the devices has put a new challenge to journalism: What to do when a camera is available to anyone, with the possibility of making videos or text or recording audios anywhere or transmitting events in direct? The answer would remain differentiate with research and quality content.

METHODOLOGY

To conduct this study, where we will analyze the business model of five native digital media in Latin America, we used case study methodology (Eisenhardt 1989; Yin 1989). Which is useful as an empirical evidence that supports the analysis of contemporary phenomena (Yin 1989). This qualitative method was chosen because it allows the combination of sources and techniques for data collection (Chetty 1996); furthermore, it is also appropriate for the analysis of emerging phenomena.

Although there is no single number of cases for this methodology, Eisenhardt (1989) argues that the analysis of between four and ten cases is usually sufficient to conduct an investigation. Perry (1998) argues that the number of cases is the decision of the investigator, and Patton (1990) follows that same line and does not indicate an exact number of cases to evaluate. The investigations that apply the case study methodology, in general, are heuristic and holistic, because the complexity of the cases is reflected and it is also about giving a complete vision of the situation and context that is being analyzed, which also allows conclusions and discuss them.

Chetty (1996) indicates that the case study is a rigorous methodology that allows to study the phenomenon from different variables and is appropriate to analyze and investigate those phenomena and give answers to why and how they occur, from a deeper form. Goode and Hatt (1976), however, claim that this methodology is a way of organizing data, not of achieving it. In any case, in order to validate the information, it is necessary to contrast the content and revise the criteria and the construct (convergent: two or more concepts that coincide; discriminating: concepts that differ from one another) (Rialp 2003).

Yin (1989) argues that this methodology is essential in the social sciences, and contemplates a protocol that has four steps to guarantee objectivity in research: (i) background analysis, literature related to the subject; (ii) triangulation of information and questionnaire focused on contrasting theories; (iii) establishment of a work schedule and a scheme for research; and (iv) selection of a theoretical sample, not representative of the population. In addition, it

proposes a series of components that allow an assertive design: research questions, theoretical propositions, unit analysis, and linking and interpretation of data.

For data triangulation, Arias Valencia, (2000) states that the most important thing is to control personal bias and take into account the following: verify interview information with observation and secondary data (method); contrast information: in research and finding the balance between space and time, collect the data at different times and have the ability to contrast them. To analyze the business model of the three digital native media, *Anfibia* (Argentina), *La Silla Vacía* (Colombia) and *El Faro* (El Salvador), eight interviews were conducted by video conference with members of each media, taking into account the diversification of roles, approaches and in some cases the presence in different regions, we interviewed: Laura Ardila (editor of *La Silla Caribe*), Juan Esteban Lewin (chief editor of *La Silla Vacía*), Jineth Prieto (editor of *La Silla Santandereana*), María Luz Nóchez (journalist and opinion coordinator of *El Faro*), Sol Dinerstein (producer of *Anfibia*), Leila Mesyngier (editor of *Anfibia*), Cristian Alarcón (director and founder), and Tomás Pérez Vizzón (responsible for editorial innovation).

In addition, Jean-François Fogel, a journalist and digital advisor of several media in France (including *Le Monde* from 1994 to 2002), was interviewed in person as an external informant. Mr. Fogel was selected due to his participation on the team that renewed the internet platform of *Le Monde* and created the first online payment area for subscribers. Archival data was also used to strengthen and contextualize the information provided by informants.

LITERATURE CONTEXTUALIZATION

In order to contextualize our study on the current debates regarding digital journalism, we conducted a systematic literature review using Web of Science as the main database source. Search criteria included the terms “journalistic innovation”, “online media”, “digital newspaper”, “online news media”, “business model journalism”, “digital journalism”, and “journalistic entrepreneurship”. With this search we managed to identify 53 articles published between 2000 and 2019. Content analysis of these manuscripts allowed us to identify the approach and impact of digital journalism in comparison to traditional media companies.

With this search, we managed to identify native digital journalism as innovating through three central indicators: (i) native digital media content and narrative, (ii) the usage of technological tools and new and research format, and (iii) a business and sustainability model (Flores 2017). In addition, we achieved to recognize long-range native digital media as a growing genre that combines written language with photography, super short films (compilation of short video clips), maps, and other graphic elements (Hippala 2017).

FINDINGS: THE CASES OF DIGITAL MEDIA IN LATIN AMERICA

The three journalistic media analyzed in this chapter were created by journalist that had remained working for traditional media companies. Among those, the only specialized in a subject is *La Silla Vacía*, focused in research and coverage of Colombian politics.

El Faro is the oldest native digital media in the region and has a more international reach than other cases studied, primarily due to having long-range research focused on political, legal, and social topics from El Salvador and specific coverage in Central American countries.

In terms of the number of journalists, we can identify that the three cases have between 13 and 22 people in their editorial offices, including directors, editors, journalists/reporters, engineers, commercial/sales, and administrative and financial areas. As for the technological platforms to disseminate its research, *La Silla Vacía*, especially *La Silla Caribe*, uses WhatsApp to distribute messages redirecting to the website. *El Faro* also has a newsletter and sends it via email to its subscribers.

In the sources of funding, we can find that *La Silla Vacía* and *El Faro* conduct crowdfunding campaigns among their readers, although they also have support from international organizations and grants and organize events or academic activities to diversify their income sources. *Nomad* has its own content agency for sponsored content and provides consultancy services.

The three native digital media outlets monitor their audience through Google Analytics, and their audience in general varies from ages 25 to 45 years and allows to access content via mobile devices and computers. All the media began by publishing their research in text format. However, as their business models evolve, they incorporated other formats such as photography, videos, and infographics. Currently, all these media are on Facebook, Twitter, and Instagram.

EL FARO (EL SALVADOR): THE FIRST NATIVE DIGITAL MEDIA OF LATIN AMERICA

Founded in May 1998, *El Faro* is the first digital native newspaper in Latin America. Its editorial line is focused on defending human rights. According to its opinion coordinator, María Luz Nochez, “*El Faro* is committed to the truth”; she also highlights that *El Faro* readers possess a certain interest for understanding what is happening in politics. She believes that they differ from their other country’s media due to the way in which they present the news and information, always focusing on innovating so “the reader both enjoy the content and feel satisfied with the findings”, stated Mrs. Nochez.

Research Revenue Model organized annually the Central American Forum for Journalism, at this event there are multiple talks and workshops, besides, a crowdfunding strategy known as *Excavación Ciudadana* is held at this event since 2015. With this activity, they receive online donations from readers in

order to financially support research. Their goal is for the number of income and donors to grow and allow for long-term sustainability, in a region where there are also external factors such as migration, gangs, and political context—social that make independent journalism in an area considered particularly violent, be more complex. *El Faro* Store: sale of books, magazines, eBooks. Some of these contents are created by journalists (own content) and collaborators linked to *El Faro*. Some others from journalists and researchers in Latin America. It also has audiovisual products, decoration, and stationery. But it was not always like this. For six years, this media created in a region where not the entire population accesses the internet connection, had no income. It was until 2003 that he received the first international donation from the United Nations Development Program (UNDP). In terms of format, *El Faro* generally presents their research using text, it as well creates regular content for *El Faro Television*. In addition, it once was also presented in radio.

LA SILLA VACÍA (COLOMBIA): HOW POWER OPERATES IN THE NATION

Created by Juanita León in 2009, this medium is focused on covering political power in Colombia. He started with headquarters in the capital of the country, which at this time has a team from five regions responsible for working from the territories. To coordinate the teams, a weekly editorial board is held and there is continuous communication. The one in Bogotá, Colombia, remains the main office, and from there the administrative management and metrics are coordinated. Although they publish content on social networks, there is not an official Community Manager role. The content on social networks is managed by the journalists themselves, even though the workload increases, it maintains the accuracy of content on social networks.

It has a creative department (*La Silla Gráfica*) where they have photographers and audiovisual directors with whom they seek to strengthen other formats to publish the news. This media sees it as an opportunity not to charge for accessing its content and maintaining a direct relationship with the audience. Unlike print and traditional, looking for subscribers who are willing to pay to see the news.

However, what they do maintain is their *Super Amigos* campaign (since 2012), in which they seek donations to diversify income and finance in-depth research. This media is characterized by identifying who are the powerful figures in the country and how they operate their work and personal relationships; it also has a section in charge of detecting lies or “the filtering of the post truth” (data check/speech). This media publishes most of their news in text format.

La Silla Caribe was the first regional division that *La Silla Vacía* had. It is focused on the northern municipalities of the country. When interviewing their editor, we were informed that every day a massive text is sent to their WhatsApp contacts in order to share the most relevant news.

According to Jineth Prieto, regional editor of *La Silla Santandereana*, this is the most regional division of the whole media but is as independent as the rest of the divisions. Mrs. Prieto stated “What *La Silla* expresses is not expressed by anyone else with that level of depth and independence. It presents the context, what moves behind the story”. *La Silla Santandereana* has a direct alliance with a local university to access physical space. It is considered a reference in that area of the country. They have created in a new format: the podcast. In addition to these two sections, they have *La Silla Pacífico, Sur, Cachacha* (centered in Bogotá), *Paisa* (Power in Antioquia and Coffee Region—Caldas, Risaralda, Quindío, Tolima, Norte, and Oriente del Valle del Cauca), and *Nacional*. *La Silla Académica* is one of their sources of income. It publishes articles and research conducted from universities and allows users to access knowledge that usually remained in educational establishments. The whole media is a network with more than 500 experts having a space to publish current content about the country. From that media, they diversify the positions in front on different issues.

The whole staff is formed by the journalistic director, reporters, the administrative area, the graphic designer, and systems engineer. The office is located throughout five other different cities around the country: Barranquilla, Medellín, Bucaramanga, Neiva, and Cali. In total, the team consists of approximately 20 people, divided in groups of 5 per region. Regarding their audience and according to Chief editor Juan Esteban Lewin, audience possesses a certain level of education due to their researches being “relatively complex” that contains data and analysis in which specific and sophisticated knowledge is usually required. According to Lewin, as an attempt to reach younger audiences, the creative department developed lighter format and social network presence.

In regards of the business model of *La Silla Vacía*, this media was originally created without a clear business in mind; they wanted to develop one that was feasible for them while remaining independent. Mr. Lewin states that part of their funding comes from international cooperation, while the crowdfunding campaign *Super Amigos* is also an important economic source. Mrs. Prieto told us that the “democratization of information” is at the very core of *La Silla Vacía*, and that they do not consider charging users for the quality content they produce.

ANFIBIA (ARGENTINA): CHRONICLES AND ALTERNATIVE CONTENTS FROM THE SOUTH

It is a digital magazine of nonfiction stories, chronicles, essays, and opinion columns; it was founded in 2012, with funding from the General University of San Martín. In recent years, he has tried new formats: *Anfibia* podcast, Polyamory, paper magazine, and a luxury edition published in 2019. They also carry out training workshops, which are a percentage of their income and also have a line: performing journalism, which can be defined as the “border

between journalism and art, between the story and the action". With the new formats, they have discovered a new audience. They have to, as challenge for the coming years, diversify sources of income, consolidate the support of the university, and be a producer of content rather than just a journalistic medium, have a growth opportunity. One of the reasons for entering the podcast is that there is part of the audience that does not connect completely with the text but that "the audience even if it does not read does not mean that they do not want to report", says Tomás Pérez Vizzón, responsible for editorial innovation. Although *Anfibia* started with a more conversational format, it was with the *Poliamor* texts, transfer to audio recordings, which experienced a more narrative line. The content of the magazine is aimed at people between 25 and 40 years, while the podcast, for an intermediate audience, between 20 and 32 years, "a little younger". People who are permanently looking for information, with concern and desire of looking for new things. That's why *Anfibia* presents podcast, videos, stories on Instagram, Twitter, WhatsApp. *Anfibia* is a reference in journalism. The audience of your country looks for them when there is a situation to know their analysis, position, and perspectives of the news. They link different professionals in their publications to contribute on current issues.

They have an artistic and content director, a team of five editors, some rather oriented to the traditional text editing and the rest oriented in working with alternative journalistic areas. They also have a community manager and an executive producer that is in charge of coordinating everything that happens in the magazine. Additionally, they have a person that manages the training activities, and, finally, two editors responsible for the productions that also illustrate and design the images for the texts.

Their editorial line is focused on human rights and gender inclusion, while their formats range from texts, podcasts, videos, and computer graphics. In regards of their audience, *Anfibia* targets readership leaders, who have "middle-class cultural consumptions, up with those interested in being informed, who like literature", according to editor Leila Mesyngier (2019). The magazine, then, "offers tools for interpreting reality, and using in discussions", expressed producer Sol Dinerstein. This is why their texts and productions can generate conversation in any context. Its readers are interested in the political agenda of the country and in general in the Latin American situation; that is why when events take place in the region, they also focus part of their content for this purpose. They "try to find a different focus in the texts", argued Mrs. Mesyngier.

DISCUSSION

The creation and development of native digital media in Latin America began with *El Faro*, in 1998. It is interesting that El Salvador, since it is a small country where at the end of the twentieth century the access to internet was limited, produced the first digital media (Meléndez Yúdicó 2016). What we can identify is that these media were created because there was a need for

information and content that were not found in traditional media. The cases analyzed in this research also show that the cost structure of digital natives is much smaller; they do not depend on a single product and are in constant innovation. Having diversified their sources of income and not relying on single partners or income sources. This also allows them to be independent and be such a reference in their countries of origin (and in some cases at a continental level).

Although it is often thought that journalism is in crisis, in reality it is the big companies that are in the process of transformation due to generational and technological changes. The three digital native media analyzed in this article were founded because there was a void of information or not-so-deep approaches to current issues in the traditional media of three countries: Argentina, Colombia, and El Salvador.

CONCLUSIONS

The first conclusion of this article is that there are two different yet complementary scenarios in the media: the traditional and the digital one; however, the boundaries between them are often blurred. The fixed cost of printing is very high. The mass media are disappearing due to fragmentation and the multiplication and appearance of new digital media. Journalism changes its traditional formats to adapt to the demands of new consumers. Transparency and verification of information is a fundamental pillar for this exercise. Data checking, contrasting information, and searching conflicting sources, the information that arrives are still the basis for good journalism, transparency, and integrity. Second, the information is in different parts and formats. Native digital media in general have a not-so-large number of people in the newsroom and therefore their costs are lower, which helps maintain independence and a margin of income.

Third, there is a lot of information on the web and a very high but fragmented demand. The attention is also different. Not only are the media, there is entertainment everywhere. Even Jean-François Fogel, a French journalist and director of the master's degree in media management at the Sciences Po University in Paris, says that Netflix, the entertainment platform that distributes audiovisual content through streaming, is the biggest competition in journalism. Given the variety of media and portals, companies compete for the attention of the audience. Netflix time is cheaper than the reading time of a daily hour. Today we are in a world where people have several subscriptions for activities that take away time dedicated to leisure and entertainment such as Spotify, HBO, Hulu, and the other platforms that offer content. The audience's available time is limited. This did not exist before.

Fourth, new media that have a lower-cost-level culture will survive in journalism, including businesses that combine sources of income: grants, donations, events, training activities, specialized blogs, and sale of items. The business and income models are currently fragmented to the extent that one

cannot be recognized. Each media finds a way to manage itself according to its needs. Big and expensive organizations with higher costs tend to disappear.

Fifth, specialized and niche information gets subscriptions. The idea of journalism as a pure thing is something that is going to be reduced. There are all kinds of communication but in the digital world the loyalty of the audience is complex. They also have social networks as a stimulus. We must always review what they do and for whom. Why that niche what is offered differently. The readers of these five media in general are people with a university education level and who are interested in what happens behind the news, but especially interested in debating.

Sixth, to be a partner or donor of a medium is to define oneself as a person who cares about quality journalism and deep investigations. This figure is increasing in digital media. They pay to help the existence of a medium thinking that it improves the political situation of the country. Seventh, the diversification of profiles and professions within a writing enriches the debate and the focus of research. A mixed team is valued more and, on the web, having news in different formats attracts new audiences.

Eighth, to have a small media management team from the beginning helps strengthen them. Entrepreneurship is a day-to-day learning process but having clarity of income and costs is a strategy that allows us to view economic needs. Ninth, social mobilization was another important reason for the creation and development of digital media. Some journalists felt that the voice and demands of society were not reflected in traditional journalistic companies, some biased or in the lookout for power, so having their own space gave them the opportunity to provide information that was sufficiently transparent to allow them to know in detail what directly affected their countries: cases of corruption, inequality, and issues related to politics and economics.

For journalists or groups that try to promote their own media, it is recommended to start with a small team that knows what they want. Hyperlocal media (focused on research of specific communities/territories) has a great opportunity. This kind of journalism could be more interesting and sustainable, furthermore, it can reach better quality standards because journalists have the opportunity to deepen on specific and powerful issues within the region or city in which they are focused. The model of partners, and not having a subscription to access content, makes Latin American digital media have an advantage. Analyze the thoughts of undergraduate careers in journalism and social communication. With the speed in which technology moves and the media industry is transformed, the courses that are taught must be reorganized, including even those that allow a more complete training for future journalists: innovation, entrepreneurship, and business management must be added. The tendency to create a medium of its own continues to increase and better than the academy to prepare future professionals.

For future research, it is convenient to characterize the partners/donors of each medium and analyze the behavior and time spent in the digital media. It is understood that a partner is someone interested in the quality of information

and the sustainability of a medium, but does it go beyond donation? Are they active readers? How much is the content consumed? Are they participating in the activities conducted by the media? With these questions as a basis, one could have a more precise knowledge of this part of the audience that is so important for the sustainability of the media.

APPENDIX

Questionnaire focused on directors, founding partners, or managers/coordinators of the media.

1. Full name of the interviewee.
2. Name of the media.
3. Media country.
4. Describe the main functions of your position.
5. In what context was your medium created (Vállez and Codina 2018; Salaverría 2019)?
6. What is the editorial line of your medium?
7. How is the xxx team (name of the medium) formed?
8. In which category of journalism do they classify the content they publish (Greenberg 2013)?
9. To what audience are the contents of your media directed? Is it only local or open to international news/publications? In what format are your news published (Masip 2016)?
10. What is the business model of your environment (Casero-Ripollés 2012; Batlle and Roses 2009)?
11. What is the income model of your environment? Detail as much as possible the strategies they use (Campos-Freire 2010).
12. With what system of metrics or indicators monitor the interaction of its users with the content (Campos-Freire et al. 2016)?
13. From which devices do you access your page (López-García et al. 2019)?
14. Do you have official accounts on social networks? If the answer is positive, how do you manage the content published on social networks? How much impact on the content published content from these channels (Campos-Freire et al. 2016)?
15. What is your main journalistic competence or what media do you have as references (same type of content) (Meléndez Yúdice 2016)?
16. Have you thought about publishing a paper version? why (Campos-Freire 2015)?
17. How do you fight fake news (Loterio-Echeverri et al. 2018)?
18. On the sustainability of your environment: What challenges do you perceive for the next five years (Barranquero 2013)?
19. What recommendations/suggestions could you give to journalists interested in creating their own digital media?

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The Internationalization Speed of SMEs and their Long-term Sustainability in Foreign Markets

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INTRODUCTION

This chapter discusses the speed and the long-term sustainability of firm's internationalization. The analysis focuses on the firm and its internationalization process in a temporal perspective, exploring small and medium-sized enterprise (SME) technology-based firm (TBF). Preliminary studies about internationalization speed (Oviatt and McDougall 2005) focused on the time between inception and start of internationalization (Chetty and Campbell-Hunt 2004), but not on the subsequent period once internationalization has started (Chetty et al. 2014). That is, most of the studies on internationalization speed have been based on the analysis of the time in which a company initiates its international activities (Chetty et al. 2014).

The post-entry period, as an important part of internationalization process, is still under-investigated (Ibeh et al. 2018), especially the post-entry speed of internationalization (Romanello and Chiarvesio 2019). Such approach can advance the international entrepreneurship literature in several ways. First, in the existing literature, consistent results have pointed to the antecedents that lead to accelerated internationalization (Oviatt and McDougall 2005; Hilmersson et al. 2017), as well as the characteristics of the companies that

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present fast internationalization (Dzikowski 2018). However, what happens after the entry in foreign markets and its implications over time are yet to be explored (Hilmersson and Johanson 2016).

Second, we believe that the factors that promote and influence the pre-internationalization are different in post-internationalization (Efrat and Shoham 2012). Albeit the term “long-term sustainability” is not approached literally in the literature; it can be seen as a kind of consequence of post-entry internationalization, as it goes beyond performance, growth, and survival. In our understanding, studies that address the topic of survival in the internationalization context are too deterministic, as they mostly focus on whether the firm is still alive or not (Carr et al. 2010; Sapienza et al. 2006). In this study, we argue that long-term sustainability can be seen as an output of post-entry internationalization, related to the post-entry stage. Some of the consequences of post-entry internationalization speed analyzed as an output of internationalization are performance, survival, and international growth. The existing literature, when focusing on such post-entry outcomes, may be narrow and does not allow a more dynamic perspective of this level of firm’s international commitment. In this sense, this study proposes to include long-term sustainability as a specific result of the internationalization process, based in empirical assessments of different cases, where they suggest that companies may stay abroad for reasons beyond international performance, in some cases to escape from weak institutional context from home country, as an emerging market. In this context, the internationalization motives can go beyond the classic taxonomy of FDI motives, as pointed by Cuervo-Cazurra et al. (2015). The authors suggest that emerging market firm’s internationalization could have four different motives, such as sell more, buy better, upgrade, and escape. Based on this assessment, the understanding of internationalization motivation can be advanced by arguing that these motives can change during the internationalization process, in the pre- and the post-entry stages.

Thus, the main goal of this chapter is to analyze the motivations and propellers of acceleration along the pre- and post-internationalization stages of a TBF. Under this perspective, long-term sustainability is regarded as one of the consequences of post-entry speed of internationalization.

In this sense, the research was conducted using a single case of Brazilian TBF to understand the motivation and factors that lead to accelerate the internationalization process, comparing the pre- and post-entry stages, and its consequences for the long-term sustainability.

This research contributes to the literature on the internationalization of technology-based SMEs in several ways. First, by proposing a different approach to capture the dynamic of internationalization. By analyzing the long-term sustainability, it proposes the concept of permanence in foreign markets to overcome the concept of performance, speed, and survival. Such categories are too deterministic and tend to overlook the changing internationalization patterns. Second, it distinguishes between pre-entry and post-entry, as two main time categories of this phenomenon of long-term sustainability. Third, it

expects to design such process by using the case of technology-based SME from an emerging economy. While corporate sustainability is still a challenge for SMEs from emerging markets that operate abroad, changes in the business environment from traditional to digital market may provide some opportunities to SMEs to internationalize and obtain long-term sustainability in the foreign market.

This chapter is organized as follows: first, it discusses the theoretical issues about speed in pre- and post-entry stages and the motivations from emerging market firms to internationalize. After, it exposes the methodological approach and describes and analyzes the case, contributing with some theoretical propositions, leading to the final remarks and conclusions.

THEORETICAL ISSUES

Determinants of Pre- and Post-internationalization

Studies about the precocious process of internationalization have been concentrating on behavior approach theories, specially the studies of International New Ventures (Oviatt and McDougall 1994, 2005). Studies approaching accelerated internationalization examine speed under different lights (Zucchella et al. 2007), as in the beginning of international activities, during growth and international expansion, and in firm's survival.

Speed during the process of internationalization of the firm can be understood in two stages, pre-entry and post-entry. Both stages, pre and post, correspond to the same process, although presenting distinct determinants and consequences. But despite being different, both stages are dependent, what occurs on the first will affect, positively or negatively, the subsequent stage. On post-entry phase, for international growth of the firm, less time would have a positive effect, but not for its survival, where less time would have a negative effect (Sapienza et al. 2006; Mudambi and Zahra 2007). This is in consonance with Gerschewski et al. (2015), which highlighted that different dimensions of international activities may be an outcome of different determinants that need to be acknowledged in order to have a full perspective on the overall speed of internationalization. The pre-entry stage may be defined as “the time lag between the founding of a firm and the start of international operations” (Autio et al. 2000, p. 909), where the determining factors are analyzed as being those that allow firms to make its first entrance on the international market. On the post-entry stage, determinant factors are analyzed as those that rapidly propel international expansion and is defined as “post-entry or post-internationalization” once the company has started internationalization (Prashantham and Young 2011).

Dominguez and Mayrhofer (2017) and Efrat and Shoham (2012) indicate that in the process of internationalization influences differ between the two stages; in the pre-entry stage, external factors have more positive effects on

firm's performance, as opposed to internal factors, which have greater impact on the post-entry stage.

Therefore, the determinants of accelerated internationalization during pre- and post-entry stages are distinct, and can be arranged in three main perspectives of analysis: the entrepreneur-based view, the firm-based view, and the external factors-based view. The three perspectives are based on the model of Zahra and George (2002)—which indicates environmental and strategic factors (external factors-based view) as potential moderators of the relation between organizational factors (firm-based view) and the dimensions of entrepreneurship (extent, speed, scope)—and on the studies of Oviatt and McDougall (1994), which highlight the aspects of entrepreneurship for the formation of international new ventures (INVs).

From the perspective of the entrepreneur, the determinant factors of pre-internationalization, the entrepreneur international experience (Zucchella et al. 2007; Musteen et al. 2010; Casillas and Acedo 2013), and the entrepreneurs' networks (Pla-Barber and Escribá-Esteve 2006; Felzensztein et al. 2015) appear as crucial aspects for precocious internationalization. Experiences gained by working and studying abroad provide personal aptitudes to get familiar with other cultures, to develop a global mindset, and to establish network ties, which minimizes the risk perception enhancing the confidence of the entrepreneur to take a step ahead toward international markets (Osarenkhoe 2009; Musteen et al. 2010). On the post-entry stage, entrepreneur characteristics such as international experience (Casillas and Acedo 2013; Mudambi and Zahra 2007) and entrepreneur personal network ties (Khan and Lew 2018; Safari and Chetty 2019) also positively influence rapid international expansion.

On the firm-based view, among firm's internal factors that propel acceleration of internationalization on the pre-entry stage are those related to the firms' innovation and knowledge intensity (Osarenkhoe 2009), comprehended through product innovativeness and innovation capacity (Autio et al. 2000; Luo et al. 2005). Niche positioning (Zucchella et al. 2007) is also a significant factor on precocious internationalization, for it allows the firm to differentiate from international competition obtaining advantages and henceforth accelerating its process. During the post-entry stage, firm's networks (Gerschewski et al. 2015; Safari and Chetty 2019), a diversification strategy (Casillas and Moreno-Menéndez 2014; Sadeghi et al. 2018), and technological capacity (Luo et al. 2005; Khavul et al. 2010; Musteen et al. 2010; Teixeira and Coimbra 2014) are pointed as propellers of rapid international expansion. Nonetheless, regarding firm's external aspects (external factors-based view), speed propellers observed during pre-internationalization stage are cultural distance (Luo et al. 2005; Chang and Rhee 2011; Casillas and Moreno-Menéndez 2014) and firm's location (Casillas and Acedo 2013; Teixeira and Coimbra 2014). When firms are located on companies' conglomerates, they tend to have a superior position concerning market information, networks, and marketing practices that nourish firm's further expansion (Luo et al. 2005). Lastly, within the determinants of the firm's external factors for post-entry internationalization,

so far the first mover advantages (Fariborzi and Keyhani 2018) and number of countries (Chang and Rhee 2011; Felzensztein et al. 2015; Hilmersson et al. 2017) appear to have the biggest influence on internationalization speed.

Analyzing the determinants for speed of internationalization in both stages, network appears as a preponderant factor, for networks enhance the learning of foreign environments, and they provide valuable information to develop capabilities (Laurell et al. 2017) to improve the company's outcomes to reach its objectives. However, those networks go beyond commercial scope for market services (Sedziniauskiene et al. 2019); they need to be locks for the generation of new or reinforcement of old innovative capacities of the firm (Laurell et al. 2017). It is understood that access to resources that generate new competences and innovation for the firm are the more strategic ones, which lead to long-term sustainability. Hence, a new element appears as a turning point, the importance of innovative capacities generators for TBFs in process of internationalization. Therefore, for TBFs the insertion in innovative ecosystems contributes to the support of international business, for it has elements and actors that enable an increase in innovation in firms (Autio and Thomas 2014) and consequently brings the conditions for the firm to reach and sustain a superior position in international competition. Table 6.1 summarizes determinant factors on internationalization speed discussed in this session both in the pre- and post-entry stages, which composes the first category of analysis of the case study.

Consequences of Pre- and Post-internationalization Speed

As determinants of internationalization speed differ between stages pre- and post-entry, so do its consequences. Studies have focused in understanding these effects with temporal frames on pre- or post-internationalization stages.

Khavul, Perez-Nordtvedt, and Wood (Khavul et al. 2010) analyzed the relation between organizational entrainment among international new ventures (INVs), and their most important international customers positively moderate the relationship between the degree, scope, and speed of internationalization and performance of INVs from emerging markets and have found out that the degree and scope have a positive effect over firm performance, although the speed was not proved. Analyzed performance was the perception answerers had over growth in international sales, profitability, market share, and firm's competitive position. Accordingly, Zhou et al. (2012) produced a similar study and successfully sustained the hypothesis that INVs from emerging countries reached a positive result, on answerers' perception, in growth in international sales, in profitability, and in market share, and this relation was mediated by marketing capability development.

On yet another study that analyzes the INV of emerging countries, Deng and Sinkovics (2018) examine the relationship between rapid export expansion across institutional distance and overall firm performance (net profit divided by total sales) and affirm the relationship to be positive when INVs export

Table 6.1 Determinants of pre- and post-internationalization

<i>Determinants</i>	<i>Pre</i>	<i>Post</i>
Entrepreneur's perspective	Entrepreneur's international experience (Zucchella et al. 2007; Musteen et al. 2010; Casillas and Acedo 2013). Entrepreneur's networks (Pla-Barber and Escribá-Esteve 2006; Felzensztein et al. 2015). Risk perception and entrepreneur's confidence (Osarenkhoe 2009; Musteen et al. 2010).	Entrepreneur's international experience (Casillas and Acedo 2013; Mudambi and Zahra 2007). Entrepreneur's personal network ties. (Khan and Lew 2018; Safari and Chetty 2019).
Firm's perspective	Firm's Network (Laurell et al. 2017). Firm's innovation and knowledge intensity. (Osarenkhoe 2009). Product innovativeness and innovation capacity (Autio et al. 2000; Luo et al. 2005). Niche positioning (Zucchella et al. 2007).	Firm's networks (Gerschewski et al. 2015; Safari and Chetty 2019). Strategy diversification (Casillas and Moreno-Menéndez 2014; Sadeghi et al. 2018). Technological capacity (Luo et al. 2005; Khavul et al. 2010; Musteen et al. 2010; Teixeira and Coimbra 2014). Internal Factors (Dominguez and Mayrhofer 2017; Efrat and Shoham 2012).
External factors-based view	Cultural distance (Luo et al. 2005; Chang and Rhee 2011; Casillas and Moreno-Menéndez 2014). Firm's location (Casillas and Acedo 2013; Teixeira and Coimbra 2014). External factors (Dominguez and Mayrhofer 2017; Efrat and Shoham 2012).	First-mover advantages (Fariborzi and Keyhani 2018). Number of countries (Chang and Rhee 2011; Felzensztein et al. 2015; Hilmersson et al. 2017). Firm's location (Luo et al. 2005). Insertion in ecosystems of innovation (Autio and Thomas 2014).

Source: Elaborated by the author

upwardly to more open countries, yet the relationship to be negative when INVs export downwardly to less open countries.

In common, both studies point internationalization speed of INV from emerging markets in pre-entrance stage to have a positive effect over firm's performance's index. But the question is, what are the consequences on post-entry phase?

Studies on the effects of speed over post-internationalization are still inconclusive. Research by Mohr et al. (2018) has found a decrease in investment as a consequence of rapid internationalization on post-entrance. Nonetheless, the study has concentrated on retail companies, which present differences when compared to firms from other sectors, such as TBFs. Mohr and Batsakis (2017) also analyzed the market-seeking expansion of 110 retailers over a ten-year period and found support for a curvilinear relationship between internationalization speed and firm performance that is moderated by the geographic scope

of firms' internationalization path and firms' international experience. Other studies have also found evidence that the post-entry speed of internationalization may have negative consequences, especially on performance. Jiang et al. (2014) have focused on the speed with which subsidiaries are established and concluded that speed was negatively associated with subsidiary survival, so the early mover subsidiaries are less likely to make a profit when they are established with faster speed. According to Hilmersson and Johanson (2016), the speed of increased commitment of resources abroad has a negative and curvilinear effect in firm performance and the speed of increased dispersion of international markets has a positive and curvilinear effect on firm performance.

The conclusion is that time associated to commitment, sales, or dispersion will have different results on firm's performance.

This way, Hilmersson (2014) has found that the scope and speed of internationalization render a positive performance effect (measured using the firm's return on total assets), whereas the scale of internationalization does not. Chang and Rhee (2011) sustain that speed positively affects firm performance with a strong brand, and firms with intensive global competition. Accordingly, Chetty et al. (2014) discovered that there is a positive relationship between speed and international performance, and firms that internationalize earlier have faster speed of internationalization process.

The conclusion is that during pre-entry stage the speed of internationalization will have a positive effect over firm's performance, but for international expansion it can bring negative effects, which can compromise long-term sustainability. Table 6.2 presents the consequences of speed of internationalization in pre- and post-entrance stages, which will compose the second category of analyses of the case study.

Internationalization Motives for Emerging Market Firms

During the process of internationalization of emerging market companies, the manner in which they explore resources, both at home and in host country, will have consequences to the type of motivation the firm will have to expand internationally. There are two types of advantages, one on the level of the firm, the competitive advantage—Firm-Specific Advantage (FSA)—and the other from the place/country, the comparative advantage—Country-Specific Advantage (CSA) (Rugman and Verbeke 1998). According to Cuervo-Cazurra et al. (2015), the reason for internationalization for firms from emerging markets can be classified as four types, sell more, buy better, upgrade, or escape.

To sell more, the company exploits existing resources and capabilities at the home country to obtain access to a larger market and increase revenues. So, the firm explores home country conditions to gain economy-scale selling for the domestic and international markets, getting access at better host country conditions, like market opportunities to increase revenues (Cuervo-Cazurra et al. 2015). To buy better, the company exploits existing resources and capabilities at the host country to avoid the comparative disadvantages of poor home

Table 6.2 Consequences of speed of pre- and post-internationalization

<i>Pre</i>	<i>Post</i>
(+) Degree and scope of internationalization affect positively firm's performance (perception of growth in international sales, profitability, market share, and competitive position) (Khavul et al. 2010).	(-) Decrease in investment abroad. (Mohr et al. 2018).
(+) INVs from emerging countries reached positive growth in international sales, profitability, and market share, relationship mediated by marketing capability development (Zhou et al. 2012).	(-) The market-seeking expansion has a curvilinear relationship between internationalization speed and firm performance that is moderated by the geographic scope of firms' internationalization path and firms' international experience (Mohr and Batsakis 2017).
(+) Relationship between rapid export expansion across institutional distance and overall firm performance (net profit divided by total sales) when INVs export upwardly to more open countries—yet the relationship is negative when INVs export downwardly to less open countries (Deng and Sinkovics 2018).	(-) The speed of increased commitment of resources abroad has a negative and curvilinear effect in firm performance (Hilmersson and Johanson 2016).
	(-) For survival, to which less time would have a negative impact (Sapienza et al. 2006; Mudambi and Zahra 2007).
	(+) The speed of increased dispersion of international markets has a positive and curvilinear effect on firm performance (Hilmersson and Johanson 2016).
	(+) The scope and speed of internationalization render a positive performance effect (firm's return on total assets) (Hilmersson 2014).
	(+) The speed positively affects firm performance with a strong brand, and for firms with intensive global competition (Chang and Rhee 2011).
	(+) There is a positive relationship between speed and international performance (Chetty et al. 2014).
	(+) For firm's international growth, less time would have a positive effect (Sapienza et al. 2006; Mudambi and Zahra 2007).

Source: Elaborated by the author (2019)

country conditions. The firm uses the sources of comparative advantage to help it to face competitors better by reducing the relative comparative disadvantage of the home country. In this case, the firm may choose to reduce operations in the domestic market and increase operations in foreign markets (Cuervo-Cazurra et al. 2015). To upgrade, the company exploits new resources and capabilities in better host country conditions (comparative advantage of host country) to improve its existing operations and its competitiveness (competitive advantage of companies). In this case, the firm's "focus is on the upgrading of the home country by exploring new sources of advantages abroad" (Cuervo-Cazurra et al. 2015, p. 32). To escape, the company exploits new resources and capabilities in the host country to avoid poor home country conditions, and to gain efficiency in its operations, accessing new sources. In that case, probably

the firm will expand activities in the host country and will reduce or close its activities in the home country (Cuervo-Cazurra et al. 2015).

This perspective is particularly important to understand the internationalization of firms from emerging markets that faced many challenges from poor home country conditions. This study will analyze these internationalization motives in the Brazilian TBF case. The TBFs from emerging countries are dependent on specific resources and capabilities, like technology and skilled labor, and in many cases they try to explore these resources abroad, expanding internationally. For the companies operating in emerging markets, internationalization is one strategic option to grow and acquire resources and capacities (Guillén and García-Canal 2009). It is understood that the dynamicity of the process of internationalization may lead to changes in the motivation between pre- and post-internationalization stages, due to experience acquired by the firm in international operations, which may lead to reviewing strategic goals regarding internationalization. It is also understood that target market attractiveness is not enough to guaranty long-term sustainability. The motivations for internationalization—sell more, buy better, upgrade, and escape—in emerging market firms will compose the third category of analyses of this case study.

METHOD

The research uses qualitative method, given the descriptive and exploratory approach proposed (Eisenhardt 1989). A single case study method was chosen (Creswell and Poth 2016) in order to capture the nuances related to motivation, to the propellers and consequences of speed of internationalization during pre- and post-entry stages. The goal is to understand how the Brazilian TBF conducts its process to achieve long-term sustainability and obtain the in-depth knowledge needed to answer our research question (Yin 2003). Small and medium Technology-based firm was the object of analysis. Prashantham and Young (2011) argue that the strength of the competitive advantage of TBFs lies first in their own structure: technological knowledge and market knowledge. TBFs can quickly apply improvements to identified needs and adapt to acquire a greater volume of customers (Zahra et al. 2000). In addition, TBFs bring innovation to products and accumulation of knowledge to compete in the international market (Wiklund and Shepherd 2003).

Case Selection

The criteria for selecting a single case study (Yin 2003) was due to a set of peculiar characteristics of Audaces, the chosen firm, which allows the understanding of how a Brazilian TBF leads a fast process of internationalization in order to achieve long-term sustainability. Such characteristics are as follows: it is established in the 1990s, when the phenomenon of INV starts to be studied; it leads an accelerated process of internationalization, both during entrance and

expansion to near and distant markets; it starts its process without managers' previous international experience; it is located outside of a reference pole in its area (fashion/clothing/textile); it comes from an emergent country and begins its process in a time when Brazil is opening its markets, without any world reference technology firms; it has 22 years of international permanence; it has had international divestment and performed direct foreign investment South-South and South-North.

Data Collection

Data was collected and crossed from two different sources (Eisenhardt 1989). The first was multiple in-depth, semi-structured interviews. Interviews were conducted between August and December of 2018. The subjects were the founder/director of the company (01 h 40 min) (E1), the international manager (45 min) (E2), and the commercial manager (01h 22 min) (E3). For the interviews, it was designed a protocol with questions that would capture the motivations and propellers of acceleration and long-term sustainability during pre- and post-entry stages (available in [Appendix](#)). The interviews were recorded and transcribed.

The second was secondary data for obtaining additional information captured from official websites, press releases, articles published in the media, institutional material, and papers about Audaces.

Data Analyses

After meticulous reading, interviews were codified into analytical tables, with the assistance of Atlas Ti software, for a better understanding of the data.

In this phase, the story of the internationalization process is described in a longitudinal perspective, in a manner to chronologically understand how the firm developed its strategies in order to achieve long-term sustainability. After that, it is analyzed according to previous analyses categories: (1) internationalization path, pre stage—(2) motivation, (3) propellers, and (4) consequences of speed; post stage—(5) motivation and (6) long-term sustainability propellers. Quotations were organized, analyzed, and interpreted in a manner to answer to the questions posed by this study. Therefore, outcomes of the interviews were crossed with secondary data collected.

DESCRIPTION OF AUDACES CASE

Audaces was idealized by five computer sciences students who started the company in 1992 at CELTA — a TBF incubator in Florianópolis, Santa Catarina, Brazil. Today, it has 240 employees, around 8500 clients, partnerships with over 200 educational institutions in fashion/textiles, present in over 70 countries, with a factory in the city of Trento, Italy.

After a brief history in furniture, in 1996 it turned its focus to fashion: “around 1996 we perceived a need in the textile industry. There was little competition, it was foreign, expensive, and offered bad services. It was when we changed for textiles” (E2). They continued in textiles and operated with software and equipment for this industry. The product line emerges as a product of the lack of domestic competition, and for that reason already pointed at internationalization as a strategy of expansion, although there was still a segment to be explored in the Brazilian textile market. “In 1996 we were the only ones in Brazil to do what we were doing. We knew the all the competition was abroad and being in the global market was important for Audaces. A technology company cannot be in one country only” (E1).

Internationalization Process: Pre-internationalization Phase

Ground zero of internationalization history was in 1996, with the participation in two international fairs in textiles, which resulted in the prospection of potential international clients. They started in Argentina, where they developed the first international partnership. “The opportunity came in a fair. Due to the proximity to Florianópolis, an Argentine said ‘I want it, it’s ok if it’s Brazilian, I want it’. There we realized that if we could sell to him we could sell to others” (E3).

After that, they closed deals with Spain and Venezuela. After 1999, fashion and textile fairs became the company’s main strategy to prospect new international opportunities. “It happened because of the opportunities we had in fairs in Latin America. We saw the opportunity in international markets when we started the first export” (E2). But they needed persistency, for international market demanded thrust. “This is a long term investment. In some fairs we started investing in 2006-2009-2012, around the third time you come back they start really taking you for real. Ahhh those Brazilian guys are here for the third time, I think we can thrust them” (E1).

The access to first markets brought contributions for adapting the products, and so the strategy was expanding to countries with similar cultures, using adaptations already made: “we thought of these countries after Argentina (Spain, Venezuela, Peru) for having the same language. As the evolution of those contacts after the fairs were quick, we thought: we can’t go wrong there” (E3).

Internationalization Process: Post-internationalization Stage

In 2000, after participating in a fair, they entered the Peruvian market. In 2002, they participate in the JIAM fair, in Osaka, Japan. There they met the director of IBERTEC, a distributor of industrial automation systems in Europe and started a partnership that consisted in the adaptation of the Audaces software for meeting the needs of the European customer. With just a few adjustments, the company managed to export to Spain, Italy, and Japan.

According to the content in E3, all this internationalization movement wasn't planned at the beginning and also wasn't motivated by previous international experience. However, quick internationalization after first fairs was motivated by the recognition that they had a solution superior to those available at the international market: "we saw a global opportunity, since we only have two globally strong competitors, but their software is not as optimized as ours, it was a great opportunity to think about dominating some markets" (E2).

With a stand at the Intermoda fair, in the city of Guadalajara, in 2003, they closed deals and partnerships in Mexico. In the year of 2004, they participated in Colombiatex, and in the same year they started partnerships and sales for Colombia, Guatemala, Uruguay, and Lithuania. In 2005, through a representation company in El Salvador, they entered the markets of El Salvador, Nicaragua, Costa Rica, and Panama. In the same year, an Egyptian company came looking for a partnership deal and brought new businesses.

Despite not facing language barriers, cultural dressing barriers came in some countries, but they were quickly overcome: "In Europe, for example, they have the costume-made culture. But our product was designed for an industry that produces millions of the same piece. We have to make some changes in order to better serve this market" (E2).

Therefore, by the end of 2005 they were already leaders in Latin America and had a mild participation in more distant markets such as Europe, Japan, and Egypt; they had validated a model for international operation through commercial partnerships, as well as developed a structure to maintain international operations.

The entrance into other countries after 2006 continued in quick pace, partly for the participation in fairs and partly for the expansion in commercial partnerships. And for guaranteeing the entrance in new markets, Audaces continuously built a successful case in each country to show credibility to new potential clients. Acquired knowledge from previous experiences gave subsidies and confidence to get speed in entering new markets. Also, international experience developed by the team allowed designing more assertive processes with time. "Today we have in our international area multidisciplinary people ... when you go make business abroad you need to know a little bit of everything. If you are focused on only one area, you'll suffer in the others" (E2).

In this scope, they have redirected the international strategy to prioritize markets. "Today we have the strategic markets' department, focused in a few markets, in order to develop nourished markets. We came to the conclusion that the world is too big to embrace at once ... it is one thing to sell and another one to develop the market, develop a culture there to be a sales leader. Today we focus on developing markets. We have someone to work with market opportunities that are outside the focus" (E3). Hence, to guarantee long-term sustainability in the countries Audaces was, they focused on developing markets and structuring processes for local demands, improving their capacity to respond locally. "today sales happen through partners. Our job is to go there

to support sales, make sales enablement, give them support, orientation, controlling goals. But they do the hands on sales operation” (E3).

In 2007, the firm tried an investment on the Spanish market with the opening of a commercial unit in Barcelona. Led by the firm’s commercial director, it started two partnerships with distributors, but closed its activities in 2008 due to the world crises (Ramos and Alperstedt 2010).

Business model was also altered, but the challenge was integrating the model internationally, due to differences between markets. Those changes represent market differentials and Audaces can adopt a pioneer position, but at the same time it depends on conservative moves from the global competition that establishes market patterns. “We have two strong global competitors, with more than 50 years of experience, those are very big and strong companies, with a square model, they only sell for life” (E3). This makes altering business model become risky. Those strategic changes occur also due to movements in other Brazilian TBFs that start to adopt a recurring revenues model through SaaS—Software as a Service—but to succeed it was essential that market adopted cloud computing. Henceforth, Audaces brings this new model to its operation “This year we are starting sales with recurring revenues, changing the product to SaaS and probably we’re going for this e-commerce line. But it’s still a challenge because it’s a complex product to sell. Manage to sell this software that enters the manufacture cycle and that is self-service, enabling the client to click there and buy, it’s still a challenge, it’s not a cheap software” (E3). And it faces resistance: “Here in Brazil it is easier to implement SaaS because it’s a culture that’s more used to services. Outside, nobody wants to rent. Specially in Asia, they say: ‘how is this going to be in the cloud? What if there’s no cloud?’ In Europe also, incredible as it may sound, they have this difficulty in accepting SaaS. It is the only continent in which no one bought SaaS, only life licenses. In Latin America, some accept, others don’t. [...] in Central America, this difficulty doesn’t exist because the companies in our niche are all very big, American or Korean capital” (E2).

Audaces’ long-term sustainability depends on the efficiency of its business model, based on commercial partnerships, hence depending on the engagement of local partners for commercializing its products. Henceforth, they have developed a “channel engagement index” which consists in evaluating existing channels through “structure, capillarity, coverage, formation, clients’ list” (E3). Investment in each country happens according to market segmentation strategies; the company evaluates in which stage each country is for its product and works according to its maturity.

Even with the business model based on commercial partnerships, in 2010, with an increase in demand in Latin America, Audaces opened three own commercial units, in Argentina, Colombia, and Mexico, and, in 2012, in Peru.

The opening of the Colombian unit was encouraged by the closing of the partnership with a local distributor in 2009, when the country presented good marketing potential and the firm needed to restore its image, deteriorated by this former partner (Ramos and Alperstedt 2010). In Mexico, the market

potential was associated with the low level of qualification of the Mexican partner, so Audaces decided to take charge of operation to guarantee quality and the market. Things were different in Argentina, where partnership was well established and working, but there was a potential for expansion (Ramos and Alperstedt 2010). Here started a new cycle through own sales offices.

In 2014, the firm started to plan a direct investment in Italy, motivated by the country being a world reference in high fashion and by an increase in clients in that market, to which they still exported. “We’ve always had the goal to be abroad, not only for revenues, but for competing on the best markets, which would improve the quality of our services in Brazil. Our target was to grow in number of clients” (E1). Given the relevance of the market, the importance of proximity with reference clients, and the potential of entering even more distant markets such as Asia and Africa from Europe, they indicated a strategic intention of opening a subsidiary in Italy. “A no turning back decision with a defined strategy to be closer to the Asian market, to which we also sell in large scale.” “By developing systems and equipment, Audaces is thinking about the demanding customer from Europe. That way we can sell world wide” (NSC 2018). Despite knowing the Italian market through its partners, the firm had some trouble culturally adjusting. “The biggest barrier to opening our own firm in Italy was the cultural difference, even already having 400 clients there, this was the biggest problem. They are nice clients, important references, but until you can actually understand how they work it’s hard. Each country has its own particularities, even the wording, we need to adjust” (E1).

The choice of location inside Italy, hence, is given by factors that could generate innovation for the company: “In Italy, creative centre of world fashion, believing the transformative strength of design, we are located in the region of Trento, one of the most important poles of mechatronic technology of Europe” (Audaces 2019). The importance of networks, besides commercial scope, reveals a new strategic step for Audaces, searching for a more adequate environment to develop its international business in an ecosystem of innovation. “Investment in labour can be decisive in the process of internationalization, specially when dealing with innovative technology to a certain segment. It is possible to establish partnerships with teaching institutions and government entities that can favour that measure. Guaranteeing support and maintenance through local technicians and distributors is usually also a relevant strategy because it reduces industries’ production costs, crucial aspect for the survival of so many firms” (Pereira 2019).

Due to the opening in Italy, Audaces decided to close its offices in Argentina, Mexico, Peru, and Colombia, passing the operation to its commercial partners (distributors). It also realigned its international structure, and, now, from the headquarters in Brazil they work the markets in the Americas and from its subsidiary in Italy they work the European, Asian, and African markets (Audaces 2019).

RESULTS: DEVELOPMENT OF PROPOSITIONS

It has been observed that the determinants of speed of internationalization, the initial motivation and consequences of the pre-internationalization stage have differed from the post-internationalization stage (Chetty et al. 2014; Sadeghi et al. 2018). Nevertheless, there is dependency between stages; initial consequences have been the basis for further movements at Audaces.

By starting internationalization, the firm enjoyed recognition for its innovative capacities in the market niche it worked, which represented a competitive differential in face of the international competition. Niche positioning (Zucchella et al. 2007) is an important catalyzer for precocious internationalization, for it allows the firm to differentiate from the international competition, speeding up its process. Moreover, the innovative (Autio et al. 2000) and niche product (Luo et al. 2005) needs to seize the moment of competitive differential and so did Audaces, which contributed for accelerating its initial process of internationalization. The realization that they had an innovative product led them to international fairs and the establishment of commercial networks (Oviatt and McDougall 2005), speeding the internationalization process.

The consequences of the precocious internationalization were positive in terms of performance, as advocated by previous studies by Khavul et al. (2010) and Zhou et al. (2012). Furthermore, the results were beyond financial performance (Zahra and George 2002). The firm found in internationalization a way to keep innovating for better-serving external markets, as well as the domestic market.

Henceforth, in the beginning the motivation was “sell more”, seizing initial conditions in resources and home country capacity (Cuervo-Cazurra et al. 2015), Audaces’ source of innovation so far. This leads to the following proposition:

P.1: In the pre-entry stage, external factors – captured in terms of international opportunities – and internal factors – captured as niche positioning, innovative products, and legitimacy – have a higher impact on the speed of internationalization, suggesting a sell-more motivation.

During the post-internationalization stage, network continues to be a propeller of acceleration for international growth (Gerschewski et al. 2015; Safari and Chetty 2019) that leads to long-term sustainability. However, in order to lead to long-term sustainability, network needs to go beyond commercial scope and include educational institutions and governments, as institutional network (Sedziniuskiene et al. 2019). Also, it is important to be close to big clients to guarantee responsiveness (Barlett and Ghoshal 1990). In the same way, the post-entry stage also presents some particularities that are dealt with as the firm continues in the market and acquires legitimacy. “Intangible assets such as reputation and networks can significantly influence the speed and degree of internationalization” (Zahra and George 2002, p.16).

The speed of internationalization that leads to long-term sustainability depends on the level of input of resources (commitment). According to Hilmersson and Johanson (2016), the speed of increased commitment of resources abroad has a negative and curvilinear effect in firm performance but the speed of increased dispersion of international markets has a positive and curvilinear effect on firm performance. In the Audaces case, the initial exportation model lasted for almost ten years, changing for a commercial model that passed through distributors and overseas offices, which lasted for another seven years and, two years ago, the model changed again to an overseas unit. That way, speed was in the replication of tested models. The adoption of new models that would implicate a larger amount of resources commitment demanded more time.

This strategy diversification dynamism (Casillas and Moreno-Menéndez 2014; Sadeghi et al. 2018) accelerates international expansion and leads to long-term sustainability and subsequent permanence of firms in the international market, with goals exceeding financial performance to reach technological capacity (Khavul et al. 2010; Musteen et al. 2010; Teixeira and Coimbra 2014).

Post-entry internationalization speed was a consequence of the possibility of replication of the business model tested and validated in the overseas market until there was a need for strategic change, in this case propelled by an external factor: world reference big clients' demands. Hence, this dynamics for better competitive conditions led the firm to achieve long-term sustainability and ulterior permanence.

Permanence in international markets is therefore aligned with the possibility of replication of tested models, performance, and access to new sources of innovation, as well as external factors such as firm's location (Luo et al. 2005) and the immersion in innovative ecosystems (Autio and Thomas 2014) providing exchanges among companies in the market.

By being present in the largest market of its segment, Audaces is up-to-date with tendencies and needs of that industry. Permanence overseas provides the possibility of internalizing knowledge acquired in the Italian market, applying it in Brazil and vice versa, boosting innovation in Audaces' products and services worldwide. Lastly, being located in an innovative ecosystem, as source of connections and innovation, brings the firm the capacities it needs to continually adjust and stay overseas. That leads to the second proposition:

P. 2 In order to achieve permanence the firm needs to reach long-term sustainability in foreign markets, connected to performance, scalability of business model, innovation, network, big clients, legitimacy, and responsiveness.

The case demonstrates new findings regarding motivations for internationalization after the first experiences in foreign markets. They have created and tested their business model, going for rapid replication, which contemplated scalability of business model applied to new contexts/markets. However, they needed to keep innovating to guarantee long-term sustainability and that led

to strategic change, in this case directly catalyzed by large clients in Italy and the attractiveness of the host country as a whole, with resources and capacities complementary to the ones in the home country in a motivation for upgrading (Cuervo-Cazurra et al. 2015). Moreover, they find in the host country a way to escape the weak institutional conditions in Brazil, such as juridical and tributary insecurities. So, in this case, there is an intersection between upgrade and escape: on the one hand, exploring complementary resources and capacities; on the other, escaping a weak institutional environment. All with the incentive of large clients in the host country demanding proximity from its suppliers.

That leads to a third proposition:

P.3: In the post-entry stage, firms from emerging markets are likely to adopt an upgrade and escape strategy of internationalization to obtain better conditions from home and host country and to avoid the poor institutional conditions in the home country.

Table 6.3 brings a summary of obtained results in each category of analyses, showing the difference and correlation between pre- and post-internationalization phases.

Table 6.3 Motivations, speed propellers, and consequences of pre- and post-internationalization stages in the Audaces case

<i>Pre-internationalization stage</i>		
<i>Motivation</i>	<i>Propellers</i>	<i>Consequences and expansion factors</i>
Sell more	Access to international opportunities Innovative niche product in the international market	Seizing accomplished adaptations Validated commercial model Legitimacy and thrust Commercial network Development of internal capacities Development of new markets and clients
Post-internationalization stage		
Motivation	Propellers	Consequences and factors for long-term sustainability
Upgrade	Possibility of replication and scalability of business model Responsiveness to world reference large clients Strategic changes toward better-competitive and innovative conditions	Home and host countries as sources of innovation Location in innovative ecosystem Expansion of network (institutional) beyond commercial boundaries Consolidation of business model Global legitimacy International hub International permanence
Escape	Access to better institutional conditions	Development of alternatives to deal with home country restrictions

Source: Elaborated by the author (2019)

FINAL REMARKS

Given the dynamicity and speed of the internationalization process of TBFs, this study helps to explain how TBFs from emerging countries conduct a speedy process that creates room for long-term sustainability leading to international permanence. Considering there are two stages of internationalization, pre- and post-entry, the study explores the differences among them in terms of propellers and consequences of speed, and the motivations inherent to the speedy internationalization process in a longitudinal perspective. The study contributes with the literature in a manner to bring new factors as outputs of speedy internationalization in the post-entry phase, especially international permanence, which is beyond operational financial performance. Permanence emerges in this case as an output reached by long-term sustainability, which is strongly related to innovation, international legitimacy, institutional and commercial network, scalability of business models, and responsiveness to world reference large clients. Moreover, the study highlights that firms from emerging countries can change their motivation for internationalization throughout the process, exploring resources and capabilities both at the home and host countries. In the case of Audaces, initial motivation was Sell More with strong dependency on the home country as source of resources and capacities, but it changed to a hybrid perspective between upgrade and escape: first looking for new sources of capacities and resources in Italy to maintain its innovative and technological capacities and, at the same time, escaping weak institutional conditions typical to emerging countries.

From the perspective of emerging countries-based TBFs, this study contributes to the understanding of the changes that occur between pre- and post-entry stages, highlighting that the factors that propelled the start of the speedy internationalization are complementary—however different from the ones that lead to long-term sustainability and subsequent international permanence.

In this case, we advance the debate by pointing that the concepts of performance and survival are concepts basically related to the firms' pre-internationalization stages. The perspective that underpins such concepts is to understand the factors and motivation of internationalization, suggesting that the resources in pre-internationalization stages may be the same or sufficient to support their further internationalization.

The concept of international permanence has the advantages of showing how such resources change over time, and by such process, firms are more likely to change their own motives and adopt different and, sometimes, complementary approach to sustain their growth in foreign markets. From a pure international entrepreneurship perspective, this may suggest that firms, particularly TBFs, can achieve their permanence in international markets by overcoming their own home country constraints, but that such level of commitment in the post-internationalization can succeed by establishing different levels of commitment in the different foreign markets, multiple motivations, and distinctive network positioning and product development, as the case above has shown.

Finally, the concept of international permanence can, in some way, provide a better framework to connect international entrepreneurship and international business. While definitely entrepreneurial behavior (proactive, innovative, and risk-taking) are key factors to the internationalization path of firms, the development of new resources and firm-specific advantages is a further stage of firm development in foreign markets. Such process, in our understanding, is likely to happen when firms reach the permanence stage of their internationalization path.

Results arising from this research, however, present limitations. Because it was based on one case, replication of results is limited to the context of this firm, requiring new cases in order to validate and complement findings. The same scope can be extended to other emerging country companies in longitudinal analyses of the internationalization process, pre- and post-entry. Furthermore, studies can be expanded in a manner to connect innovative ecosystems from home and host countries, as propellers of speed and internationalization long-term sustainability in the context of TBFs, enhancing the comprehension of the factors that lead to the permanence of firms overseas.

APPENDIX: INTERVIEW PROTOCOL

The case protocol was divided in three sessions:

Session I—First, questions revolved around the start of internationalization: How did they approach international market? What motivated the firm to internationalize?

Session II—Questions about the obstacles throughout the process: Which were specific facts that marked the process of internationalization and could have been more natural? What would they do different since the foundation of the firm? Particularly in the international market, what would they have done differently?

Session III—Questions about post-entrance stage leading to long-term sustainability: What motivated the firm to grow abroad? What are the companies' prospects in the international market?

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Cybersecurity, Personal Data Protection and Crime Prevention from an Italian Perspective

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INTRODUCTION

It is a common view that the development of the digital and knowledge-based economy has yielded extensive benefits for our societies and economy. For example, the telecommunications, financial services, and transportation industries, as well as the military and other essential government services, all depend on the Internet and networked computer systems to conduct most of their

Note, Although the authors have jointly developed this chapter, it was written as follows: “Introduction”, “The Regulatory Framework as an Incentive to Cyber Security and Personal Data Protection Investments” and “Conclusion” by F. Reganati; “Cyber Events and Cybersecurity: A Descriptive Analysis” and “Cybersecurity Investments: An Economic Analysis” by R. Pittiglio; “The Italian Legal Framework and the Principle of Accountability Using a Possible Connected Cyber and Personal Data risk Model”, “Current System and its Reference Context”, “Comparing the Legal Instruments: Differences and Elements in Common. The Principle of Accountability” and “A Possible Connected and Flexible risk Prevention and Management Model” by C. Tedeschi; “Research Methodology” and “Findings” by F. Ricci.

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day-to-day operations. At the same time, the digital revolution and its implications for society and business growth are increasingly important in the context of the near future, due to technological developments like cloud computing services, mobile deployments, and big data applications. In particular, digital technologies can facilitate the achievement of the 17 goals set out by the United Nations 17 in their 2013 [Sustainable Development Goals \(SDGs\)](#)—from reducing poverty and infant mortality to promoting sustainable farming, improving health services, fighting discrimination, and achieving universal literacy. For example, digital health technologies can reduce inefficiencies, improve access, reduce costs, increase quality, and personalize care (FDA 2017), while the adoption of autonomous vehicles may reduce emissions and energy consumption providing positive impact on the environment (Lim and Taeihagh 2018). However, the intensive utilization of the online space has raised society's exposure to malicious behaviors, causing an unprecedented global expansion of computer-based criminal activities. Cyber incidents have surged, in terms of frequency and costs. According to the Internet Crime Report (2019),¹ business e-mail compromise/e-mail account compromise—BEC/EAC—incidents in the USA have increased from 16,000 in 2017 to 20,000 in 2018, resulting in losses of nearly US \$1.3 billion. On a global scale, the last report from the Center for Strategic and International Studies (CSIS) estimated the annual cost of cybercrime, to the global economy, at around US \$600 billion (roughly 0.8% of global GDP). Thus, cybercrime has emerged as a novel, profitable activity that bears very low risk, which has raised the concerns of governments, citizens, and the private sector.

Given this state of affairs, the goal of investing in cybersecurity and personal data security has come to pose an important challenge, involving both public and private entities which, however, do not often have enough sufficient incentive to provide an optimal level of protection (Dynes et al. 2008; Anderson and Moore 2006). This paves the way for intervention by national governments, which are better suited to manage the risks associated with cyber events and to reduce their vulnerabilities. As a matter of fact, the lack of effective cybersecurity and personal data protection measures might have potential knock-on effects on the development of information societies because it makes digital technologies a source of risk more than a source of development and erodes users' trust, which will in turn cripple adoption and hinder innovation.

This issue becomes particularly relevant in the private sector, where firms must face a trade-off between allocating their scarce resources to investment in cybersecurity and personal data security and other competing activities (i.e., investments in marketing) that might improve revenues.

In such a context, and from a regulatory point of view, two legal instruments have been adopted recently: the *Network and Information Security Directive*—NIS—(Dir. EU 2016/1148), which concerns the security of the EU's networks and information systems, transposed onto the Italian legal system by Legislative Decree 65/2018, and the *The General Data Protection*

¹FBI's Internet Crime Complaint Center.

Regulation—GDPR—(Reg. EU 2016/679), which is self-executing among the EU Member States and has led to changes in the Italian legal system (Legislative Decree 101/2018) to meet the new requirements. These legal instruments are important, because they both introduce a number of obligations and responsibilities for the entities, which include companies, covered by these instruments. Consequently, their entry into force represents a chance to reflect on how, and to what extent, these new rules can optimize investments in security and affect the organizational structure of companies.

It is worth noting that, although the NIS Directive and the GDPR have some elements in common, in terms of obligations and responsibilities, the NIS Directive's scope is to protect the “network and information system”, which consists of an e-communication network and the relevant devices and digital data processed by the said networks or devices; by contrast, the GDPR protects “personal data”, namely, any information related to an identified or identifiable natural person.

Therefore, the aim of this chapter is twofold. First, we explore the economic costs and benefits faced by private firms in the context of their investments in cybersecurity and personal data security activities. Second, we analyze how the recent legislative innovations on network security, information systems (EU Directive 2016/1148, NIS Directive), and the protection of personal data (EU Regulation 2016/679, GDPR) may affect firms' organization of activities aimed at reducing the risk of security breaches. In doing this, we adopt a case-study approach focused on an Italian multinational firm (i.e., Leonardo, S.p.A.) which not only undertakes activities in several sectors (defense, banking and finance, telecommunications, etc.) but also produces solutions and services that ensure the security of data, networks, and systems.

In particular, the research questions we seek to address are the following: (i) to what extent is information security perceived as a business objective by firms' managers?; (ii) moreover, if firms' investment in cybersecurity and personal data security does not meet societal needs, what is the role of the policy-maker in implementing regulatory or legislative actions?; and, finally, (iii) to what extent is such legislation effective in implementing an efficient level of cybersecurity protection?

The remainder of the chapter is organized as follows: Section “[Cyber Events and Cybersecurity: A Descriptive Analysis](#)” deals with some descriptive data on cyber events; Section “[Cybersecurity Investments: An Economic Analysis](#)” examines how private firms negotiate the decision to invest in information security; Sections “[The Italian Legal Framework and the Principle of Accountability Using a Possible Connected Cyber and Personal Data Risk Model](#)” examines the Italian legal framework and the principle of accountability, potentially using a connected cyber and personal data risk model; Section “[Research Methodology](#)” presents our case study; Section “[Findings](#)” provides the results and finally, Section “[Discussion and Conclusions](#)” furnishes some concluding remarks.

CYBER EVENTS AND CYBERSECURITY: A DESCRIPTIVE ANALYSIS

This section provides some stylized facts relating to the evolution of cyber activities, from 2014 to 2018, and from which emerges the need for intense activity aimed at cybersecurity (i.e., techniques to protect computers, networks, programs, and data from unauthorized access or attacks that are aimed for exploitation).

Before carrying out our descriptive analysis, two remarks are necessary. First, this research focuses exclusively on the following three types of criminal activities connected to the cyber sphere: (i) cybercrime—all those activities (such as fraud, theft, forgery, distribution of child pornography, incitement to racial hatred) committed, using a computer especially, to illegally access, transmit, or manipulate data; (ii) Hacktivism—all activities aimed to compromise or disrupt the operation of information systems (computers or networks); and (iii) cyber espionage—those activities aimed to obtain personal, sensitive, or proprietary information from individuals without their knowledge or consent.²

Second, this preliminary analysis is based on a sample of 5614 cyberattacks of particular gravity, or that significantly impacted the victims, in terms of economic losses, damage to reputation, the dissemination of sensitive data (personal or otherwise), or that, in any case, prefigure particularly worrying scenarios occurring in the world (therefore including Italy).³

To this end, we use information collected by CLUSIT—Associazione Italiana per la Sicurezza Informatica—considered the most substantial and authoritative Italian association in the field of computer security. Figure 7.1 shows the evolution of three categories of cyberattacks considered over time.

From the figure, it emerges that cybercrime is the most important cause of cyberattacks at the global level. Over the five-year period, its share shows a significant increase of around 20 percentage points (p.p.) By contrast, in the same period, Hacktivism activities have significantly decreased. In 2018, only 4% of cyber events aimed to compromise or disrupt information systems, relative to 27% in 2014. As for the espionage activities, relative to 2014, their percentage rose from 13% to 17%. When we look at the victims of cyber events (Table 7.1), we notice that, in 2018, around 50% of attacks are targeting three categories of victims: multiple targets (19.6%),⁴ government sectors (16.2%), and health/chemical/medical (10.3%).

²Also included are cyberwarfare and cyber sabotage (i.e., computer- or network-based conflict involving politically motivated attacks by a nation-state on another nation-state).

³The CLUSIT sample consisted of 8417 known attacks of particular gravity over the period 2011–2018. They include, therefore, all attacks that significantly impacted the victims, in terms of economic losses, damage to reputation, and diffusion of personal data. We exclude from the analysis the attacks happened over the years 2011–2013 (2803 attacks). The reason is that, since 2014, more restrictive criteria have been used to define a serious attack; therefore, some categories of attacks, which may still have been considered “serious” in 2011–2013, have now become ordinary administration (e.g., the “defacements” of websites).

⁴The significant decrease in the “Others” category is due mainly to the fact that, in 2016, the new “multiple targets” category was introduced to account for the growing number of serious

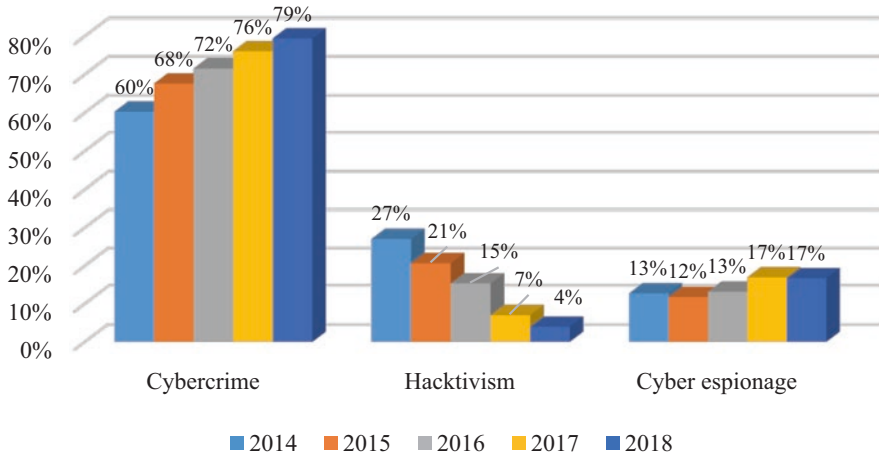


Fig. 7.1 Evolution of cybersecurity events from 2014 to 2018. (Source: Authors' creation based on Clusit (2019) data)

Table 7.1 Victims of cybersecurity events

	2014 (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)
Multiple Targets	0	0	4.7	19.7	19.6
Gov. – Mil. – LE – Intel	24.4	22.0	21.0	15.9	16.2
Health/Chemical/Medical	4.2	3.8	7.0	7.1	10.3
Banking/Finance	5.7	6.3	10.0	10.4	10.1
Online Services/Cloud	11.8	18.5	17.0	8.4	8.3
Research–Education	6.2	8.1	5.2	6.3	7.1
Software/Hardware Vendor	5.0	5.4	5.3	6.0	7.0
Entertainment/News	8.8	13.6	12.5	10.2	6.6
Critical Infrastructures	1.5	3.3	3.6	3.5	3.7
Others	21.4	6.1	4.3	5.1	3.1
Hospitality	0.0	3.9	3.1	3.0	2.9
GDO/Retail	2.3	1.7	2.8	2.1	2.5
Organization-ONG/ Religion	6.2	5.0	1.8	0.7	1.4
Telco./Automotive	2.4	2.3	1.7	1.5	1.3

Source: Authors' creation based on Clusit (2019) data

Note: Gov. – Mil. – LE – Intel' stands for 'Government – Military – Law Enforcement Intelligence Attacks'; 'GDO' for 'Large – scale retail trade'; 'ONG' for Nongovernmental organization, and TELCO for Telecommunication Companies.

attacks carried out, in parallel, by the same group of attackers against numerous organizations belonging to different categories. As a result, some of the attacks against organizations belonging to this category were merged into a single “multiple targets” category (CLUSIT 2019).

It is worth highlighting two aspects that, interestingly, since 2017, indicate a transformation in the actions of cyber aggressors. The first is an increasingly greater propensity to attack victims belonging to different categories (therefore multiple targets), as a demonstration of the fact that the attackers have become increasingly aggressive and carry out operations on an ever larger scale, with an “industrial” logic divorced from territorial constraints and target type of targets, aiming only to maximize the economic result (CLUSIT 2019). Second, we note a strong reduction of attacks aimed toward government sectors, traditionally considered the main target of cyber attackers (over the five-year period, the category of Gov.–Mil.–LEAs–Intel. showed a reduction of about 8 p.p.). Finally, we can observe an impressive increase in the number of attacks related to the health/chemical/medical sector (+6.1 p.p.), mainly a reflection of the increased incidence of identity theft (i.e., events in which cybercriminals steal personal data like passwords, bank account data often related to credit and debit cards, social security, and other sensitive information.)⁵

Given this exponential growth of cyberattacks, characterized by ever novel threats, companies are, at once, increasing their investments in risk prevention and struggling to adapt to the rapid evolution of these methods of aggression. For instance, the Italian market for information security and privacy solutions in 2018 reached a value of 1.19 billion euros (with a growth rate of 9% in 2018 and 12% in 2017).

Generally leading the market are large companies, with 75% of total spending focused on adapting to GDPR and more traditional security components (such as network security, business continuity and disaster recovery, endpoint security). Among the large companies, 63% increased their budgets for cybersecurity and 52% designed a multi-year investment plan, even if almost one in five still lacks the foresight to put forth dedicated investments or does nothing more than allocate resources only in case of need.

In this context, we ask: Do firms have the right incentives to invest in cybersecurity? Therefore, in the next section, we analyze, from an economic perspective, the extent to which the free interplay of market forces can provide firms with the right incentives to advance a level of investment in cybersecurity that may be regarded as optimal for private agents and society.

CYBERSECURITY INVESTMENTS: AN ECONOMIC ANALYSIS

According to the investment theory, a firm determines its optimal level of investment by comparing costs and benefits. In other words, firms invest up to the point where the marginal costs of an additional “unit” of information security activity are equivalent to the expected marginal benefits associated with that activity. However, some authors (Gordon and Smith 2007; Bauer and van

⁵According to the U.S. Bureau of Justice Statistics (BJS), more than 1.1 million Americans are victimized by identity theft (ENISA 2019).

Eeten 2009) have argued that, in the case of cybersecurity investments, firms rarely undertake the well-established cost-benefit analysis before deciding whether to invest and the amount of investment.

Why does this happen? Scholars of the economics of cybercrime (Gordon and Loeb 2006; Moore and Anderson 2011) have identified two main motives that may justify instances in which the optimal level of investment from a private perspective may be less than the optimal level of investment from a social perspective.

The first motive concerns the fact that cybersecurity investments are associated with some costs and benefits that, often, cannot be easily observed (Romanosky 2016). Among the economic costs necessary to prevent adverse cyber events, in fact, not only there are costs that can be easily identified and estimated in monetary terms—(i) personnel costs associated with setting up new in-house teams, tiger teams, and so on; (ii) purchase costs for hardware, software, and consultancy services, and (iii) administrative costs—but also there are items that have a value that is virtually impossible to capture easily, including, for instance: (i) the time spent by IT staff on security, as opposed to other IT activities, and (ii) the time spent by the firm's staff on reading and following security policies.

The evaluation of anticipated economic benefits associated with cybersecurity investments is even more complex. In fact, Gordon and Smith (2007) argued that these consist, essentially, of “cost savings” items, derived from several categories of factors, such as: (i) decreased security incidents and cybercrime losses; (ii) reduced costs of liability for breaches; (iii) increased trust of customers; (iv) increased company reputation; (v) protection from unfair competition due to industrial espionage; or (vi) increased compliance. Given that all of these benefits represent a reduction in potential future costs, linked to the prevention of losses due to cybersecurity breaches, their estimation is difficult, costly, and, in many cases, impossible. However, today's availability of statistics and data on cyber events is quite limited and often unreliable; as such, this represents a primary factor that limits the use of traditional economic methods for evaluating the efficiency by which cybersecurity investments are made. Moreover, another factor that may lead to situations of under- or overinvestment in cybersecurity emerges from the possibility that firms under-report incidents, out of a desire to avoid undermining trust in their brand and because they aim to avoid damage to their reputation and stock price (Moore et al. 2009).

A second factor that discourages firms' adoption of cybersecurity solutions relates to characterization of the IT industry by the presence of many different types of externalities that engender a mismatch between the perceived individual and social benefits and the costs of information security. Several scholars (Gordon et al. 2015; Moore and Anderson 2011; Anderson 2001) have argued that, due to the inherent interconnectivity associated with computer networks,

when a firm invests in cybersecurity, it indirectly increases the level of cybersecurity for other firms also (positive externalities). In such a case, as the marginal social (indirect) benefits are higher than the marginal private (direct) benefits, the single market player has the incentive to under-invest in cybersecurity activities, relative to that quantity that maximizes social welfare. Similarly, the lack of investment in cybersecurity by one market player may determine costs that not only do harm to the firm itself, but also negatively affect the security of other actors (negative externalities). For example, a cyberattack against a service provider (i.e., health insurance company, e-mail provider) may impose heavy costs that result in, for example, the theft of customers' personal data that are not fully internalized by the victim.

Moreover, the IT market is characterized by the presence of network externalities, that is, the value (benefit) of a protective measure is an increasing function of the number of other users adopting it (Moore and Anderson 2011). For example, when a company buys encryption software, it can protect communications only within its boundaries, but not with respect to other external agents (customers or suppliers). In such a case, as the marginal costs of this investment may be higher than the marginal benefits, at least until a certain threshold number of other players adopt the protection, the early-adopter firm is likely to under-invest in cybersecurity. Finally, it may also be the case that an investment by one firm generates positive externalities for others, inviting them to free-ride and discouraging their own investment.

The two factors articulated above represent cases in which market forces fail to recognize an efficient allocation of resources. Both situations suggest that a government intervention is required to provide the right incentives or regulations to compel firms to invest in cybersecurity activities, at a level that accounts not only for private losses incurred by firms from breaches of cybersecurity, but also the costs of externalities resulting from such breaches.

By postponing a deeper analysis of the Italian legislation on the enhancement of cybersecurity until the next section, we can now present some general measures that may be undertaken to amplify a firm's incentive to invest in cybersecurity.

First, governments may favor helping with the collection and dissemination of reliable and cost-effective information related to cybersecurity. In this respect, one possible solution may be to enhance the coordination of cybersecurity activities, at national and international levels, through implementation of the information sharing related to computer security.⁶ However, if, on the one hand, information sharing has the potential to lower the cost of cybersecurity for each firm involved in such a program, then, on the other hand, free-rider behavior may arise; in other words, one member of the group may be tempted to under-invest in the program, since it hopes to

⁶The ISACs (Information Sharing Analysis Centers) and the US-CERT (United States Computer Emergency Response Team) are two good examples of efforts to coordinate cybersecurity activities.

learn a lot from the other members (Gordon et al. 2003). Thus, unless economic incentives are devised to offset the free-rider problem, much of the potential benefit from information sharing among organizations will not be realized.⁷

Other possible actions that the government may take include designing mechanisms and regulations aimed to provide incentives for private firms to internalize cost externalities associated with lax cybersecurity behaviors. Some examples may include regulations that enhance disclosures related to cyber risks and actual incidents, as well as penalizing firms for data breaches.

THE ITALIAN LEGAL FRAMEWORK AND THE PRINCIPLE OF ACCOUNTABILITY USING A POSSIBLE CONNECTED CYBER AND PERSONAL DATA RISK MODEL

Starting from the idea that companies are facing new risks caused by innovation and technological progress, among others, and after having analyzed whether and how the market provides them with adequate incentives to develop a suitable security system, we need to see how these new instruments place themselves vis-à-vis the market and how they meet the objective to ensure cyber and personal data protection.

Although the NIS Directive and the GDPR are different, they have some elements in common in terms of obligations and responsibilities; their comparison is important to see whether it is possible to develop a flexible and connected risk organization and management model.

In terms of differences, the NIS Directive's scope is to protect the "network and information system".⁸

The GDPR, rather, protects "personal data".⁹

Thus, the NIS definitions are broader because they refer not only to electronic systems and devices but also to any other digital data, whether personal or not personal. The GDPR, instead, only concerns personal data (Kuan Hon 2018).

In order to understand whether we can have a common risk organization and management system, even if only in part, we need to identify the risks that can actually occur within the framework of cybersecurity or personal data protection.

Within the ambit of cybersecurity, the NIS Directive requires the security measures to allow the entities concerned to resist any incident, that is, any action that compromises the availability, authenticity, integrity, or confidentiality of stored or transmitted or processed data and the related services offered

⁷In the USA, this problem has been tackled by information-sharing associations, security-breach disclosure laws, and vulnerability markets.

⁸That is an e-communication network; the relevant devices and the digital data processed by the said networks or devices.

⁹Namely any information that regards an identified or identifiable natural person.

by, or accessible via, those network and information systems and, consequently, has an actual adverse effect on the security of network and information systems.

Within the ambit of personal data, the GDPR, instead, requires data processing to be performed in such a way as to prevent any breaches thereof, that is, a breach of security leading to the accidental or unlawful destruction, loss, alteration, and unauthorized disclosure of, or access to, personal data transmitted, stored, or otherwise processed. Hence there are different risks.¹⁰

It is also true, however, that a cyber breach may also lead to a data breach, even of personal data.

Both instruments in terms of security obligations provide for risks to be assessed and appropriate and proportionate security measures to be taken to assess and manage the risks.

The need to take such measures is common to the protection and security of both the networks and information systems and the personal data, although it is important to stress that an assessment of a cyber risk assumes benchmarks that only in part coincide with those of the GDPR (Zuanelli 2018).

We are going to refer to this area of partial community to see whether it is possible to develop a flexible and connected risk organization, monitoring, and management system that may be more effective for the company, lead to a more efficient flow of information, and be more cost-effective.

Thus, it is the aspects concerning the security obligations and responsibilities envisaged by the legal instruments that have similarities shared by the GDPR and the NIS and that suggest we take into further consideration the symmetry between cybersecurity and data protection as developed by the European law makers.

Within this legal framework we have the underlying principle of accountability. This word has a broad meaning that embodies both the concept of liability and that of competence, compliance, and transparency when implementing effective measures and modalities for demonstrating and verifying such effectiveness.

We need to take due account of the fact that in the Italian legal system the new framework of safeguards has points in common with the rules on the prevention of risks that are the result of criminal activities set out by Legislative Decree 231/2001 (regulating the responsibilities of entities for administrative wrongdoings that are the result of criminal activities), so much so as to justify giving due consideration to the possibility for companies that should abide by the new security obligations and consequently responsibilities, to develop a more efficient risk prevention, control, and management system. This new framework should make the stakeholders performing the different functions take action in concert, also through a more efficient flow of information.

¹⁰The risk of an incident that compromises the security of networks and systems and the continuation of services in the first case: the risk of an accidental or unlawful breach affecting personal data and natural persons in the second case.

Furthermore, in Italy, a first cybersecurity step was the Law Decree 105/2019 that established the cybernetic national security perimeter in order to ensure a high level of security of networks, information systems, and IT services.¹¹ In the near future, decrees will be adopted to outline the content.

Naturally, although we are comparing the legal instruments, in the GDPR and the NIS the predicate offenses required instead to apply Legislative Decree 231/2001, are absent.

In the light of the above, we would like to follow the process below:

1. Identify the reference context, defining the stakeholders subjected to the obligations.
2. Compare the legal instruments from the viewpoint of the principle of accountability, identifying differences and similarities.
3. Assess whether it is possible to implement a flexible and connected risk prevention and management model.
4. Lay down some conclusive thoughts on how the legal instruments affect the organization of enterprises in terms of reducing the risk of security breaches and also in terms of relations between the supervisory bodies and efficient information flows.

Current System and Its Reference Context

In terms of our [current system and its reference context](#), the NIS Directive regulates the digital framework of critical infrastructures (essential operators) linked to the providers of digital solutions, laying down the relevant requirements and sanctions.

Hence, the individuals that are subjected to these requirements are the operators of essential services.¹²

Rather, the GDPR addresses a large number of individuals, which naturally may coincide with the individuals covered by the NIS, and regulates the automated or non-automated processing of personal data retained by different individuals.¹³

Since many cyber incidents compromise personal data, the NIS provides that the competent authorities should cooperate closely with the authorities

¹¹ In particular security of public administrations, bodies, and operators. Public and private having an office in the national territory, on which the exercise of an essential function depends, that is, the provision of an essential service for the maintenance of civil, social, or economic activities fundamental for the interests of the State and whose malfunction, interruption, even partial, or improper use, may result in prejudice to national security.

¹² Private or public entities with a strategic role in the sectors of energy, transportation, banking, infrastructures, financial markets, health, water, and digital infrastructure, and the providers of digital services, specifically online marketplace, online search engine, and cloud computing—consequently, well-identified individuals.

¹³ Like natural or legal persons, public authorities, or other bodies, except for States, natural persons performing activities that are exclusively personal or home-based, or also individuals that use them for specific objectives (e.g., prevention, investigations, or more).

that supervise data protection and, should incidents occur that breach personal data, they should exchange information.

The above legal framework allows us to confirm the link between *cybersecurity* and *personal data protection*.

Comparing the Legal Instruments: Differences and Elements in Common—The Principle of Accountability

In this part of the chapter, we are going to compare the requirements pertaining to security connected to the responsibilities of administrative bodies and corporate control, the relationship between the bodies and those in charge of correctly implementing the rules, and the ensuing liability resulting from a breach of law.

The most important innovation in both legal frameworks is the approach to risk management under the principle of *accountability*.

We should start by identifying the stakeholders in charge of laying down the security measures, and monitoring and demonstrating their effectiveness.

In the GDPR there are three stakeholders: the *controller* (Article 4, GDPR), who provides for the processing of data without receiving instructions from others and determines the purposes and means of the processing itself. Usually, and in case of enterprises, especially companies, the controller of the processing is the company itself through its management bodies that may appoint a specifically identified stakeholder to take on the position.

That is an important and functional element because it will always be the management itself that would be in charge of laying down the security measures to prevent cyberattacks (as is the case in relation to prevention of offenses within the framework of Legislative Decree 231/2001).

The second stakeholder is the *processor* who processes personal data on behalf of the controller (Article 4, GDPR), guaranteeing the implementation of measures and ensuring the protection of the rights of the data subject (Article 28, GDPR).

Lastly, the *controller* and the *processor* may designate, under certain conditions, mandatorily or also voluntarily, a *data protection officer* (Article 37, GDPR), a stakeholder designated to carry out tasks to support, monitor, advise, train, and inform with regard to the implementation of the GDPR and the processing of data, cooperating with the supervisory authority (Articles 38 and 39, GDPR [Avitabile 2017; Riccio 2016; Pizzetti 2016]).

Without prejudice to the responsibility of carrying out the tasks correctly, the highest burden in terms of accountability and liability is on the *controller* who shall ensure that the personal data is processed lawfully, correctly, and transparently; is collected for specific, explicit, and lawful purposes and later processed in such a way as not to be incompatible with such purposes; is suitable, pertinent, and limited to what is needed to abide by the purposes; exact and updated; retained in such a form as to allow the identification of the data subjects for the time needed to accomplish the purposes and not exceeding the

said time—retention for a longer period of time is allowed only with a view to dismiss the data in the public interest, to carry out research for the purposes of science, history, and statistics—and is processed in such a manner as to ensure an adequate personal data security.

Furthermore, the *controller* is responsible for compliance with these principles and should also be able to demonstrate adherence to these principles (accountability).

Hence, from the above requirement derives the obligation to implement technical and organizational measures and to be able to demonstrate that the processing is being performed in accordance with the Regulation itself (Articles 24 and 32 GDPR).

The system of responsibilities is important and sets out that the controller and the processor are jointly responsible for the processing. They are exempted from responsibility when they can demonstrate that they are not responsible for the harmful event. That seems to suggest that, under the principle of *accountability*, the controller and the processor have to demonstrate that they have correctly fulfilled the obligations set forth by the Regulation and hence that they have really and effectively implemented all those technical and organizational measures suitable to ensure the correct protection of personal data and the prevention of the risk of breaches.

The NIS instead, unlike what is envisaged by the GDPR, is a directive and does not refer explicitly to *accountability*, but in any case ascribes to the concept of responsibility such a broad meaning that it should be linked to risk assessment and management in terms of competence, transparency, and compliance and thus, basically, of accountability. Nonetheless, it does not identify specific stakeholders to implement security measures. It rather sets out a number of requirements that the stakeholder that implements the provisions shall have to satisfy, like operators of essential services and providers of digital services. And it is precisely by looking at the security measures introduced by the NIS that we can understand this new accountability plan.

The operators of essential services should implement technical and organizational measures to prevent and minimize the impact of incidents (Articles 14 and 12 of Legislative Decree 65/2018).¹⁴ The providers of digital services too should implement technical and organizational measures that are suitable and proportionate to risk management (Article 16).¹⁵

The Commission Implementing Regulation (EU) 2018/151 is also important on this specific point, and only concerns digital service providers. It requires these providers to make the adequate documentation available to enable the competent authority to verify compliance (Article 2).

¹⁴The competent authorities should have the powers and means they need to assess adherence and that also includes an assessment of the whole risk management and analysis process (Art. 15).

¹⁵Here again the authorities, in line with what is envisaged for the operators of essential services, nonetheless with some dissimilarities, may take measures when they have evidence that a digital service provider does not comply with its obligations.

Hence, it seems that although the NIS does not explicitly refer to accountability, its reference to adequacy, proportionality, and *compliance* leads us to connect risk assessment and management not only to the implementation of the legal instrument, but also to the demonstration of the implementation of the legal instrument—concepts that characterize the meaning of *accountability*.

A Possible Connected and Flexible Risk Prevention and Management Model

We have seen that the principle of accountability is implemented through a number of technical and organizational measures and it is useful to consider the model that is already envisaged by our legal system to be able to define it concretely.

Following the introduction of Legislative Decree 231/2001, entities with a legal personality, companies, and associations, including those without a legal personality—with a view to prevent and manage the criminal activities committed to their advantage or in their interest by stakeholders that have high-ranking positions or employees, and to be exempted from administrative liability—are required to implement an organizational model that identifies areas of risk and reduces the likelihood of criminal activities being committed, and to set up an internal supervisory body.

Specifically, Article 24*bis* of Legislative Decree 231/2001 covers e-crimes and the unlawful processing of data and refers to offenses envisaged by the criminal code.

One reference set out in this Article is to the offense of unauthorized access to a computer-related system (Article 615*ter* criminal code [Finocchiaro 2017]), which is a case of *data and security breach* and is connected to the provisions set out in the GDPR (Maglio and Ghini 2017a, b; Cupelli-Fico 2019) and probably now also to the provisions set out in the NIS.

Consequently, it is the implementation of adequate measures that is common to all legal instruments considered, amid the deep differences pointed out earlier. The identification of a common cross-cutting line defining a broader risk prevention policy would allow a partly unitary assessment by the company.

In general, the steps to a correct and efficient system are: first, to preliminarily identify potential risks, detecting the areas where harmful events could take place; then, to start mapping the risk processes and to blueprint a monitoring system made up of procedures aimed at regulating the activities, the training, and the implementation of decisions and the traceability of each important step (Confindustria's guidelines—General Confederation of Italian manufacturing and service companies).

Accordingly, the management has to first take a picture of the existing situation and then take action to tackle critical circumstances.

In order to be exempted from liability an entity should have assigned the task of supervising over the implementation and compliance of the model to a body endowed with autonomous powers in terms of initiatives and

supervision. Just as important is the setting up of an efficient and operational information flow system.

With specific reference to the offenses set out in Article 24*bis*, it is a complex task to identify the elements needed to develop a risk management and organization model because first the areas of risk, namely the sectors—practically all—where computer-related systems are used need to be identified. Then, the sectors where an offense may be committed need to be set out. Lastly, the principles and rules of conduct as well as the procedures for data access and use to counter the specifically identified risks need to be identified.

In this perspective, we can say that the above model may be of use to handle the risk of a criminal activity perpetrated by outsiders as well as an accidental incident, thus outside the scope of Legislative Decree 231/2001. Basically, the activities and risk mapping performed to develop an organizational model for the purposes of Article 24*bis* could come handy to determine, at least in part, the personal data protection model or the cyber model.

Similarly, also within the GDPR and the Italian personal data protection code we see an exemption of liability when adequate security measures in compliance with the principle of accountability are set out.

The new rules provide for a level of security and protection starting from the blueprinting of the activity and for the whole duration of the data, from collection to erasure, and for the implementation of mechanisms that allow only the data which are necessary for a specific purpose to be used (*Privacy by design and privacy by default*, Article 25, GDPR). Then, in case of a high risk, an assessment of the impact is required (Article 35, GDPR [Linee guida Gruppo articolo 29—WP248 2017]).

Hence, the data-processing controller has to perform a wide range of activities with a view to *compliance* and to demonstrate *compliance*, that is to say that a controller has to provide for a risk organization and prevention system.

Activities begin with an assessment of the risks, their likelihood of occurrence and seriousness, and identifying the sectors where data is processed and the activities that give rise to the risks. This implies mapping all the data processing, identifying the data sources, their nature, the modality of data retention, and the purposes of the processing; then activities continue with the identification of the data processors and their specific responsibilities within each sector; the implementation of the required procedures to comply with the data-processing instructions of the controller and the processor; and the setting out of specific protocols to counter the risks.

Building a personal data-protection system is similar to building the organizational model envisaged by Legislative Decree 231/2001 and that allows us to make some considerations on a possible extended approach, when the same stakeholder is required to build other risk management systems referred to the GDPR or the NIS Directive.

An important factor is for the identification of the risk area, just like the content of the risk organization and management model and the technical and organizational measures required under the different legal instruments, to be

always performed by the same stakeholder with management and supervision responsibilities.

Within this perspective and within a supervisory system that encompasses the provisions of Legislative Decree 231/2001, and which interacts with the personal data protection and cyber protection provisions, it is important that the actions of the supervisory body and those of the data protection officer, or the computer-related security data processor, although aimed at different safeguards, be at least in part coordinated and, where possible, organized together.

We have in mind a monitoring system of the collaboration structures; an aggregated supervisory process that will link the stakeholders in charge of each sector through reports, information exchange, and meetings.

In this case, models, where possible, should be interconnected and flexible. Depending on the size of the enterprise, the supervisory stakeholders involved in the different functions should have a systemic approach not limited only to one individual function—a comprehensive stance capable of coordinating and connecting (Internet audit, risk and control committee, when there is one) the different functions falling within the cognizance of the management, as, for example, the data protection officer and those who are in charge of assessing and improving the risk control and management processes and the efficiency of corporate organization.

Probably, it is a question of fostering a process that is already in place in large companies, although the segregation of duties does not always make its implementation easy.

It is also a question of promoting corporate change in smaller companies given the need also for these companies to comply with several legal instruments that require the implementation of risk management processes.¹⁶ Consequently, it is a question of enhancing and strengthening an instrument that not only ensures *compliance* with specific rules, but also, within the framework of a long-sighted and wide-ranging perspective, the monitoring, change, and improvement of the whole of the risk management processes, also in terms of cost-effectiveness.

Lastly, in order to make an overall assessment, we have to analyze the NIS Directive. This legal instrument sets out a large number of measures to address cyber-risk management, including the implementation of a monitoring model capable of ensuring accountability.

We need to make two preliminary remarks:

- In the current situation, a cyber risk is no longer limited to the area of information technology but has become a general risk for enterprises and as such has to be assessed and managed.

¹⁶ Ranging from health, the environment, and security in the workplace to personal data protection, of course the GDPR, to computer-related security and Legislative Decree 231/2001.

- In terms of cybersecurity, the activity is very broad and complex and, in this framework, the use of a cyber-risk management model is only one of the multiple instruments aimed at implementing security.¹⁷

We have said that unlike the provisions of the GDPR, although the NIS Directive considers the implementation of adequate security measures necessary, it does not identify them nor indicate specific stakeholders to implement them. It instead provides that the obligation to implement them is on the operator of essential services or the provider of digital services.

Then it is plausible for an entity, after having already implemented an organizational model for the purposes of Legislative Decree 231/2001 and a partially overlapping organizational personal data protection model, to supplement the same model to fulfill the obligations in terms of computer-related security.

Although here the system of responsibilities has to be totally built and interpreted.

Notwithstanding the fact that the principle of accountability is present, it is nonetheless envisaged in more general terms. An analysis of the Directive—after having taken into consideration the obligations of the operators of essential services and providers of digital services, and the role of the competent authorities to verify compliance—has shown that here again in order to fulfill the obligations set out by the NIS Directive and to be exempted from liability, a risk monitoring, management, and organization model needs to be adopted.

Hence in order to prevent the risk of computer-related criminal offenses envisaged by Article 24*bis* of Legislative Decree 231/2001, which is the part in common, the starting point is the recognition of the risk sectors and the activities that for that purpose are already being performed.

The said mapping and the identification of risk areas—even if performed in relation to the prevention of specifically identified offenses—certainly lead to an overall analysis of the system of risks connected to the strategic objectives of an enterprise. An analysis of the possible internal attacks is the starting point to prevent personal data breaches resulting from criminal activities or incidents as envisaged by the GDPR, and to assess the risk of compromising the networks and information systems caused by external attacks or incidents, as required by the NIS Directive.

¹⁷This aspect is pointed out in the 2015 Italian cybersecurity report, which sets forth a national framework for cybersecurity, as well as underlining the importance of a dynamic and synergic action between the different instruments. The report also refers to an organizational model comprising risk assessment and management processes to identify risk areas, threats, likelihood of occurrence, possible impact, and measures to mitigate these factors. Consequently, adequate security and monitoring procedures need to be implemented and roles and responsibilities defined, in compliance also with the principle of segregation, to ensure correct risk management and an efficient system to monitor, prevent, and counter the threats against cybersecurity. Functions and responsibilities, in particular in terms of the monitoring processes, have to be well defined also with a view to ensuring accountability.

Hence, part of the analysis may be used in three different milieus, Legislative Decree 231/2001, personal data, and cyber, and, consequently, information should be shared also with the stakeholder in charge of computer-related security. By so doing, *compliance* with the legal instruments and sharing of information would be connected, and the said connection would facilitate prevention of all criminal activities, as well as wrongdoings and accidental events. The foregoing would lead to enhancing the implementation of these legal instruments, reaching the objective of reducing security breaches and making the system more efficient.

RESEARCH METHODOLOGY

The aim of this chapter is to investigate to what extent cybersecurity investment is considered a strategic target at firm level and in what ways the recent legislative innovations on network security, information systems, and the protection of personal data may affect firms' organization of activities that aim to reduce the risk of security breaches.

In particular, it intends to answer the following three research questions:

- Rq1. Why should a company invest in cybersecurity and personal data protection?
- Rq2. How does a firm implement a strategy of cybersecurity and personal data protection?
- Rq3. To what extent does the current regulatory framework incentivize investments in cybersecurity?

To address these research questions, we have conducted a case study on an Italian multinational company, Leonardo S.p.A.

It is worth noting that the use of a case study can be considered a particularly appropriate strategy for:

- i. research based on single firm-level findings that can be generalized across a larger set of units (Gerring 2004); and
- ii. investigating novel and complex issues that lack data and are still understudied (Eisenhardt 1989; Weick 2007).

With regard to case selection, the choice of Leonardo S.p.A. is due to the following two criteria:

- 1. it ranks among the leading world providers of cybersecurity solutions; and
- 2. in the last few years, Leonardo S.p.A. has outstandingly increased its investments in cybersecurity and personal data protection.

Founded in 1948 under the name Finmeccanica, in 2017 the company changed its business name to Leonardo S.p.A, inspired by the Italian creative

genius Leonardo da Vinci. Today, Leonardo S.p.A. is a multinational company operating in more than nine countries (located in Europe, North America, Oceania, Middle West, Asia, Central and South America, Russia, China, Africa) with a turnover of about 12.2 billion euros and about 46,000 employees. Cybersecurity and cyberspace are strategic sectors for this company, which has been producing and developing solutions for 30 years, through technologies and services that ensure the security of data, networks, and systems.

One of the strong points of Leonardo S.p.A. stems from the fact that the company undertakes activities in various sectors such as defense, banking and finance, telecommunications, emergency services, production and distribution of energy and gas, health care, and transport. This high degree of sectoral diversification has allowed the company to develop specific skills in understanding both the business and security requirements needed to protect customers' key infrastructures. Hence, over the last few years, Leonardo S.p.A. has increased its investments in cybersecurity.

Thanks to its long-standing experience, Leonardo S.p.A. is the cybersecurity partner of several national and international institutions and, since 2012, it has been cooperating with the NATO Communications and Information Agency (NCI) to protect NATO's Communications and Information System (CIS) infrastructure from cyberattacks.

In order to develop the case study, we have followed a specific analytical protocol (Mayring 2014; Yin 2013). First, we collected and analyzed archival materials from multiple sources, including the company's websites and internal documents. In this way, we conducted a preliminary identification of the phenomenon (Pan and Tan 2011) before onsite data collection. Then, we collected onsite data mainly through personal (face-to-face) interviews at the headquarters of Leonardo S.p.A. in Rome. The choice of subjects for the interviews and the formulation of interview questions were supported by the analysis of various documents and archives. Interviews were structured on the basis of research questions, literature review, and our own experiences.

The interviews, which involved individuals from the cyber head office and cybersecurity division, aimed to encourage participants to describe their attitude toward cybersecurity and personal data protection, as well as the company's propensity for making investments in cybersecurity.

Examples of questions asked during the interviews include:

- How important is the issue of cybersecurity and personal data protection for Leonardo S.p.A.?
- What are Leonardo S.p.A.'s main points of strength regarding the issue of cybersecurity and personal data protection, and which areas need improvement?
- With regard to this aspect, which investments have been made recently?
- Do employees receive training on cybersecurity and personal data protection?
- What are the main cost items?

- What would be the direct cost of a cybersecurity attack?
- What are the potential benefits of cybersecurity investments?
- How would you assess the cost-benefit trade-off of cybersecurity investments?
- How do you report on cybersecurity and data protection?
- Is the current regulatory framework adequate for the purpose of cybersecurity?

FINDINGS

In this section we present the main results of our case study with reference to the relevant elements of the decision to invest in cybersecurity: the strategic target, costs and benefits, and regulatory incentives.

(a) Cybersecurity and personal data as a strategic target

Cybersecurity is one of the company's main strategic objectives: today, Leonardo S.p.A. serves about 70,000 users and more than 5000 networks delivering cybersecurity services in 130 different countries. Being aware of the importance of data protection is an asset that makes the company competitive in the marketplace and is prevalent at every organizational level. The company's approach is based on a strategy which achieves the security objectives through: (i) continuously improving cyber defense (Detection and Response) and cyber resilience capabilities in order to discover, respond to, and recover from internal and external threats by leveraging skilled people, structured processes, and technologies; (ii) developing a risk management culture involving every stakeholders (either internal and external); and (iii) promoting collaboration and partnerships with institutional, public, and private entities with similar cybersecurity interests and objectives.

One example is the Cyber Trainer project which Leonardo S.p.A. is developing thanks to internal and regional funds (Fondo europeo di sviluppo regionale (FERS) 2014–2020), with the endorsement of European Defence Agency (EDA) and the Ministry of Defense. The project's objective is to develop the capacity for creating critical infrastructures in order to train future cybersecurity operators, but those very same structures could be applied to the sector of cyber defense. The advantage is that cyber training infrastructures lend themselves to use in both civil and military contexts (Italian Institute For International Political Studies (ISPI), Report 2018).

In 2014, Leonardo S.p.A. inaugurated the Cyber Security Centre in Chieti (Italy) which aims to design and deliver services and solutions that ensure cyber safety for both Italian and foreign organizations. The Security Operation Centre (SOC) identifies and analyzes malicious cyber activities, by correlating them with other events and evaluating the associated risk. Prevention and defense activities against cyber threats are based on alarms sounded by the SOC in the presence of cyberattacks or on identification of new cyber weakness in

information infrastructures. The SOC can also restore the integrity and availability of information and systems that have been attacked.

In 2016, Leonardo S.p.A. started its Computer Emergency Readiness Team (CERT) that has the mission to coordinate the incident management and threat intelligence services across the constituency. The Leonardo CERT has got the FIRST¹⁸ and Trusted Introducer accreditations and exchange threat information with many other worldwide CERTs.

(b) The cost–benefit trade-off of cybersecurity and personal data investments

The issue of the cost-benefit trade-off is well established in capital investment literature, including that related to investments in cybersecurity (Gordon and Loeb 2006). In general, cyberattacks cost on average, about 11.7 million dollars at a global level. In USA, it has reached 21.22 million, nearly twice the global average, while in Italy the estimated cost of a cyberattack is around 6.73 million dollars (Accenture 2018). The chief executive officer at Leonardo S.p.A. declared that:

By the year 2021, the costs of cyberattacks will exceed 1,000 billion dollars. Accordingly, Leonardo has created a cybersecurity division with yearly sales of about 400 million and nearly 1,500 employees.

As previously discussed in section “[Cybersecurity Investments: An Economic Analysis](#)”, an ex-ante evaluation of the costs and benefits associated with a cyberattack is not easily quantifiable at firm level. It is therefore quite difficult to incentivize private sector firms to make the appropriate level of investments in cybersecurity activities: Gordon and Loeb (2002) show that the optimal investment in information security is always less than or equal to 36.79% of the expected loss from a security breach.

Our interviews confirm the difficulty of estimating the costs of cybersecurity incidents ex ante, but at the same time reveal an awareness of the importance of taking preventive measures.

We are perfectly aware that cybersecurity investments do not yield a direct gain, but it is necessary to prevent costs to the firm. Since Leonardo deals with civil and military stakeholders daily, it cannot afford to lose customers due to cyberattacks. The impact of a huge cyber accident would be too big to be contained. For instance, in the event of cyber espionage attack, competitive information (projects, financial data) could be lost, while in the event of a hacktivist attack, we would suffer from damage to our image.

Since 2015, Leonardo has implemented its own cybersecurity framework based on national and international best practices. This model has a tree-structure and considers five dimensions, named “goals”:

¹⁸ FIRST: Forum of Incident Response and Security Team

- Govern cybersecurity
- Identify and manage cyber risks
- Protect business environment from cyber threats
- Predict and detect cyber threats
- Respond and recover to cyber threats

Each goal has been articulated in about 30 domains totally. Every domain includes cybersecurity capabilities, each one based on three aspects:

- Organization and skills of people employed
- Processes
- Technology

Through this model, Leonardo assesses the level of capability maturity on a yearly basis. The increase in the capability maturity score is due to increased investments/activities in cybersecurity, particularly in skills, processes, and technologies. The most substantial investments have been made in specific people skills. Indeed, thanks to continuous personnel training, Leonardo has obtained a high level of security certifications. There is also substantial investment in the technologies and maintenance of software and tools.

The importance of human capital was emphasized during the interviews. It has in fact emerged that only highly specialized skills can endow the organization with an effective system of management and prevention of cyber risks.

In 2018 – said one interviewee – we had two attempted cyberattacks that were potentially highly dangerous. Both were detected and mitigated thanks to the skills of our analysts. Investment in technologies per se does not suffice, it should be coupled with highly qualified personnel, and people skills always need to be kept up-to-date.

Regarding the cost–benefit trade-off, interviews also revealed that, from 2017 to 2018, the time needed for reacting to cyberattacks decreased, log sources that provide data increased, and the cyber posture turned from reactive to preventative:

When we started implementing the cybersecurity strategy, virtually 100 percent of our actions were reactions to an attack, while today 85 percent of actions are preventative. That is, eight actions out of ten are made to prevent a cyberattack. At least half yearly, Leonardo makes a management review to assess benefits and improvements involving every internal stakeholders. This leads to the conclusion that even if the benefits of cybersecurity investments are hard to assess in strictly economic terms, they outweigh the related costs.

*The Regulatory Framework as an Incentive to Cybersecurity
and Personal Data Protection Investments*

One might argue that the current regulatory framework acts as an incentive to investment in cybersecurity and personal data protection. By using the Italian and EU legal framework, companies not only have many obligations, but also many tools to guarantee cyber and privacy security.

The Italian regulatory framework subscribes to the international trend of extending cybersecurity to the whole supply chain. Regulatory innovation of personal data protection and the creation of a regulatory perimeter is the starting point for urging firms to comply with the minimum requirements needed to guarantee cyber and personal data security standards. From this perspective, the regulatory framework acts as an incentive for security investments. Thus, when the regulatory framework is coupled with adequate investments in technology and human capital, a sustainable competitive advantage can be gained.

Another important element to be underlined concerns the fact that the cyber risk is strictly linked to the personal data risk.

A possible cyber accident should spread also to personal information which are held by the company: therefore, it is not possible clearly to separate the two risks.

From an organization point of view, this implies not only a continuous exchange of information between the cybersecurity and the personal data units but also a shared use of such information.

We have seen how the implementation of adequate measures is common to the legal instruments, despite the deep differences pointed out earlier. The identification of a common cross-cutting line that defines a broader risk prevention policy allows a partly unitary assessment by the company and as a result information is shared with personal data protection and cybersecurity officers. By so doing, the compliance with the legal instruments and the sharing of information would be connected and thereby facilitate the prevention of criminal activities as well as accidental events.

DISCUSSION AND CONCLUSIONS

Cybersecurity and personal data protection represent crucial elements to harness all the potential of digital technologies and to deliver outcomes that are beneficial to society.

This chapter has analyzed the economic costs and benefits faced by private firms with regard to their investments in cybersecurity and personal data security activities, and in what ways recent regulations on network security, information systems (EU Directive 2016/1148, NIS Directive), and the protection of personal data (EU Regulation 2016/679, GDPR) may affect firms' organization of their activities to reduce the risk of security breaches. From a methodological point of view, we adopted a case-study strategy on an Italian

multinational company—Leonardo S.p.A.—which has produced and developed solutions for 30 years, creating technologies and services that ensure the security of data, networks, and systems. Overall, the findings from the case study on Leonardo S.p.A. support the idea that it is very difficult to estimate the optimal level of investments in cybersecurity and personal data protection and, more generally, from a private perspective, it is likely that the optimal level of investment in cybersecurity and data protection will be less than the optimal level of investment from a social perspective, making it quite difficult to incentivize private sector firms to make the appropriate one.

Coherent with the economic framework, analyses of cost-benefits and normative incentives have emerged as key factors in orienting a firm's investment decisions. On the one hand, it was stressed that evaluation of the anticipated economic benefits associated with cybersecurity investments can be quite complex, given their *cost savings* [why in italics?] nature, which is mainly related to factors such as: (i) a decrease in security incidents and cybercrime losses; (ii) reduced costs of liability for breaches; (iii) the increased trust of customers; (iv) increased company reputation; and (v) increased compliance. On the other hand, government intervention is required to incentivize firms' investments in cybersecurity activities.

With regard to a firm's strategic planning, the case study implies that Leonardo S.p.A. is perfectly aware of the importance of cybersecurity and data protection as fundamental assets for increasing its competitiveness in the marketplace.

With reference to the implementation step, the findings show that the effectiveness of cybersecurity and privacy systems is achieved by simultaneously investing in human capital and technology. Each of the key informants interviewed consistently stressed that improvements over these last few years in terms of cybersecurity and personal data have been obtained by investing in technologies and relying on people with highly specialized skills who are stimulated by continuous training.

Finally, with regard to the effectiveness of the regulatory framework to incentivize an optimal level of investment, the analysis confirms that it would be possible to enhance the implementation of these legal instruments, reaching the objective of reducing security breaches and making the system more efficient. We have in mind a possible system of the collaboration structures: an aggregated supervisory process that will link the stakeholders in charge of each sector through reports, information exchange, and meetings. In this case, models, if possible, should be interconnected and flexible. By this way, there would be a better information sharing and costs reduction.

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Mobile Money Systems as Avant-Garde in the Digital Transition of Financial Relations

Dimitrios Reppas and Glenn Muschert

INTRODUCTION. MOBILE MONEY: GEOGRAPHICAL DISTRIBUTION AND HOW IT WORKS

“Mobile money” (MM) is an electronic form of currency, that is, digital money, which requires the use of an application on an electronic device, such as a tablet or a mobile phone. MM systems often lie outside the formal banking system: MM users can make basic financial transactions (such as transfers, deposits, and withdrawals) *without* the need of having a formal bank account (therefore, MM is not to be confused with mobile banking, in which customers, typically in developed countries, access their formal bank accounts via mobile devices). MM systems are instead associated with the use of SMS (text messaging) mobile phone technology, typically in developing countries, by the “unbanked” population in order to conduct cashless transactions.

Overall, this chapter points out the need for greater complementary financial services, which ideally emerge out of cultivating collaborative relationships between MM systems and the traditional banking system. There is a growing amount of empirical evidence that the development and deployment of MM systems contribute toward the achievement of sustainable social and economic growth (as described by the *UN Sustainable Development Goal 8*: “to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” (Sustainable Development Goals, n.d.)).

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Therefore, business managers and entrepreneurs, regulatory agencies, governments, as well as academia should engage in establishing closer collaborations with a view to deploying MM systems. This chapter aims at providing some lessons to these stakeholders for improved analysis and practice of MM systems in the future.

As a noted example of financial “reverse innovation” (Govindarajan and Trimble 2012), the development and deployment of MM systems have unexpectedly occurred at greater pace among the poor and financially excluded populations of low- rather than high-income countries. The African continent has the highest adoption rates for MM compared to all other continents (Lashitew et al. 2019), while adoption lags in Europe and the Middle East. As of 2019, the Global System for Mobile communications Association (GSMA) worldwide network of 750 mobile operators estimated that about 720 million people worldwide have opened an MM account in 90 different countries, and nearly half (350 million) are located in the sub-Saharan Africa and 223 million in South Asia (GSMA 2019a). Kenya’s “M-Pesa” system is the most successful and well-documented example of MM adopted since the mid-2000s (see Aron (2018) for a summary of Kenya’s “M-Pesa” system); however, Somaliland is the African region with the highest percentage of MM users worldwide (Demirguc-Kunt and Klapper 2012) (see Penicaud and McGrath (2013) for a summary of Somaliland’s “Zaad” system).

Overall, the high rate of MM adoption systems in East Africa and in South Asia may, at first, be rather counterintuitive; we typically expect new technologies to be adopted first by the developed countries, and later by developing countries. Nevertheless, several arguments, presented in the next section, can explain this higher adoption rates of MM in developing economies. Furthermore, most MM systems seem to have focused initially on consumer transactions, that is, on allowing person-to-person (P2P) remittances, but at least Kenya’s “M-Pesa” and Somaliland’s “Zaad” systems have now expanded their services to person-to-business (P2B) and person-to-government (P2G) remittances (e.g., merchant payments, electricity payments, university and schooling fees, even livestock trade), business-to-person (B2P) and government-to-person (G2P) remittances (e.g., salary payments), as well as to business-to-business (B2B) payments.

The way MM systems work, in general, is the following: customers first need to register with the provider of the service by showing some form of government identification to an Agent. In most countries, the provider will be a telecommunications company, that is, a Mobile Network Operator (MNO), but MM services can also be delivered by the established banking sector, that is, by the local banks in the economy (see Pelletier et al. 2019). The Agent is typically a small retailer (such as a grocery store or a petrol station), and occasionally, a larger one (such as a supermarket or a utility company). Once registered, users can then deposit cash (i.e., official tender) in their MM accounts and get, in return, the equivalent value in the electronic currency (i.e., e-money). E-money can then be used for transactions with other individuals/businesses/

government (who may or may not be holders of an MM account), or money can simply be kept in the mobile wallet in a digital form (i.e., for saving purposes). Finally, different countries introduce varying regulatory frameworks for their MNOs. In general, MNOs are required by their respective governments to comply with the international established “Know Your Customer” (KYC) and “Customer Due Diligence” (CDD) standards so as to prevent financial crimes. Overall, regulations for MNOs are less stringent than those imposed on the formal banking sector (Suri 2017). For instance, MNOs are typically required to secure their electronic money by holding assets of equal value in liquid form (Pelletier et al. 2019). That is, MM deposits need to be held in trust accounts within the commercial formal banking system, while banks are expected to keep only a small proportion of deposits in liquid form.

The next section briefly summarizes the main positive economic and social impacts of deploying MM systems on the unbanked segments of populations in developing countries. We then proceed with some lessons for improved inquiry and practice, by summarizing common empirical challenges encountered by all parties involved in the design and deployment of MM systems. We conclude that MM systems are a promising step toward a new financial market; nevertheless, there seems to be a need for greater standardization of research protocols.

ECONOMIC AND SOCIAL IMPACTS OF MOBILE MONEY

As a subject in the broader field of digital transformations and sustainability, MM systems are an important area of study, as they seem to achieve several positive outcomes, categorized in the following three broad themes:

1. MM systems represent a *digital transformation* of exchange relations (in the form of the migration of remittances from cash-based systems to electronic media).
2. MM systems show great promise to *include unbanked and financially excluded* populations in formal economic relations.
3. MM systems seem to contribute to *humanization* of aspects of financial relations.

Briefly, we now explain how MM systems can be beneficial along the three themes described earlier.

Regarding the theme of digital transformation, MM systems seem to reconfigure pre-existing financial practices by bringing increased transparency and by offering a more secure and convenient alternative method to cash. In other words, MM help record a larger volume of official remittances; help authorities control money laundering practices; reduce transaction costs of transporting money through middlemen; facilitate trade and business planning; and also offer a safer option for savings (as compared to “cash under the mattress,”

“jewelry accumulation,” or other practices followed in developing countries; see, for instance, Nelms (2017), for a discussion about Ecuador’s “cajas”).

Regarding the theme of financial inclusion, MM systems seem to have been particularly successful wherever formal banking transactions are limited due to the following three reasons. First, in rural areas, where population density falls, the cost of establishing a geographically wide network of bank branches increases significantly. Instead, MNOs may still find it profitable to launch an MM platform in rural areas, because they can rely on their already available mobile network infrastructure (and their available Agents). Second, the typical rural family (at least in developing countries) tends to have a lower income than that of an urban family; and when poor families cannot meet the requirement for maintaining a minimum account balance, they are excluded from conventional banking. MNOs may instead find it profitable to launch an MM platform in poor areas, because they can rely on charging low commissions for a larger volume of transactions. Third, banks are reluctant to open a bank account (or offer any additional services, such as insurance and loans) to poor people, because hardly any records of financial transactions will be available for such families. Instead, MNOs can rely on the history of transactions they already have for their customers from mobile usage and build profiles; that is, MNOs face less of an asymmetric information problem than banks. Apart from the aforementioned three main reasons (explaining why/when MM achieve financial inclusion of the unbanked), Economides and Jeziorski (2017) also note that MM can be successful in areas with high criminality, that is, where holding cash is a risky activity and therefore mainstream banking services are unavailable.

In some cases, such as in Kenya’s M-Pesa system, financial inclusion extends beyond simple P2P and P2B remittances; that is, the mobile currency may not serve just as a cash-in-cash-out system. Instead, the MNO provider in the above two countries has managed to continuously evolve the system by providing also micro-credit and micro-insurance to poor people. Suri and Jack (2016), for instance, find that access to MM has been effective in improving the economic lives of Kenyan women and has reduced poverty in Kenya by about 2%: women, in particular, seem to have changed their occupation away from agriculture (into small business and retail), as MM provide greater financial inclusion via access to direct remittances, increased privacy for financial dealings, and increased access to credit. Likewise, in Asia, fintech players are now diversifying their MM services by offering medical (i.e., insurance) and financial (i.e., wealth management) (GSMA 2019a). Pelletier et al. (2019) find, using data for MM systems on 90 countries, positive economic impacts on the poor due to adopting MM systems (such as an increase in the total value of transactions recorded in the economy). Furthermore, they find that such positive spillover effects are much larger when MM systems are deployed via the banking system, rather than an MNO.

Overall, the empirical literature finds that MM systems allow households in developing countries to integrate into the financial system, and that a

prerequisite for their financial inclusion seems to be the development of a robust Agent network. In Kenya, for instance, the number of participating Agents in the M-Pesa system grew, in 2015, to about 65,000 (compared to approximately 10,000 bank branches in the country); in Tanzania, the number of MM Agents, in 2014, grew to around 45,000 (compared to approximately only 580 bank branches); and in Uganda, the number of Agents has grown to around 41,000 (versus only about 470 bank branches in the country) (Suri 2017). Another significant determinant of the practical development of MM systems worldwide has been the successful collaboration of the provider with the regulatory authorities (Lashitew et al. 2019).

Regarding the theme of the humanization of financial relations, MM systems have been viewed as a means of providing self-reliance and security to local communities, particularly as a means of “insulating” local economies either from large exogenous communal shocks (e.g., natural disasters/medical epidemics) or from idiosyncratic financial shocks. In the case of Kenya, for instance, Suri et al. (2012) find that users of the M-Pesa system have been able to utilize their remittance network in order to finance their increased health care cost without reducing food and education expenditures (whereas non-users of MM were found to be more likely to pull their children out of school, as a means to cover increased medical expenditures). In a subsequent study, Suri and Jack (2016) find that the reductions in transaction costs of remittances (achieved through the use of MM) have resulted in M-Pesa users flattening their financial risks, compared to non-users. The reason for this improved risk-sharing is that households participating in MM systems have a larger set of people to rely upon (whenever a negative shock takes place). In other words, MM seem to have the potential to build social relationships of trust, reciprocity, solidarity, mutual aid, and cooperation among communities (resulting therefore to poverty alleviation); perhaps, there is a stronger sense of belonging and solidarity among sparsely populated, or geographically isolated, poor communities. Also, keep in mind that not only MM systems but several other alternate systems of economic exchange, denoted collectively, in the literature, under the terms “complementary currencies,” “parallel currencies,” “local currencies,” “regional currencies,” “alternative currencies,” “social currencies,” or “supplementary currencies,” seem to have similar positive social effects (for a meta-analysis of these alternate forms of currencies and their potential to remedy some of the negative effects of mainstream state-sponsored currencies, see Reppas and Muschert (2019)).

To sum up, MM can be seen as a tool not only for protecting local communities from exogenous financial shocks, but also for building social capital and strengthening social cohesion. That is, today’s widespread use of MM may be explained partly by the fact that many post-materialist societies recognize the potential of MM to boost social integration and achieve social sustainability.

Although most of the literature assesses MM overall positively (for its ability to achieve outcomes as those mentioned in the above three themes), Martin (2019) raises a rather underexplored, but important, feature of MM platforms:

MM may be used as a means of increased surveillance because MNOs seem to operate “in-house” monitoring platforms which allow them to build unique behavioral profiles for their customers and Agents (see, for instance, *The Economist* (2018a) on how some firms try to generate credit judgments in the absence of a conventional financial history). Therefore, Martin (2019) expresses concerns that if MM platforms are perceived, in the future, mainly as a surveillance mechanism (placed by governments), then poor people may eventually step away from them. Another drawback of MM is that they seem to be encouraging overborrowing, particularly in East Africa, where digital lending is yet not regulated (*The Economist* 2018b).

LESSONS FOR IMPROVED INQUIRY AND PRACTICE

From a research perspective, there is still much to learn about MM systems. For example, in a critical review of the empirical literature on the micro- and macro-economic impacts of MM, Aron (2017) concludes that the parties potentially involved in the deployment of MM platforms (i.e., academic community, government regulators, central banks, and telecommunication companies) need to better understand the types of data required to conduct more reliable empirical research. Likewise, Pelletier et al. (2019) conclude that partnerships between the two main providers of MM (namely MNOs and the formal banking sector) should be encouraged because none seems to be unambiguously superior to the other: MM systems offered by MNOs have the advantage that they can reach a larger number of financially excluded individuals (than with banks), while MM systems offered by banks have the advantage (compared to MNOs) that they can stimulate better the economy (due to the wider range of products offered along with the MM system).

Overall, this chapter aims at enhancing cooperation among the academic community, government regulators, central banks, and telecommunication companies/entrepreneurs by specifying some of the conditions required for the successful development of MM systems, and by identifying what types of data may be required to conduct more reliable empirical research for the measurement of social and economic impacts of MM.

In the growing field of academic knowledge about MM in a variety of fields, most academic studies seem to focus on iterations of one or both of the following two questions (Aron 2017, 2018):

- Researchers examine the factors that lead to the development, deployment, and adoption of MM systems, including the economic conditions, social/cultural conditions, the existence of a well-structured network of Agents, and the proper regulatory environment (as already discussed in the previous section).
- Researchers examine the impacts of MM systems at various levels, including macro- and micro-level, such as enhanced transparency, measures of

financial inclusion, poverty reduction, and risk reduction (as already discussed in the previous section).

Among a large proportion of studies examining MM systems, the answers to the above two fundamental research (but also practical!) questions are unclear, primarily due to concerns with the wide variety of ways/forms in which data are collected (including data quality), and the broad swath of methodologies employed (such as Randomized Control Trials, Differences-In-Differences, Propensity Score Methods, and Instrumental Variable Methods). Thus, as Aron (2017, 2018) points out, it is important to exercise caution in making inferences from existing studies about MM systems, about the factors that play a role in their adoption and sustained usage, and about their potential welfare increasing effects. Although some authors tend to make strong claims, many findings in the literature seem potentially emergent from idiosyncratic aspects of the data examined. Similar to Aron (2017, 2018), Khan and Blumenstock (2016) also conclude that behavioral models for the adoption of MM (by using mobile phone data) do not necessarily apply to several developing countries; therefore, predicting the key drivers of MM adoption is difficult and researchers should avoid making generalizations. Suri (2017) also concludes that although MM seem revolutionary, there is still a lot to learn.

Therefore, in the rest of this section, we summarize some common mistakes (or methodological challenges) encountered in the existing empirical studies when trying to answer either of the above two main questions (i.e., trying to identify either factors of deployment or the impacts of MM). We overall aim at providing some lessons for improved analysis and practice in the future.

There are numerous common methodological challenges across the empirical studies of MM, the first of which deals with measurement bias in some of the variables used. There is noted measurement bias on the MM *usage* variable, such that the definition of MM usage seems to be inconsistent across empirical studies (and occasionally, some authors may fail even to explain exactly how MM usage is measured in their studies). For instance, when usage is defined as the number of registered customers to the MNO, then true participation is overestimated, because some customers may never use the MM service (i.e., being registered to the operator (i.e., ownership of a SIM card or of a mobile phone) does not necessarily mean usage of the MM service). Furthermore, Roessler (2018) points out that ownership of mobile phones is likely to be inflated particularly in surveys for households with lower income, lower education, and older age groups. Therefore, although MM systems seem, in theory, to support the needs of a broad set of users, in practice they may end up reaching a smaller (than expected) number of individuals, which can underestimate measures of digital inequality experienced by excluded households, as it gets increasingly harder for such households to catch up with the rest. On the other hand, true MM usage is underestimated whenever it is measured as households with at least *one* of its members having had a registered MM account (or a SIM subscription): underestimation occurs because other unregistered customers of

the same household who are not the owners of the SIM card might still be using the service.

Further measurement bias is observed in the *wealth* and *education* variables, both of which seem to be poorly measured in developing countries, or at other times are completely omitted from the empirical studies. For instance, Munyegeera and Matsumoto (2016) measure household wealth in terms of land size and total asset. Blumenstock et al. (2016) use mobile-phone usage data as a proxy for wealth, while others (Jack and Suri 2014; Suri and Jack 2016) omit wealth entirely, even while including other household characteristics in the control variables. Likewise, education may be measured in terms of years of schooling (Jack and Suri 2014; Riley 2018) or entirely omitted (Suri and Jack 2016). Nevertheless, in studies trying to identify the factors for the adoption of MM, both wealth and education seem to be important determinants and therefore should be included in the vector of control variables, as otherwise the omission of such important controls leads to endogeneity problems, as discussed in more detail below.

A second methodological challenge concerns omitted variable bias for structural changes. The adoption of MM systems may depend on political regime changes (such as in Somaliland); on important technological changes (i.e., quality changes in the services provided by the MNO); and/or on network/spillover effects (i.e., whether there exists a threshold, either a critical number of users or a critical number of Agents, above which MM adoption becomes widespread in a community; see Riley (2018) and Centellegher et al. (2018) for spillover effects). Empirical studies should therefore test for any of the above structural changes by introducing dummy variables (and interaction effects of these dummies with other explanatory variables). Researchers might also want to keep in mind that technological changes are likely to occur in the near future in Africa (because the majority of Internet connections there are currently 2G, but 3G is expected to overtake 2G during 2019 (GSMA 2019b); and the rollout of 3G services will be critical for the wider adoption of MM systems).

A third methodological challenge involves the possible existence of endogeneity when MM is introduced as an explanatory variable in the analysis. Some studies measure the impact of MM on different microeconomic outcomes (e.g., household consumption) and therefore introduce a dummy in the right hand side (RHS) for the intervention (adoption of MM), or some continuous variable referring to the usage of MM by individuals. Nevertheless, both the adoption and usage of MM are *not* uncorrelated with unobservable (or difficult to measure) variables, captured through the error term. For instance, as noted above, adoption and usage of MM seem to be affected by household education, household wealth, technological changes (in the network), and the user's social network. If any of such difficult-to-measure variables is not explicitly introduced in the empirical analysis (but, instead, is captured through the error term), then the explanatory variables are endogenous (and thus the results biased).

To resolve the endogeneity problem, an instrument should be used to replace the MM adoption (or usage) variable. Some commonly used instruments in the literature are the number of Agents available (Jack and Suri 2014); the distance of a household from the closest available Agent (Munyegera and Matsumoto 2016; Riley 2018); or the *change* in the Agent's network density (Suri and Jack 2016). Nevertheless, any of these measures (relating to the Agents network) may still not be a good solution for the endogeneity problem, because the roll-out of Agents (by MNOs) is not random (Aron 2017, 2018). Instead, Agents self-select in locations predicted to bring more profits to them (i.e., toward locations with higher population density, higher income, and education levels).

CONCLUSIONS

While studies of MM do indeed suggest that some optimism is warranted regarding the capacity for such systems to lead to the positive inclusion of financially marginal populations, and for the increase in economic and social well-being in environments where they are deployed, there remains a need for greater standardization of research protocols for the study of the socioeconomic aspects of MM systems. As Suri (2017) points out, MM systems are perhaps one promising step toward a new financial market, but researchers should always keep in mind that the robustness of their empirical studies should be tested against different model specifications (Aron 2017, 2018).

This chapter therefore scrutinizes the existing body of research, in order to develop a way toward the establishment of a more unified field of MM research. Drawing upon a meta-analysis of existing studies, with a particular concentration on the two fundamental questions (as described in the previous section), this chapter provides a list methodological concerns for researchers, which if addressed will increase the internal and external validity of MM studies, advocated in the spirit of contributing to the broader fields of digital transformations and sustainability in financial relations.

MM is perhaps the quintessential example of a reversed engineered financial technology (Govindarajan and Trimble 2012), and the successful deployment of such systems speaks a potential growth strategy that, if successfully adopted, can serve the interests of various stakeholders simultaneously. Of course, those interested in development initiatives for poverty reduction among the world's poorest (see Collier 2007) will find MM systems attractive, because they have shown great potential to include unbanked populations in formal economic relations, to reduce poverty, and to protect less affluent populations from the risks of economic shock. In addition, MM can be appealing to those interested in developing services for the vast consumer base located at the "bottom of the pyramid" (see Prahalad 2010), in a way which rather than competing for existing market share in financial services, relies on the creation of new markets among those who have been excluded. A case in point is that once MM systems have been widely adopted, they have expanded to offer additional financial

services to users such as insurance or microcredit. Thus, rather than displacing the vested interests of mainstream financial institutions such as private or public banks, MM systems often include those previously unbanked segments of the population without drawing customers away from traditional financial services. In many cases, MM systems have also linked users to formal banking institutions via interoperability, and therefore have complemented existing banking systems rather than competing with them.

Indeed, there is a great potential in the use of MM systems in a variety of nations to drive progress on the UN Sustainable Development Sub-Goal 8.10 to “*strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all*” (Sustainable Development Goals, n.d.). The key indicator for success would be measured via the “*proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider*” (Goal 8, n.d.). To the extent that development and deployment of MM systems contribute to the achievement of sustainable social and economic growth, then these policies should be encouraged by regulatory agencies, governments, and NGOs.

However, MM systems may not be a silver bullet which solves the problem of financial exclusion without generating any unintended negative consequences. While the record generated via MM remittances can help government and regulators monitor and thereby minimize unauthorized activities such as black marketing, money laundering, and tax evasion, there may be other ethical concerns with MM which have not been deeply explored. While financial inclusion may have benefits for those who were previously excluded, inclusion may create different vulnerabilities. MM systems have potential to subject disempowered segments of the population to greater surveillance and indeed may be a form of “surveillance capitalism” (see Zuboff 2019) which refers to the increased use of data in economic relations and use of automation in decision making. Such commodification of consumer information via the digitization of remittances may serve the interests of data-driven capital accumulation and/or the rise of the surveillance state, and thus should be examined critically (see Martin 2019). Ultimately, the use of MM systems in remittances should serve the interests of those whose exchanges are facilitated via such systems, rather than the other way around.

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Augmented Reality: The Game Changer of Travel and Tourism Industry in 2025

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INTRODUCTION

Dubbed as ‘Mini Asia’, Malaysia is a melting pot of Asian culture with strong fusion of influences from China, India and Southeast Asia. Such competitive advantage, on top of the strategic geographical location with year-round pleasant tropical climate, has made Malaysia as one of the preferred choices among global travellers. With a new aim to reposition as the ‘World’s Top 10 Destinations’, Malaysia forecasts to welcome 28.10 million international tourist arrivals and generate RM92.2 billion international tourism receipts in 2019 (The Edge Markets 2018c). Recently officiated by the Ministry of Tourism, Arts and Culture, the ‘Visit Malaysia 2020’ aims to attract 30 million international tourist arrivals and generate RM100 billions international tourism receipts (The Star Online 2019).

Tourism sector is categorised as one of the largest industries in contributing to domestic economic well-being in many countries (Patuelli et al. 2013; Pérez-Rodríguez et al. 2015; Tang and Tan 2015). Nevertheless, tourism sector in Malaysia is experiencing a downfall when the nation missed its tourism

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targets in recent years. Similarly, one of the most visited states, the UNESCO World Heritage City of Melaka (UNESCO 2019) is also facing a similar declining trend. The deteriorating tourism performance has raised an alarming signal to the tourism authorities and businesses for a need to rejuvenate the local tourism sector.

Launched by Arctur (a company headquartered in Nova Gorica, Western Slovenia, which pioneers the co-creation of sustainable innovations through industrial partnership), Tourism 4.0 is an initiative to transform tourism by creating a collaborative ecosystem in which tourism stakeholders co-create enriched travel experience by using the enabling key technologies of Industrial 4.0, such as augmented reality (AR). Inspired by the ideas of Tourism 4.0, many tourism businesses are now participating in the paradigm shift of digital transformation through the use of digital technologies to offer tourism products in a more personalised, interactive and engaging manner (Arctur 2019), especially when majority of the travellers today are the millennial who are more tech-savvy.

Past tourism studies categorised AR as one of the most notable digital technologies which has a great potential in tourism to enhance travel experience into something more interactive, enjoyable and exciting (Han et al. 2013; Jung et al. 2015; tom Dieck and Jung 2018). It can be achieved when “3D virtual objects are integrated into a 3D real environment in real time” (Azuma 1997) to provide useful information, navigation, guides and translations to travellers. In the past, signs are built to provide information of world heritage sites to tourists, which is said to affect the overall natural state of destinations (tom Dieck and Jung 2018), but AR applications can now enhance visitor experience by overlaying digital information accessible via smartphone displays in the real environment while preserving original state of the site and creating awareness on heritage preservation (Garau 2014; Kalay et al. 2007). Being developed as part of smart tourism, AR will become an innovative way to achieve sustainability tourism because it fulfills all three aspects of environment protection (safekeeping of natural state of destinations), social (appreciation of cultural and heritage values) and economic (marketing in an attractive way of less popular tourist attractions) for generations to come.

Due to the downturn of the local tourism sector, AR is believed to be a useful digital technology to improve tourism experience and pave the way for smart tourism. However, AR is regarded as a new technology in the local tourism context, and studies on user’s acceptance of AR is still in its infancy as far as tourism studies are concerned. Thus, studies on user’s acceptance of AR are deemed crucial for successful implementation of Tourism 4.0 technologies.

BACKGROUND OF STUDY

The Downturn of the Local Tourism Sector

World Tourism Organisation reported that Malaysia was the second most visited Southeast Asian country, which has attracted 25.83 million international tourist arrivals and generated US\$19.14 billion international tourism receipts

in 2018, failed to defeat Thailand, which has attracted 38.28 million international tourist arrivals and generated US\$63.04 billion international tourism receipts (World Tourism Organisation 2019). Since 2013, Malaysia has failed to defend its distinguished title as the 'World's Top 10 Destinations' and is currently ranked 15th, while Thailand is ranked 9th worldwide (World Tourism Organisation 2017, 2019).

Being the third largest contributor in terms of foreign exchange receipts in Malaysia after manufacturing and commodities (New Straits Times 2019b; The Edge Markets 2018b), the tourism sector is reported for losing its global competitiveness when the international tourist arrivals plummeted in recent years. To further illustrate, international tourist arrivals dropped by 808,933 (-3.02%) in 2017 from 26,757,392 tourists in 2016 (Tourism Malaysia 2019). In 2018, international tourist arrivals further shrank by 116,105 (-0.45%) from 25,948,459 tourists in 2017 (Tourism Malaysia 2019), while other Southeast Asian countries registered a positive growth in international tourist arrivals (World Tourism Organisation 2019). In addition, Malaysia has missed its targets of international tourist arrivals for the sixth consecutive years, and the gap of mismatch has been widening across the years from 1.08 million in 2013 to 7.27 million in 2018 (World Tourism Organisation 2019; The Edge Markets 2018c). Malaysia has recently revised down its forecast for the number of international tourist arrivals for 2019 and 2020 to a more attainable figure of 28.10 million and 30.00 million, from an early target of 34.50 million and 36.00 million, respectively (New Straits Times 2019a). Malaysia has also missed its targets of international tourism receipts for the fifth consecutive years and the gap of mismatch has been widening across the years from RM4.00 billion in 2014 to RM49.90 billion in 2018 (Tourism Malaysia 2019). As such, the Socio-Economic Research Centre has urged the country to do more to attract tourists, and there is a need for a comprehensive study to address the issues on view of the tourism sector in neighbouring countries, such as Thailand is now far ahead than Malaysia (Bloomberg 2018; The Edge Markets 2018a). Malaysia has also revised down its forecast for the international tourism receipts for 2019 and 2020 to RM92.2 billion and RM100.00 billion, respectively, from an early target of RM151.00 billion and RM168.00 billion, respectively (The Edge Markets 2018c). Figure 9.1 shows the tourist arrivals (in million) and tourism receipts (in RM billion) in Malaysia from 2013 to 2018.

Located in the southern region of the Peninsular Malaysia, the 600-year-old historic city of Melaka is one of the most visited destinations in Malaysia (The Edge Markets 2018a), attracting millions of domestic and international tourists to witness the universal cultural heritage values between the East and the West left by the colonisers. In 2008, the UNESCO inscribed Melaka and Georgetown in Pulau Pinang as the world heritage cities (UNESCO 2019). Notably, the worsening outlook of the national tourism sector is reflected in Melaka. Recently, the tourism performance in Melaka has been showing deteriorating sign which received serious attention. In 2017, Melaka welcomed 16,794,468 tourist arrivals and generated RM 1965 million tourism receipts. However, the growth of tourist arrivals in Melaka failed to maintain

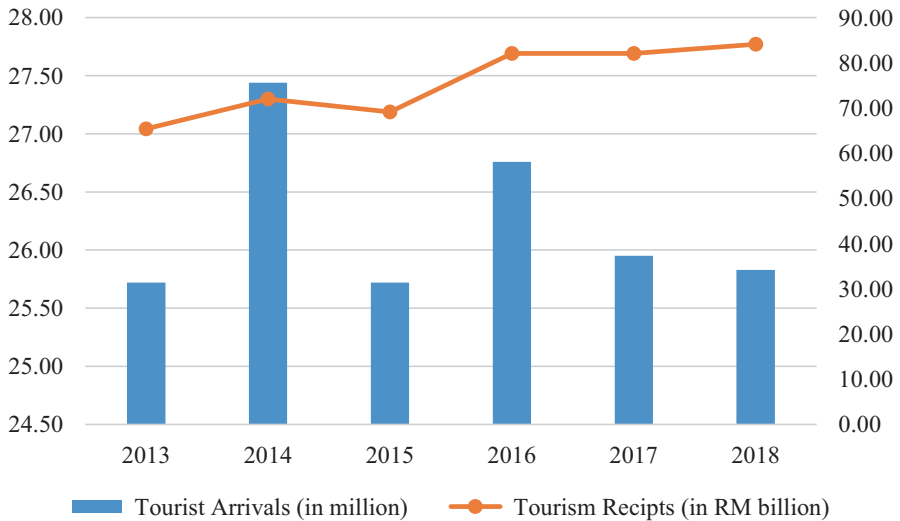


Fig. 9.1 Tourist Arrivals (in millions) and Tourism Receipts (in RM billions) in Malaysia 2013–2018. (Source: Authors’ creation based on Tourism Malaysia (2019))

double-digit growth since 2013 and only grew by 3.13% in 2017, which was the lowest since 2008 (Melaka Chief Minister Department 2018). Similarly, the growth of tourism receipts contracted to only 7.65% in 2017, which was the lowest since 2008 (Melaka Chief Minister Department 2018). The deteriorating performance of the local tourism sector has raised an alarming signal to the tourism authorities and businesses for a need to rejuvenate the local tourism sector through effective tourism marketing.

INCREASING USE OF AR TECHNOLOGY IN WORLD’S MOST POPULAR MUSEUMS

Today, the cultural and heritage tourism sector such as museums are looking for innovative ways to engage with visitors by mean of cutting-edge digital technologies (Tscheu and Buhalis 2016), for instance AR. Both the *Art Newspaper* (2019) and Themed Entertainment Association (2019) reported that the ‘Top 10 Most Visited Museums in the World’ mainly located in the United States, the United Kingdom, France and China have all integrated AR mobile app or similar virtual technologies for visitors to interact with museum exhibits and enhance their overall experience while visiting the museums. A study reported that visitors only spend an average of 2.31 seconds for each museum exhibit; thus, the use of AR applications in museums would grab their attention and explore the exhibits which lead to longer time spend in the museums (MuseumNext 2019).

LIMITED STUDIES ON USER’S ACCEPTANCE OF AR

Recent technological advancements in mobile devices have changed how users interact with the environment. Despite its wide applications in various fields, literatures argued that AR application is still in the infancy stage for tourism sector (Olsson et al. 2012). Also, limited attention has been devoted to studies on how AR technology can be used at world heritage sites (Han et al. 2013; tom Dieck and Jung 2018). Many past studies focused on the technical aspect on how AR applications are developed rather than studying the adoption of AR applications (Yovcheva et al. 2013).

In order for a new IT application to be successfully implemented, it is imperative to study on user acceptance and use (Aldhaban 2012). Past studies also mentioned that if tourists accept and use AR applications, it will enhance the satisfaction of the tourists (Yovcheva et al. 2013). In tourism studies, reasons why people use AR applications have not been extensively studied (Chung et al. 2015). In addition, past studies that focused in user’s acceptance of AR mobile app were conducted in Dublin, Ireland (Han et al. 2018; Jung et al. 2018), South Korea (Jung et al. 2018), Korea (Chung et al. 2018), the United Kingdom (Tussyadiah et al. 2018) and the United States (He et al. 2018). Similar study is still at its infancy in the context of Malaysia.

Purpose of Study

The objective of this study is twofold: (1) to develop an AR mobile app for the People’s Museum, Melaka, to enhance visitor experience; (2) to examine user’s acceptance of the AR mobile app. This study adapted the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by (Venkatesh et al. 2003) to gauge user’s acceptance of the AR mobile app. The research framework is presented in Fig. 9.2 postulating that performance expectancy (PE), effort expectancy (EE), social influence (SI), playfulness expectancy (PL) and content relevance expectancy (CRE) as the factors affecting museum visitors’

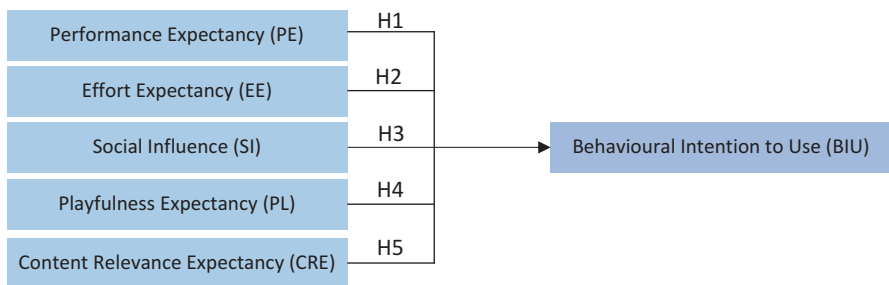


Fig. 9.2 Research framework, hypotheses and operating definition of contracts for studying AR in the tourism industry. (Source: Authors’ creation)

behavioural intention to use (BIU) the AR mobile app. Hence, five hypotheses were developed and tested.

Hypotheses

- Hypothesis 1 / H1: Performance expectancy significantly affects behavioural intention to use AR mobile app.
- Hypothesis 2 / H2: Effort expectancy significantly affects behavioural intention to use AR mobile app.
- Hypothesis 3 / H3: Social influence significantly affects behavioural intention to use AR mobile app.
- Hypothesis 4 / H4: Playfulness expectancy significantly affects behavioural intention to use AR mobile app.
- Hypothesis 5 / H5: Content relevance expectancy significantly affects behavioural intention to use AR mobile app.

Operation Definition of Constructs

PE—The degree to which a museum visitor believes that using the AR mobile app will make visiting the museum more satisfying in meeting his or her needs.

EE—The degree of ease associated with the use of the AR mobile app.

SI—The degree to which a museum visitor perceives that important others believe he or she should use the AR mobile app.

PL—The degree to which a museum visitor believes the experience of using the AR mobile app is enjoyable and fun.

CRE—The degree to which a museum visitor believes that using the AR mobile app will help him or her to gain good information of the museum exhibits.

BIU—The museum visitor's prediction, intention and plan to use the AR mobile app as soon as it becomes available.

METHODOLOGY

This study developed an AR mobile app named as 'When History Comes Alive', which was later tested by the respondents in a survey to examine the factors affecting user's acceptance of the AR mobile app.

Step 1: Development of the AR Mobile App

Selected exhibits in the People's Museum were first scanned using a handheld 3D scanner to create its virtual forms. Next, QR codes and AR markers of the virtual elements were created and placed adjacent to the respective museum exhibits. Then, an AR mobile app was developed using Vuforia—a software development kit for creating AR applications for mobile devices. Lastly, the AR mobile app was uploaded to the Google Play Store. Using the AR mobile app requires museums visitors to first download it from the Google Play Store into

their internet-enabled smartphone and activate it. Upon scanning the QR codes, they can watch videos which guide them to play traditional games (such as congkak, batu seremban and chapteh) and learn more about the museum exhibits through display of facts and figures. More fascinatingly, when the users scan the AR markers, they will see virtual elements being superimposed into the real environment on their smartphone screen. The AR mobile app allows them to interact and take photo with deceased legendary figures such as Tun Abdul Razak Hussein, play with virtual gassing, create their own virtual kite and wear traditional beauty accessories such as lip plate.

Step 2: Survey on User's Acceptance

This study was a mixed-method research, involving both quantitative and qualitative approaches. A survey was conducted using self-administered questionnaire to examine user's acceptance of the AR mobile app. The questionnaire was developed, validated by subject matter experts and further refined before the data collection. There were 31 items measuring the main constructs of the study using seven-point itemised rating scale ranging from 1 = 'strongly disagree' to 7 = 'strongly agree', namely PE (6 items), EE (5 items), SI (5 items), PL (6 items), CRE (5 items) and BIU (4 items). All the measurement items were adapted from the past studies on user's acceptance of information technologies and validated by the subject matter experts on its level of clarity and level of relevance based on four itemised rating scales. After necessary instrument refinement, all the measurement items are found to be clear and relevant. Data collection was carried out in the People' Museum, a three-story former municipal council building located along the Jalan Kota in the UNESCO World Heritage City of Melaka. Using convenience sampling technique, 120 museum visitors were selected as the respondents and attempted the survey after using the AR mobile app. It was then followed by an interview with the museum curators and visitors to get better insights about the use of the AR mobile app in the museum.

FINDINGS

Of the 120 samples, 53.3% were female and 46.7% were male. The respondents were predominantly local (80.0%), married (60.0%) and aged between 30 and 39 years old (33.2%) and had undergraduate education background (53.3%). Most of the respondents were full-time employed (46.60%). Separately, tourists' vacation behaviour was studied in which 53.3% of the respondents were found to have a very satisfied travel experience in Melaka; thus, they are extremely likely to revisit Melaka in the near future. Moreover, 73.40% of the respondents brought along their smartphone, and 86.70% of them were connected to the Internet when vacationing in Melaka. The above findings add confidence on the potential of the application.

In this study, the IBM SPSS Statistics 25 was used to analyse the data. Firstly, the normality test showed that both skewness and kurtosis of all measurement items were both within the tolerable range of ± 3 and ± 10 , respectively, indicating the data was normally distributed and deemed as acceptable for further analyses (Kline 2005; Park 2008). The reliability analysis showed that the Cronbach's alpha for all the constructs were above 0.800 (PE: 0.905; EE: 0.894; SI: 0.883; PL: 0.926; CRE: 0.900 and BIU: 0.912), indicating the measurement items were positively correlated; thus, all the constructs were deemed reliable (Sekaran 2000). The regression analysis reports the adjusted R-square was 0.612, indicating that 61.2% of the variation in the dependent variable can be explained by the variation in the independent variables. The ANOVA analysis indicated that an independent variable or more contributed significantly to the model ($p < 0.05$) and all the independent variables were significantly ($p < 0.05$) associated with the dependent variable. The regression model is written as follows: $BIU = -0.562 + 0.136 PE + 0.110 EE + 0.077 SI + 0.326 PL + 0.236 CRE$.

DISCUSSION

PL was found to have a significant positive effect on museum visitors' BIU, the AR mobile app, because the aesthetic dimension of an AR mobile app will motivate users to use it (Haugstvedt and Krogstie 2012). Consistent with previous study (Haugstvedt and Krogstie 2012), PL was also found as the strongest predictor ($\beta = 0.326$) of BIU. Next, similar effect was found between CRE and BIU. Supported by past studies, AR mobile app should fulfil users' information needs to improve one's usage experience, intention to use and recommendation to others (Jung et al. 2015; Yovcheva et al. 2013; Chung et al. 2015). In addition, similar effect was found for PE and EE towards BIU (tom Dieck and Jung 2018; Chung et al. 2015; Haugstvedt and Krogstie 2012), especially when the usage experience is favourable. If the AR mobile app is user friendly, it is more convenient for museum visitors to understand the exhibits and learn local history by themselves rather than referring to leaflets or inquiring others (tom Dieck and Jung 2018). Lastly, consistent with previous study (Chung et al. 2015), similar effect was found between SI and BIU but it was the weakest predictor ($\beta = 0.077$) among other constructs. The adjusted R-square was 0.612, indicating that 61.2% of the variation in the dependent variable can be explained by the variation in the independent variables. In light of the UTAUT, the determinants postulated in the research framework are said to sufficiently explain museum visitors' adoption of AR mobile app in the People Museum, Melaka. The proposed research framework is suggested to be validated in other UNESCO World Heritage Sites or tourist destinations.

During an interview with the museum curators, one of the respondents hoped that "the use of similar AR mobile app should be expanded to other museums or historical sites in Melaka" because AR makes learning history more interactive and enjoyable and thus helps museum visitors to appreciate

local culture and heritage better (tom Dieck and Jung 2018). Another respondent mentioned that “the use of AR application is suitable for tourist destinations with UNESCO’s recognition”, which supported by previous studies (Haugstvedt and Krogstie 2012; tom Dieck and Jung 2018) which mentioned that AR is now widely used in world heritage sites and museums. Another respondent concluded that “AR applications will transform the local museums into world class museums which serve as a 21st century learning hub, further enhance Melaka’s reputation as a global tourism destination”. Such advantage can be seen when the world’s most visited museums have successfully introduced AR to enhance visitor experience and their satisfaction (The Art Newspaper 2019; Themed Entertainment Association 2019).

CONCLUSION

This study suggests several managerial implications for the developers of the AR mobile app. Playfulness dimension was found as the most important factor in determining user’s acceptance. Thus, the developers of AR mobile app should focus on designing a more pleasurable and engaging user experience by adding in reward-based gamification features. Furthermore, the AR mobile app should provide precise, sufficient and updated information to the users in multiple languages to cater for the needs of museum visitors from different countries. Moreover, more virtual museum exhibits should be added into the AR mobile app, or expand the app usage to other museums and heritage sites in Melaka to further enhance the usefulness of the AR mobile app. Also, clear and multilingual user manuals should be placed in the museum so that it would be easily accessible for the museum visitors to learn and become skillful in using the AR mobile app. The management of museums and heritage sites should actively promote the AR mobile app to the tourists too.

In paving the way of smart tourism using Tourism 4.0 technologies, the tourism authorities should work hand in hand with other tourism businesses to make AR cover the four wheels of the tourism sector, namely accommodation, transport, catering and tourist attractions. Accommodation providers can now turn their business premise as an interactive hotel by using AR to advertise their services and inform accommodation details and hotel services by creating virtual tours, such as Hub Hotel and PAI Hotel. In terms of transportation, tourists can use AR-capable travel apps to point at the vehicles to get direction, route, next stop and places of interest, or multilingual AR map as an interactive guide. In terms of catering, restaurant owners can introduce brand new menus using interactive 360-view of each dish where customers can see virtual 3D food on their dining table or when ordering online. Also, exploring tourist attractions with AR mobile app makes the users travel back in time where old images of city and landmarks can be seen via AR mobile app, and be a personal tour guide for travellers to navigate and further explore the city.

Inevitably, this study encountered several limitations. Firstly, the findings in this study are not generalisable to other museums or heritage sites. As such, it

is suggested that similar study should be conducted in other museums and heritage sites to validate the present findings. Secondly, future studies should investigate on whether differences in gender and age would influence user's acceptance of AR applications because literatures showed that IT adoption of an individual varies across different gender and age (Sun and Zhang 2006), which has been tested in studies on user's acceptance of AR application (tom Dieck and Jung 2018; Sun and Zhang 2006), particularly in the context of cultural and heritage tourism. The limitations of the study suggest for future studies.

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Equality Inclusion and Diversity Through Virtual Reality

Andri Georgiadou

INTRODUCTION

In recent years, there has been a great development in virtual reality (VR) technology, resulting in its growing acceptance and adoption by the scientific community as a valuable tool for a wide range of applications. VR's technological power lies in its intensity, its interactivity, and the simulated realism that can provide the users.

For this reason, much of the scientific research has focused on further enhancing these two characteristics leading to the creation of more complex VR systems. However, these systems, despite their huge potential, require the use of specialized VR equipment that had been until recently difficult to afford and acquire by organizations; the increased commercial interest however in the power of VR has finally enabled the pervasive use of this technology.

In this chapter, we theoretically introduce the use of Virtual Reality trainings as a means for organizations to effectively promote equality, inclusion, and diversity. Literature indicates how traditional diversity training and interventions have not been as effective in enhancing organizations' inclusivity insofar (Kalev et al. 2006). In this respect, we posit that through virtual embodiment (Gaudiosi 2015) empathy will be cultivated and hence the values of equality, inclusion, and diversity will be more effectively promulgated.

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In the sections to follow, we introduce how learning occurs in organizations, and discuss existing approaches to diversity trainings in organizations, followed by an introduction on the advantages of using virtual reality equality trainings. We conclude the chapter highlighting the value of the suggested approach as well as potential limitations.

LEARNING IN ORGANIZATIONS

Learning in organizations is the organized learning process aimed at restoring knowledge and skills for achieving a specific purpose (Fiol 1994). Training aims to transfer knowledge or skills from a transmitter to a receiver through a standard procedure on one or more learning themes (Pendry et al. 2007).

Of course, learning does not involve just the transmission of knowledge but also the consolidation of that knowledge, through its practice, rehearsal, and application. Training is defined as a learning process whereby an employee seeks to acquire knowledge, technical skills, and to develop attitudes and behaviors more effective for their work. So, in business, education has a self-centered character. The question to be addressed is what the job entails and hence what is required from the employee to know now or in the future at work. What deficiencies should they cover in order to get the job done in the best possible way?

In all, training aims to provide employees with specific skills or assistance to accomplish their tasks. Also, training focuses solely on current work as well as the immediate needs of the business. In a similar vein, learning at work is a systematically designed process that aims at exploring knowledge as well as learning ways of behaving that contribute to achieving the goals and strategy of the business (Goldstein 1991).

Furthermore, training is about getting a person to do a job effectively, efficiently, and consciously: *effectively* so that what was taught can be implemented; *efficiently* in order to be able to achieve the expected results; and *consciously*, so that the different emotions and behaviors of the trainers can put the trainees in a position to do what is right and when they need to.

Training and development are closely linked to the concept of learning at work. They presuppose a level of education and career development opportunities and usually involve middle- and upper-level staff.

Staff development is also a learning process where the goal is for the employee to acquire the knowledge and skills they will use in the future, in tasks that require more responsibility and initiative (Webb 2013). Career development is more anthropocentric in nature and is related to how the employee will become capable and develop as a person (Brown 2002). Of course, the ultimate aim is to prepare employees to deal effectively with future situations and take initiatives that will relate not only to the surface dimension of the tasks but also to the resolution of wider organizational problems.

Staff training is centered around achieving the below:

- To enhance the professional skills that trainees already possess in order to improve their performance
- For employees to develop different or new professional skills so that they can take on new tasks and meet the future needs of the business as best as possible
- To reduce learning and adaptation time when taking up a new job, as a result of career rotation or promotion

Development in organizations aims in enhancing the below:

- **Knowledge:** Knowledge is a pool of observations, facts, and information that relates to the job, the processes, the individuals, and the formal tasks associated with it.
- **Skills:** Skills development involves improving interpersonal skills in order to improve employee effectiveness, such as problem-solving, decision-making, and interpersonal communication.
- **Attitudes:** Attitudes are the tendency of every individual to act and react in a specific and predictable way. A possible change in attitudes usually refers to a change in behavior. This change is intended to make the way they respond to the stimuli they receive from the environment more effective. Attitudes of the employee towards others (clients or colleagues), tolerance for cultural differences, confidence in themselves, and a desire to take responsibility and risk are some of the examples of attitudes that are sought to be developed through specific training programs and to lead in such desirable behaviors.
- **Competencies:** Competencies consist of all the professional characteristics, knowledge, abilities, and behaviors required for an employee to perform their job properly. In order for employees to acquire the required competencies, many businesses implement training programs that aim at enhancing them.

DIVERSITY TRAININGS IN ORGANIZATIONS

In the international business environment that defines today's global society, managing diversity tends to be a more specific subject of study and research, both within the internal micro-environment and organizational culture and within the global macro-academic community (Georgiadou, Gonzalez-Perez, & Olivas-Lujan 2019a, b). The internationalization of business, coupled with the phenomenon of globalization, has brought about a new reality in the human resources operating in the international business environment. It is now self-evident that on a worldwide scale, people of different nationalities, cultures, languages, religions, and sexual orientation coexist in the same work environment (Vassilopoulou et al. 2018).

The aforementioned phenomenon of *diversity*, which was formerly marked by discriminatory behaviors and unfair treatment of the workforce that *differed*

from the objective *norm*, today tends to be characterized and used as a comparative competitive advantage, which could lead through effective management to the optimization of the business performance (Georgiadou et al. 2019). This makes managing diversity in most businesses particularly important, especially if they want to remain competitive in the international market arena. As a result of this new approach to the global workforce, there has been an adoption of government laws and statutory frameworks for diversity, while endeavoring to bring relevant legal norms of diversity treatment into a *common line* worldwide, at the same time facilitating multinationals operating in many countries. Thus, diversity management strategy is now part of the management of international businesses.

Initially, the concept of diversity in human resource management emerged from issues of gender and nationality diversity. Subsequently, new categories of diversity emerged, such as age, religion, and sexual orientation. The above have been issues that have been of great concern to societies from time to time, until the basic legislative principles on diversity issues of human resources have been enacted. Multinational companies and the increase of migrant workers around the globe have been a catalyst for combating inequality and unfair discrimination against human resources, as for these companies to successfully tackle the negative discrimination caused by ineffective diversity management would lead to the highest return on their business.

Diversity management is regarded as the recognition, understanding, appreciation, respect, and acceptance of differences in terms of age, class, gender, sexual orientation, race, ethnicity, religion, physical and spiritual ability, position, and other visible and non-visible characteristics among people. At the same time, the concept of cultural diversity in international business is a characteristic of a company whose employees come from a plethora of diverse backgrounds, different nationalities, religions, cultures, and so on.

International business management realized early on that, not managing diversity and multiculturalism raises many problems, but tackling it effectively is, at the same time, a challenge for the proper functioning of human resources. By and large, effectively managing diverse human resources promotes the attraction and retention of high-value employees, augments the firm's organization in encouraging and endorsing innovation, and reinforces the corporate responsibility image of the organization (Dreachslin 2007). In the literature (Cox and Blake 1991; Dreachslin 2007), diversity is the coexistence in a workplace, a market, or a society of a group of individuals, of diverse characteristics: age, ethnicity, skills, knowledge, opinions, and values. It reflects all those features that make them what they really are: unique. Kochan et al. (2003) conducted a five-year study on the effects of diversity on business performance. Their conclusion was that "the impact of diversity depends on the context in which it is being leveraged, including organizational culture, human resource practices, and strategy" (Dreachslin 2007, p. 83). Literature has also revealed the core belief that effectively managing workforce diversity can be considered

as a strategic “value-adding HR function that enhances organizational performance” (Cooke and Saini 2010, p. 476).

According to Cox (1993), two types of diversity training are the most popular: awareness and capacity building. The latter introduces the topic of diversity management and usually includes data on the demographics of the workforce, the concept of diversity, and exercises for participants to think about issues to increase their own self-awareness. Education for creating skills provides more specific information about cultural patterns of different groups and how they can affect work behavior. New employee orientation programs are also ultimate for the introduction of the expectations of workers, regardless of their cultural and national backgrounds.

Diversity training refers to any type of organizational, either on the site or online, program aimed at helping individual with diverse backgrounds and attributes work together more efficiently and effectively. Such programs have been used by organizations for a long time, but research reports mixed effects regarding their effectiveness.

In an attempt to increase diversity and reduce bias, organizations are relying on the same programs they have been using over the last six decades. Many of the approaches have been found to activate bias rather than quash it and allow for discrimination issues to be raised. The reason was that the majority of diversity programs are centered around regulating the top management team’s behavior, which is perceived as a direct threat to their status and autonomy.

It’s been estimated that about \$8 billion a year is spent on diversity trainings in the United States alone (Kirkland and Bohnet 2017). However, on the site or online diversity training is failing because it often focuses merely on raising awareness, and not on changing behaviors and taking action to ensure diversity management and inclusion in the workplace.

Gender-based workplace discrimination costs the UK economy only the most in terms of output, at \$168 billion a year (Webber 2018). According to European Commission, if women’s productivity level would rise to the level of men’s, Europe’s GDP could grow by 27% (Lagarde and Ostry 2018). A report released by the World Bank Group finds that if women had the same lifetime earnings as men, then global wealth would increase by a total of \$160 trillion (Georgieva and Bibeau 2018).

If one considers the fact that firms nowadays operate a lot like networks (Volini et al. 2019), it becomes even clearer that equality, diversity, and inclusion can enhance organizational performance. A research conducted by Deloitte and other academic institutions confirms that inclusive and diverse teams are more engaged, innovative, and creative in their work (Rock and Grant 2016). Deloitte’s study comparing low-performing teams against higher-performing teams reveals that individuals must feel included the organizational processes, culture, and strategy in order to participate, speak up, and thus fully contribute towards the realization of the firm’s mission, aim, and objectives (Office for Women 2016).

Despite this increased scrutiny, emphasis, and investment, however, it seems that organizations face a challenging reality gap: results appear to be extremely slow and thus behavioral change is not happening. The top management teams who have abdicated responsibility for this matter to the human resource department or the diversity officer have the duty now to take ownership and hold business leaders accountable at all levels. Employees today are gradually becoming aware of various typologies and sources of bias, and some businesses are starting to invest and take action in order to expose the issue and implement the necessary structural and institutional changes to effectively deal with it (Porter 2014).

The most popular solution today is *training*. But while such interventions are helpful, it appears that the approach that organizations have been following is not effective. The latter has been confirmed by the market research we have conducted, as well. The research was conducted within the period April–May 2019. The research took place among 180 business buyers and the sample was random as questionnaires were distributed randomly through various networks, including *LinkedIn*, *Facebook*, and mailing lists like *European Women's Management Development International Network (EWMD)*; *Gender and Diversity in Organizations Division in Academy of Management*; and *Women in Academy of International Business*. Samples were taken from organizations located in the UK (44%), France (11%), Italy (22%), Germany (11%), and Austria (12%). According to our survey (2019), 33.3% believe that the existing training approach of their organization is not effective at all whereas 44.4% believe that is somewhat effective.

Proving the argument that organizations are investing resources on equality training, according to our survey, organizations are spending an average of \$750 annually per employee on equality training, whereas the average total number of employees at the companies is estimated at 4000 employees. Hence, around \$3 million is spent on average on equality training, which is perceived as not effective by the employees.

Learning in virtual reality, however, has proven to enhance employee engagement, increase knowledge retention, and build through empathy the emotional connection between the trainee and subject that is needed to bring about the desired change in attitudes and behavior. Research has shown that the more senses we employ in a situation we experience, the deeper the learning becomes; retention rates a week after virtual reality training have been documented to be as high as 80%, compared with 20% after traditional training methods (Gaudiosi 2015). This is because VR challenges trainees on an auditory, visual, and kinesthetic level simultaneously, thus offering a unique amalgamation of empathic affordances, which rely on a vivid sense of actual presence and on the illusion of owing your virtual body. A plethora of empirical studies have reported substantial cognitive, emotional, and perceptual effects of the illusion of ownership over a virtual body. Behavioral, phenomenological, and physiological evidence has suggested that following a thorough and adequate induction, participants in VR training readily identify themselves with their

virtual bodies. Remarkably, virtual embodiment may also have a significant impact on reducing implicit biases related to age and race (Banakou et al. 2013; de Waal 2008).

VIRTUAL REALITY

The advent of the Internet and its consequent universal acceptance as a dominant means of information exchange could not leave the VR space untouched. This has resulted in the development of appropriate templates that have led to the creation of three-dimensional virtual worlds, thus creating new ways to communicate online. The challenge was the ability to develop low-cost applications that appeal to a wide audience, such as all Internet users.

VR uses computers to create and simulate realistically and plausibly real or unreal environments from which the user has the illusion of being surrounded and, in which they can move freely, interacting with the others, as they would in the real world. This is achieved by isolating the users and their senses from the real world and overlaying the real-world stimuli with corresponding virtual ones, made by the VR system through the use of appropriate technology.

The virtual world is transmitted in such a way that it can be shared with a wider audience. For example, the computer-based virtual world is the description of the objects within the simulation itself created by the computer. When we observe this virtual world through a system that transmits objects and interactions to us through an interactive presentation, we experience virtual reality. Summarizing the aforementioned text, we conclude that the virtual world is the description of a collection of objects within a virtual space, as well as the rules and relationships that dominate these objects (Sherman and Craig 2018).

If we consider that the user of virtual reality must *immerse* in another, alternative reality, then a virtual reality can be defined as entering—sinking into an alternate reality or illusion. An alternative reality may be the representation of a real space that exists somewhere in the natural world, or just a fantastic environment created by a developer. This is the perception of an alternative world or an alternative perspective of the natural world.

Immersion is essentially a transition from one mental state to another and is characterized by minimizing the critical distance from what is presented to the user and, maximizing the emotional involvement in what is happening. The goal of virtual reality is to install a physical or artificial world in the user's field of vision, thereby immersing themselves in an illusion that excites their senses and pretends that two-dimensional surfaces are three-dimensional (Grau 2003). Replacing real-world stimuli with those of the virtual environment is crucial to achieving immersion in the virtual environment. In virtual reality, entry into the virtual world begins with physical or mental immersion. In natural immersion, a synthetic stimulation of certain senses is dominated through the use of technology, while the state of mental immersion is referred to as the sense of presence of the user in an environment. We conclude, therefore, that

physical immersion is the defining characteristic of virtual reality while metal immersion is the ultimate goal of most digital media creators.

One of the benefits of virtual reality is that it allows the user to choose their advantage and influence the events within the digital world. In other words, virtual reality allows the user to gain a real-time simulated experience that resembles that of physical reality. In addition, virtual reality enables the reduction of the dangers inherent in the physical reality, as well as the creation of scenarios that seem unlikely in the real world. Sensory feedback, which is provided instantly by virtual reality, is based on the user's physical position and movements and in most cases is perceived through vision. To make this possible, the computer, based on virtual reality software, must be state-of-the-art so as to record any kind of movement in real time. A typical virtual reality system records the movements of the head as well as the hands or an object in the user's hands.

The authenticity of virtual reality depends on its response to the user's actions and movements. Another element of its authenticity, which is considered essential, is interactivity. Interactivity is the ability of the user to influence a computer-based world, as well as the ability to change their field of view whenever they so wish. In virtual reality, interactivity is achieved when the user moves through the virtual world and is able to change their field of vision by moving their head, while in more sophisticated applications, the user has the ability to move objects using their hands.

EQUALITY, DIVERSITY, INCLUSION (EDI) THROUGH VR

VR technology has already passed its early exploratory stage and is progressively acknowledged, adopted, and demanded. VR has possibly reached a tipping point for achieving a large-scale adoption, mainly due to the establishment and availability of more user-friendly and affordable hardware. Even though VR has been around for some time, it was not available for use by the wider audience from the beginning. VR headsets were either too uncomfortable and not allowing for smooth vivid virtual experience, or they were too expensive and had to be powered by large-scale computers. Consequently, VR was mostly used by big organizations in the industrial design sectors or by specialized research centers.

Nowadays the VR headsets have become affordable and powerful, while even smartphones can be used to process VR data. This creates massive opportunities for individuals, organizations, and researchers seeking to further investigate and process a cultural transformation into a virtual space.

Based on this categorization, the VR technology has gone beyond the peak of exaggerated and unrealistic expectations and a substantial number of consumers and businesses are expected to adopt VR technology within the following five years.

To put this in a context, it seems that VR technology is now entering the phase of enlightenment that smartphones went in around 2008. It actually took smartphones about nine years to reach a 50% adoption rate by consumers

in Europe. At the moment, smartphones have been reported to be used by one-third of the world population, with the worldwide sales of smartphones to have reached more than €375 billion in 2016. It took less than ten years for this transition to occur. Furthermore, a growing industry of mobile applications' design, development, and launch is directly linked with the growth in the use of smartphones; it has actually brought a revenue of €16.5 billion to the EU economy.

VR technology's adoption could be taking place rapidly, as individuals are gradually seeking for it, whether for private use or as consumers or professional. Interestingly, this acceptance rate is documented to be significantly higher compared to two years ago. An increasing number of individuals are enthusiastically asking for VR solutions, whereas others are simply curious about this new technology and mandate more information and tests to be conducted (Bezegová et al. 2017).

Despite the increasing scrutiny and investment on implementing diversity training programs, organizations appear to be failing to effectively cultivate the desired skills, behavior, and attitudes, with previous estimates suggesting that only 10% of training expenditures transfer to the job. Diversity trainings in Virtual Reality address that transfer problem through cultivating empathy with immersion. This is achieved through the development of breakthrough applications using existing state-of-the-art technology that will enable the realization of training sessions in true-to reality virtual environments that resemble actual workplaces.

Ultimately, these virtual training sessions will significantly stimulate the trainees' personal accountability toward attitudinal and behavioral change to incorporate inclusion and equality into their businesses' culture and DNA. Being a fun and interactive workshop also allows trainees to enjoy the virtual experience.

The way individuals enter the fully immersive experience of a virtual training is through VR headsets (Equal Reality 2019). Once users don the headset, they are placed into their virtual workspace, which resembles their real one. There, they are asked to take on the character of a person in the workplace who is being bullied, harassed, or discriminated against. Using a predefined and pre-designed scenario, that is realized on the basis of instructions and material for the incidents developed with businesses on a one-on-one basis, the simulation will provide users with some choice as to their responses throughout the case. Once the objectives of the first case are met and the scenario plays out, another one kicks off, this time with that participant embodying an observer to the incident of harassment or discrimination. Throughout these virtual reality workshops, participants actually experience first-hand how it feels and how it is to be bullied, harassed, discriminated against, and alienated. Examples could include, but of course are not limited to, three-minute-long scenarios played out in the VR; one in which a female employee experiences being left out of a conversation with male colleagues and has to ask so as to be included, and another in which an employee is berated, and their personal space encroached upon.

SIGNIFICANCE AND IMPLICATIONS OF VR DIVERSITY TRAININGS

VR training's competitive advantage against the conventional trainings is that it can give users very strong empathy and an authentic, deep emotional reaction to issues around harassment, intimidation, and negative experiences at work. This way, it provides the participants with a unique opportunity that they wouldn't have otherwise; to realize not just what this situation is all about, but to experience how it actually feels. That's a scenario and a position that they couldn't have had in any other form, unless being literally in that person's shoes.

Virtual reality's ability to put people in the shoes of another can be utilized in a way that will have great effect in the organizational experience, culture, but also day-to-day operations, as it's the ultimate empathy evoker. On the one hand, users have an actual physical reaction on a conscious level as well as an unconscious level to this virtual character, and it's intimidating and harassing them. According to research (Nott 2018), close to nine in ten employees reported that this VR experience makes them more receptive to the proceeding workshop, while nearly all (98%) said afterward that they now understood their personal role in further promoting and safeguarding inclusion and diversity.

On the other hand, for diversity trainers VR is the ultimate teaching tool in its profound effectiveness at stimulating empathy. Being open to and valuing diversity is not just something that people can learn; it's something they can feel and experience. A lot of individuals have seen and felt intimidation and bullying up close. You can never forget that despair, that frustration. Being alienated, excluded, disregarded, and muted. So, how can you get people to comprehend that feeling? Some trainers have been using storytelling to raise awareness, and undoubtedly listening to others is a great place to start for people who will listen. However, it's even more effective if you can actually get people to feel it first-hand; that's virtual reality diversity trainings.

According to a survey conducted by Hays (2019), 52% of employees claimed that their employer's public face and the way they portray themselves on issues like diversity do not count for a genuine representation of the real organizational culture. Out of these, 23% reported that diversity is not a real concern for the business, and 21% claimed that the public face appears to be an objective and not a reality, whereas 14% argued that their line managers had failed to effectively adopt and implement inclusive policies such as diversity in the recruitment process. Diversity efforts seem to be falling apart, firstly due to diversity fatigue; people have lost interest in the conventional diversity training approach after a long period of attending workshops that have not added any value in the efforts to bring about attitudinal or behavioral changes in organizations and societies.

Second, the insufficiency of the training approaches can be found in the inadequacy of the organizations to assimilate differences. Diversity is not just about recruiting people from diverse backgrounds; for diversity's benefits to be fully unlocked, organizations need to invest in inclusion. Acquiring and adopting VR training sessions will substantially augment the impact of the diversity

training programs in businesses and subsequently contribute to a further societal attitudinal and behavioral changes on matters around equality and inclusion.

In light of this, businesses that choose to acquire and utilize VR training simulations which will be based on real lived experience of their employees will enable them to actually *walk in someone else's shoes* to learn first-hand what it is like to experience inappropriate behavior or be the victim of discrimination at work. This will allow the participants to identify potential sources of bias and make important strategic decisions in real time on a real case-scenario with reality-based coworkers, thus rehearsing how they would react should they witness discrimination and reflecting on their own practices. Hence, this virtual reality experiences puts them into a critical position of making value-based decisions and practice taking action in the moment. The ultimate goal of course is, for individuals to have an intimate experience of how it feels like to be discriminated against, harassed, bullied, or the victim of abuse of power. VR technology achieves this through the cultivation of empathy towards others, thus deepening the participants' connection to the topics under discussion.

As with any intervention of course, there are limitations that should be acknowledged. First, people are reluctant in using technologies that are not familiar with. Although VR has been available for some time now, VR trainings have been so far introduced mainly in the military, the surgery medicine, and nowadays the health and safety industry. Hence, people working in organizations exposed to more conventional training approaches might struggle to acknowledge the value of the suggested intervention. Second, for virtual simulations to be as realistic as possible, a significant amount of resources—time and money—is required; resources that organizations might be unwilling to provide, considering a “cheapest” and “fastest” alternative of traditional training sessions. Finally, on the site diversity trainings are more generic and appeal to a wider spectrum of themes associated with EDI. However, VR diversity trainings are custom-made and that can be, apart from time consuming to be designed and built, irrelevant to some of the participants.

CONCLUSION

With an estimated 500 million people entering the global workforce over the next decade, coming to grips with the inclusion and equality challenge is critical. Without normalizing gender diversity for example, millions of skilled women jeopardize being left off the grid. In order to meet the equality and inclusion challenge, especially in the context of the current financial and refugee crisis, organizations need to invest in developing the appropriate strategies that will combine a new technological capacity and assets with investments in an extensive variety of traditional and non-traditional economic sectors. Virtual workplace diversity—and not only—training is crucial and a key step in capitalizing emerging economic, market, and business opportunities.

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Need for Speed: Corporate Political Activity Effect on Celerity of Regulatory Decisions

Jeferson Lana and Raul Beal Partyka

INTRODUCTION

It can be said that over the last decade, transparency has become compulsory, a crucial safeguard to protect society from capture by private interests. Confidentiality creates several problems. The shareholders themselves are deceived because they are kept in the dark about how their endangering capital is being used.

Companies must become as transparent about their political activities as they are about their sustainability activities, and this dual management, coupled with stakeholder pressure, will pose fascinating new challenges for corporate strategy (Lyon et al. 2018). On the other hand, the quality of public policymakers' information is a prerequisite for good regulation (Néron 2016). Putting the constructs together, it would be disastrous for governments to attempt to develop such regulations without the extensive input of the organizations needed to comply.

However, consistent with Kuo and Means (2018), companies can exert their political influence for the public good as well as for private profit. So, we argue

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that corporate sustainability requires some level of political engagement. The context of emerging economies in which the institutional environment is weak or ineffective also allows exploring the links between notions of corporate social responsibility (CSR) and corporate political activity (CPA) within these institutional environments (Demirbag et al. 2017).

Before, companies must take sides to make everything faster. With the advent of the digital age, where everything literally gets even faster—transforming the speed of things—having actions and activities that help speed up your business becomes a business need, and the business now has celerity capability. From now on, companies move from just knowing how to do things to now knowing how to do things quickly. CPA is on this path, which helps, and makes a process that has always been time consuming into a faster process (Holburn and Zelner 2010).

Werner (2017) examined investors' reactions to accidental disclosure of companies' investments in CPA. Investor reactions were more positive because companies had more experience in politics in general, specifically about involvement in election campaigns. Therefore, in addition to the transparency of disclosure, involvement in political activities generated attraction for investors. Lana (2017) found speed in the anti-dumping measures requested by Brazilian companies that were politically active through corporate political donations. Holburn and Vanden Bergh (2014) focus on regulatory approvals for public service mergers and demonstrate the role of campaign contributions as the petitioner stepped up his political activities in the period before announcing the merger, consistent with a strategy of companies seeking political support before the regulatory review.

Furthermore, in Schuler's research (1996), the intention of steel companies in the United States in the worst economic year of 1982 was to overburden the system for the government to negotiate restrictive deals with foreign countries, shelving more than one hundred unfair commercial petitions, and anti-dumping and countervailing duties, believing that agents are willing to favorably govern their industry and that political action would be more effective in influencing business managers in precarious economic conditions.

Critics of corporate political activity argue that the activities are a disproportionate political voice to companies. What matters is not just a company's willingness to spend money on politics, but its ability to profit by extension and generate jobs and tax revenue. When a company that supports a local economy can easily move—or choose not to make more investments—its political preferences will have a significant weight (Kuo and Means 2018). And in an era of hashtag activism and boycotts sustained by social media, companies can't afford to ignore consumers, employees, investors, and other stakeholders (Rodgers et al. 2019).

While it is easy to criticize the negative side effects of CPA for democracy, it should not be forgotten that democratic regimes are also far from perfect and that, in many countries, to organize local communities and help solve social problems, and filling government gaps, corporate interventions are welcome.

Thus, they offer a more practical view of the CPA. Not as an opposition of principle, but pragmatic forms of deliberation and governance that can allow CPA and corporate citizenship activities to contribute to society (Scherer et al. 2013).

The remainder of the chapter is organized as follows. First, we explain the context and background. Then, the body of the chapter is present with the relevant literature of nonmarket strategies, corporate political activity, and institutional environment. Finally, we conclude by presenting the key contributions of our study, also suggesting future avenues for research.

CONTEXT AND BACKGROUND

Understanding that the corporate environment is uncertain and that companies are continually seeking ways to remain attractive, the search for tools that provide greater security is a natural consequence. Therefore, in weak institutional development environments, such as Brazil and many other emerging countries, companies use the CPA as a tool to protect market uncertainties and state expropriation.

Firms compete, whether individually or in cooperation; it is their nature. While a great body of research has focused on the financial dimensions of the consequences of the competition, we still need more explanations on the mechanisms by which firms compete (McGrath 1988; Mitchell and James 2001). We assume that CPA works better in emerging countries due to low institutional development.

In emerging countries, the institutional environment is favorable for companies to ally themselves politically to provide greater success in their business. In institutional environments with highly regulated sectors, large state-owned companies influence the attractiveness of the sectors and the pressures influencing them (Doh et al. 2012), as is the case in Brazil. Companies can use the CPA as a tool to protect and build competitive advantage due to market uncertainties and state expropriation. Country-specific institutional characteristics suggest that it is difficult to find common institutional characteristics among countries where group companies appear relatively well. For example, contract enforcement is relatively efficient in Israel and not very effective in the Philippines. Brazil is in the middle (Khanna and Yafeh 2007).

Companies are seen as social structures that exert action and pressure on the environment they are inserted in. Establishing a business can be more expensive in a more developed economy than in an emerging one because of the various actors involved. However, companies in emerging markets deal with social forces that influence political actors, and these are the results of policies (Doh et al. 2012). Companies do not understand or do not know how to deal with the institutional forces that affect political actors and, therefore, respond with nonmarket strategy (NMS) avoiding obsolescence and inefficiency.

In order to achieve the purposes outlined in the introduction of transparency and profit-oriented competitiveness, we focus on speed. If time is money,

competing for speed is a reasonable capability firms can develop in order to obtain performance (Baron 2013). We are here particularly interested in influence of corporate political capabilities (Holburn and Zelner 2010) on the speed of political decisions (Bonardi et al. 2005).

Our hypothesis states that the greater the political capabilities of the firm, the faster will be the decisions of regulatory agencies and government actors relative to the firm's demands (Hillman et al. 1999). The rationale behind this idea is that the alignment between firms and public actors (Baron 1999; Dorobantu et al. 2017; Hillman et al. 2004) boosts the interest of the latter in providing celerity to the corporate demands of the former (Bonardi et al. 2005). This alignment is pursued by several CPA channels, such as lobbying, advocacy, elections donations, and hiring former politicians to the management team (Hillman and Hitt 1999; Hillman et al. 2004; Schuler et al. 2002).

On the one hand, in developed economies, CPA focuses especially on influencing and preventing or making a decision on regulatory movements that affect companies' market strategies (Doh et al. 2012; Lawton et al. 2013). But in emerging markets, companies often use CPA to compensate for institutional gaps (i.e., Khanna and Palepu 2010).

Nevertheless, these actions must be carefully thought and strategically developed, forming a political capability of the firm. Finally, in this chapter, we will provide concepts and examples of the influence of political capabilities on the speed of public decisions to the challenges of surviving, sustainable and profitable. A broader movement pushing for greater corporate responsibility is growing and has so far focused on how stakeholders can improve corporate responsibility for corporate social responsibility (i.e., Utting 2008).

CONCEPTUAL FRAMEWORK

Nonmarket Strategies

Nonmarket strategies address the movement to broaden business strategies, "may include activities such as joining a political action committee, holding conferences, litigating a case in court, and mobilizing social actors to support or oppose a strategic initiative" (Doh et al. 2012, p. 24) in addition to its internal environment, seeking to influence the external environment (especially the government) to obtain advantages and to mitigate risks of institutional instability, and, finally, guarantee the return of invested capital. When the firm adopts a policy of developing relationships with government, the interactions in the nonmarket environment are voluntary. When government regulates an activity or activist groups organize a boycott of a firm's product, it is involuntary (Baron 1995).

Clearly, government policy is an essential component of business. However, the behaviors of companies participating in the public policy process have received relatively little attention. What is known is the relationship between competitive strategy and company policy and the objectives of the company's

political activity (Hillman and Hitt 1999). A significant factor of such activities is that the greater the control government have over opportunities, the more the nonmarket strategies are to be needed. This is clear in the case of government in the role of customer or regulator. The control of opportunity by government and interests is one side of the coin. The other side of the coin is the profits that incumbent firms garner due to this control (Baron 1997).

In airline industry, nonmarket actions significantly affect performance. The greater the number of nonmarket actions, the better is the performance, whether measured by quarterly gross profit margin (Shaffer et al. 2000). This evidence supports the perspectives of business and society scholars, which emphasize the importance of nonmarket actions to both business students and business practitioners. It was also shown that states were more likely to adopt a renewable portfolio standard if they had an American Solar Society office in their state (Lyon and Yin 2010).

The closest context is the idea by Bonardi et al. (2005), who cite the existence of political markets that would offer greater incentives to use different channels of political connections at different times. With this, the idea of team is appropriate for firms that seek to optimize their investments in political resources. In this sense, we point out that not only the political benefit in capital, favorable public policies, and information are important, but also the time elapsed until they take effect. An important point needs to be addressed in temporal surveys is that they help to improve the causal understanding of phenomena. In this sense, causal research in administration is more easily absorbed by the corporate environment, since it serves as a reference for the process of business decision-making.

As in any field of scientific study, the influences of time and relationships of interest are important, even in the organizational field. Thus, it is plausible to infer that there are more suitable moments for certain corporate political investments, which would also explain the incongruity of some results found by empirical antecedents (Hadani and Schuler 2013). The move to examine political competition is favorable. Constant attention must be paid to the importance of a problem and time, such as through changes in the technical, economic, or political environment (Hillman et al. 2004).

In addition to being influenced by the political context, the success of nonmarket strategies also depends on the capabilities and experience of the company itself. The firms with the largest size, age, diversification, and latitude (Lenway and Rehbein 1991; Schuler 1996) find it easier to influence political actors because of their greater credibility and bargaining power (Hillman and Hitt 1999; Hillman et al. 2004). Also the costs are lower for companies that have high access through political representation (Schuler et al. 2002) or offices close to the seat of power (Rehbein and Schuler 1999) and for companies with (Bonardi et al. 2006; Holburn and Zelner 2010) and greater adaptability to different institutional settings (Oliver and Holzinger 2008).

Corporate Political Activity

CPA is defined as “any deliberate firm action intended to influence governmental policy or process” (Getz 1997, p. 32). It mainly reflects the combination of different tactics, including campaign contributions, political action committee (PAC) contributions, lobbying, grassroots lobbying, and soft-money contributions to political parties with the goal of achieving access to politicians. The area most widely studied behind antecedents of firm, industry, issue, and institutional factors is the outcome of CPA in terms of both policy decisions and firm performance. The ability to influence a policy decision in a manner favorable to the firm is closely intertwined with improving firm performance (Hillman et al. 2004).

Considering the previous topic, where the nonmarket strategies are defined as the set of efforts made by the company in search of advantages that are not related to the market aspects, connecting a company politically, in search of advantages from the political sphere, is understood as one of the nonmarket strategies. In this way, the CPA is treated as a nonmarket strategy and the effects on firm performance due to these actions were investigated. The impact of the connections on performance exists, whether positive or negative, due to the creation of different conditions among firms.

The theoretical framework includes some variations regarding the nomenclature used in the treatment of the phenomenon. Getz (1997), Hadani (2012) and Hillman et al. (2004) call corporate political activity, or action (CPA), the actions aimed at bringing government closer to firms, and explain that this would be a broader approach than the proposal by the (corporate political strategies (CPS), so-called by Bonardi et al. (2005) and Schuler (1996)). Actions planned with the intention of influencing the decisions of public policies taken by the political actors. Other authors call political connections (Faccio 2006; Fisman 2001) the phenomenon of interconnecting firms and government in search of market advantages. Although there are some fundamental differences between the terms CPA, CPS, and political connections, in this chapter they will be treated as similar, and the standard nomenclature used will be CPA.

Resource dependency has been used to explain aspects of CPA, the dependence of business organizations on government for such things as favorable regulations, sales, or trade protection. Similarly, the exchange-based literature on CPA considers that there is a mutual resource dependency between firms and politicians. Both are used to explain why firms are politically active (Getz 1997).

One of the political activities is personal service. It may be considered an interorganizational linkage in that a decision-maker from one organization becomes a decision-maker in another (Hillman et al. 1999). They are part executives that may serve at the federal or the state cabinet level, elected politicians, in executive and administrative departments, or consultants or members

of special committees. In sectors where firms are increasingly subject to global competition, both a strategic perspective and a public policy at the firm level are needed to understand the factors that compel a company to seek government protection against imports (Schuler 1996). Studies on the importance of political actors in emerging markets have been published, as in China (Du et al. 2019; Li et al. 2008), India (Elg et al. 2015), and in Russia (Okhmatovskiy 2010).

On the other hand, in a case study of Fisman et al. (2012), there was no significance of the political ties of US Vice President Richard Cheney with US organizations. It was pointed out as responsible for such finding, the effective control of institutions in the search for income through personal ties with senior government officials. In this case, it focused on the importance of VP's personal ties in generating value. Existing institutions such as lobbying entities and political action committees facilitate political relations and differ greatly from the exchange of personalized favors.

In addition, visiting senior government officials appears to be a valuable CPA for companies, providing greater financial gains than companies that do not receive visits. The visit indicates that the government may be willing to provide resources that benefit its sector, whether with increased funding or aligned policies. The government may also be willing to protect loss-making companies. Visit by government officials can also attest to the reputation and legitimacy of host companies, and extension certification enhances the third-party impression of company reputation and legitimacy (Schuler et al. 2017b). In Ukraine, findings show that micro- and small businesses need to engage in political activities with the state when they enter the market, but also after entry, to survive in contexts where institutions, among them, are in conflict (Rodgers et al. 2019).

In addition, this leads to the finding that investors have been more positive than firms (Werner 2017), but is more specifically with regard to engaging in electoral campaigns. Corporate donors gained direct access to Republican governors and their senior staff. This institutional background illustrates how the characteristics of state politics and policymaking make the states an attractive target for CPA. The petitioner increased their political activities in the period before they announce merger, consistent with a strategy of firms seeking political support in advance of regulatory review. Firms use an indirect strategy of targeting pivotal political actors who can exert influence on regulatory agencies as well as a direct strategy of lobbying agencies in order to shape agency decisions (Holburn and Vanden Bergh 2014).

Corporate sustainability management is driven by enlightened self-interest, where the task of sustainability is to find the best means (e.g., pushing for new regulations) of using natural resources to meet corporate profitability goals (Schuler et al. 2017a). Companies' sustainability discourse on the importance of environmental stewardship and responsibility contrasts sharply with their less visible but deliberate and proactive policy actions designed to facilitate the approval of bills (Cho et al. 2018). Organizationally, behind the scenes, there is a more intimate area accessible only to a more intimate group of political

actors (Cho and Roberts 2010). These political actors who are only intimately affected should be sought for behind-the-scenes political contributions and strategies.

The talk in front of everyone about performance (sustainability reports) and the behind-the-scenes actions (political strategies) of oil and gas companies reflect two conflicting approaches. Publicly, corporations promote the performance of environmental responsibility with the goal of managing their stakeholders' impressions by forging a specific image of them. Our analysis of sustainability reports highlights how oil and gas companies present their concern for the present and future environmental protection.

Behind the scenes, companies focus their efforts on lobbying. Given the current and future major concerns in the social and ethical field, the current voluntary, unregulated sustainability reporting scheme, for example, allows organizations to project an image and impressions of deception. Thus, it can be inferred that sustainability disclosures are not only used to conceal poor environmental performance, but also to divert attention from economically targeted political contributions (Cho et al. 2018).

Institutional Environment

A institutional theory view governments as principal actors in establishing norms through coercive or regulatory methods (DiMaggio and Powell 1983; Oliver 1997). In the context of emerging countries, regulatory and contract enforcement regimes in such markets are ineffective. These events are commonly known as "institutional gaps" (Khanna and Palepu 1997). Khanna and Palepu argue that these gaps create opportunities for in emerging markets compared to developed markets. Informational voids in the product market create a situation where consumers do not have reliable information about products and services. Investors lack the much-needed reliable information in these financial markets. In this way, investors may not be willing to invest in opportunities, nor can entrepreneurs raise capital for promising ideas.

Companies must adapt their strategies to regulate (Khanna and Palepu 1997). Unlike developed economies, emerging markets suffer from weak institutions in all or most areas. Yet, when regulators set political goals above economic efficiency, they can distort the functioning of markets. In this case, not only does the state intervene more extensively in commercial operations, but companies also have difficulty predicting the actions of regulators. Diverging paths have been seen between North and South Korea, or between East and West Germany, where one part of the country stagnated under central planning and collective ownership, while the other thrived on private ownership and the market economy (Acemoglu et al. 2000).

Institutions are the formal and informal rules of a society or, they are the humanly invented constraints that shape human interaction and govern economic and political behavior. It is the rules of the game in a society that govern

human interactions. Institutions are the types of structures that matter most in social life because they make up the material of social life (North 1990).

Moreover, institutions are developed by society to create order and provide the rules of the segment, and organizations are the actors subject to these rules (North 1990). The role of institutions is also in improving business investment (Baumol 1990). Operating a range of formal institutions, including property rights, regulation, information transparency, and accountability, is important in attracting foreign direct investment primarily to developing and emerging countries (Globerman and Shapiro 2003).

From the standpoint of the institutional structure in the economy, increased productivity in an economy may be improved or limited, depending on its institutional structure (North 1990). The need and interest of the country need to be above lobbying by the parties that may be impacted by the development of the sector to which they belong. Therefore the importance of a solid, trustworthy institutional structure and preferably not one in which its norms change every three to five years, creating instability in the sector.

Finally, it can be seen that the development of connections with the host country's government can facilitate dealing with regulatory agencies, as well as understanding and responding to the norms of the institutional environment (Banerjee and Venaik 2018). While institutions define the system of rules that shape the attitudes, values, and expectations of individual economic actors, institutions are also responsible for producing and reproducing the conventions, routines, habits, and "established thinking habits" that, along with attitudes, values, and expectations, influence the economic decisions of the actors. However, they are unlikely to be aware of the real impact that institutions have had on their education (Gertler 2004).

DISCUSSION AND CONCLUSION

As recognized by scholars, companies and their managers make many decisions about political strategies based on the relationship with the government, it is impossible to ignore the ethical and transparency foundations of such actions.

We conclude the chapter by discussing the implications of our findings for academics and business managers, along with several reflections on how our results speak in broader discussions about civil society organizations and policymakers.

Implications for Business Managers

Companies are not expected to support public policies that significantly hurt them financially, for example that a coal company supports policies that stop coal mining or that an oil company supports policies that stop oil drilling. Then, what can we expect for 2025, really?

1. Companies should plan to fully disclose their corporate political activity. In the information age, transparency is increasingly irrefutable. Shady money and lobbying are unpopular between the public and civil society actors, and pressure for political outreach is unlikely to diminish. Leading companies in corporate sustainability are also likely to be the first to drive this movement (Lyon et al. 2018).
2. Alignment political activity with public pronouncements and corporate sustainability efforts. If a company is seeking to reduce the amount of carbon emitted, it is also expected to support public policies that require all companies to reduce their emissions (Lyon et al. 2018).

Corporate sustainability management can extend its ethical reach and intertwine with more empirical phenomena (Schuler et al. 2017a, b). The demand for political transparency is unlikely to disappear. The challenge will be, as demands for political transparency grow, that companies continue to execute a strategy that involves contradictions between virtuous public statements and self-interest lobbying and other activities. Important is a more responsible involvement with the government. Business support is important in the progress toward a more sustainable world. Corporate leaders can expose their own willingness to be transparent about their political activities and speak up to demand new norms and transparency rules for all companies (Lyon et al. 2018).

Implications for Theory and Scholarship

A major challenge for academia and education institutions will be the development of assessment tools to estimate the extent to which corporate policy action supports policies that will actually lead to more sustainable outcomes (Lyon et al. 2018). Many developing nations have been desperate for constant tax payments to governments, but without dignified return to citizens and resolution of problems. It is plausible to imagine that they suspect that much of the problem is the influence of money and corporate power on politics (Lyon et al. 2018).

On the other hand, as to the legality of campaign contributions, changes to these laws change states' anti-transparency statutes in the United States for example, when a state allows campaign contributions and has a competitive electoral environment, it approves more anti-transparency laws (Werner and Coleman 2015). This opens practical political, legislative, and regulatory debates about the role of corporate money in politics. Contributions to election campaigns and their close political connections between business and policymakers can lead to undue and unfair policy influences in a country (Claessens et al. 2008), but this type of CPA may be unavoidable due to the country's institutional or competitive pressures, especially when foreign companies set up in foreign countries (Lawton et al. 2013).

Finally, it will also be interesting in the future to examine the temporal effects, that is, how CPA strategies change over time due to changes in the

institutional environment resulting from the globalization of trade and investment flows. In addition, it will be interesting to measure society's expectations about the activities of foreign companies, who wish not only to benefit from the local economy but to contribute to it (Banerjee and Venaik 2018).

CONCLUSION

While the dissemination of money in political campaigns is already widespread in nations around the world, it should also include a number of other possible activities that are tailored to the variety of political systems and regimes around the world to prevent corruption, which remains a powerful force in many parts of the world. Much of the practical and even legal debate about CPA disclosure concerns the impact on reputation and level of competitiveness. We see this as an open question that should be involved in further studies. In addition, scopes that favor full CPA transparency would also inform the biggest ethical issue (Skaife and Werner 2019).

In front of the audience, as colors are trying to find attractive ways to attract, a search for tools that offer greater security is a natural consequence. In fact, companies do not understand or do not know how to deal with the institutional institutions that affect political actors; therefore, they respond with NMS—like CPA—in order to create a superior performance or sustain competitive opportunities and advantages.

Examining a relationship between CPA and corporate sustainability, in the context of an institutional environment in emerging economies, our study contributes to this body of literature, analyzing the research of companies that use CPA as a tool to protect and build competitive advantages due to market uncertainties and state expropriation, whereas it must maintain ethical, transparent, and noncontradictory treatment of such activities for shareholders and society.

Finally, companies must become transparent not only in sustainability activities but also in political activities. This dual management, coupled with pressure from stakeholders, will bring new challenges to the business strategy. If companies know how to manage their business strategies, from now on they will not only know how to do things, but they will also know how to do it quickly.

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PART II

Economic, Political and Ethical
Challenges



Political and Ethical Challenges of 2025: Utopian and Dystopian Views

Duane Windsor

INTRODUCTION

This chapter designs contrasting utopian and dystopian scenarios about the future (Windsor 2018b) and a median voter perspective to examine political and ethical challenges of 2025 affecting corporate sustainability. Each citizen chooses a political and ethical stance in light of their expectations about the future and capacity to influence that future. The situation has strong implications for business managers assessing the corporate social responsibility (CSR) of businesses and political criticism of capitalism and wealth as aspects of corporate sustainability. Citizens are stakeholders of specific businesses. Business managers are citizens facing the same challenges in private life as well as in their management responsibilities.

The utopian or optimistic view is designed to be progressive and globalizing in orientation. Governments and global markets both function effectively, and global economic growth continues. This view presumes that sustainable development is feasible politically and economically and that technological advances will ameliorate and reverse climate change damages. The view rests on an implicit assumption of aggregate positive-sum changes. The dystopian or pessimistic view is conservative and increasingly nationalistic and populist in orientation. This view presumes that coming changes are adverse to national and popular interests. Governments and global markets begin to function less effectively toward 2025. There could be persistent trade wars between key

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economic actors, such as the US and China or the European Union (EU). The view rests on an implicit assumption of zero-sum changes: what one country or interest gains, another country or interest loses. Zero-sum invokes a lifeboat ethics condition concerning other countries and refugees (Hardin 1974).

This chapter relates to the overall project of Business 2025 corporate sustainability in the digital age as follows. The project call for papers identifies 2025 (see Center for Long-Term Cybersecurity 2019; Lipman and Petrov 2013; Gerhold and Steinmüller 2018) as possibly a “point of no return” for various problems. The dystopian scenario corresponds to this concern. The implication is that there must be changes in individual and business behaviors as well as in public policy. The utopian scenario corresponds to positive effects of desirable changes, but must function effectively now to avoid a possible “point of no return.”

Contrasting narratives for utopian and dystopian scenarios examine what happens if on the one hand viable solutions are quickly found and behavioral and public policy changes do occur quickly enough, or if on the other hand such solutions are not quickly found and behavioral and public policy changes do not occur quickly enough. Businesses cannot decide what actions to take without considering the political chaos that seems to be unfolding in the US and the EU, in the EU due to Brexit and increasing immigration, and the combined political and ethical challenges facing the citizens of democratic societies. The emphasis in this chapter is on the implications of the call’s “social, demographic, technological, and managerial trends by 2025” as viewed by the median voter citizen and the business manager. These trends constitute the business environment shaping corporate sustainability.

The importance of the topic coverage is that this chapter addresses the difficulty of understanding the dynamics of political and ethical choices. If 2025 in reality proves to be a “point of no return,” then individuals, organizations, and institutions have amazingly little time to identify key problems and decide how to proceed. A utopian narrative anticipates success. A dystopian narrative anticipates failure. Each narrative in effect advises differently on what may happen and how to decide what to do in each year from 2020 through 2025.

The chapter structures specific objectives as follows. The second section explains the context and background for the scenario approach in terms of a perfect storm for corporate sustainability. The section identifies a first list of the most important political and ethical challenges expected in 2025. The year 2025 suggests a relatively short time horizon over which to identify potential solutions and make choices. The ethical problem for citizens and managers takes the form in a perfect storm of Hardin’s (1974) lifeboat ethics. The third section explains the constructed utopian and dystopian scenarios. The section sharpens differences between utopian and dystopian narratives to emphasize political and ethical choices facing citizens and business executives and directors. The scenarios constitute a dialogue. The fourth section links these scenarios to a median voter perspective in which the median voter is politically neutral but ethically concerned without embracing Hardin’s lifeboat ethics.

The chapter links the proposed scenarios to the median voter perspective and then to business sustainability issues of CSR and political criticism of capitalism and wealth. Because 2025 is coming up quickly, references must emphasize current topics, used simply to illustrate arguments. The chapter also seeks to link these topical references to an academic literature. The left extreme emphasizes the utopian scenario. The right extreme emphasizes the dystopian scenario. The political center party of median voters may disappear toward the left and right extremes. The fifth section addresses two key corporate sustainability issues within the framework generated by the scenarios and the median voter perspective. These two issues are corporate social responsibility (CSR) and political criticism of capitalism and wealth.

A PERFECT STORM FOR CORPORATE SUSTAINABILITY

A brewing perfect storm involves multiple challenges occurring simultaneously, more or less, and interacting viciously to undermine governments, markets, businesses, and citizen confidence and understanding.

Key Challenges

A list of the most important challenges includes the following in no particular order of importance. The combination of challenges is the perfect storm. Changes listed here, and possibly others such as the 2020 COVID-19 pandemic, present profound political and ethical challenges for business and governmental leaders and individual citizens. The chapter does not take a position on the merits of any particular challenge. Contrasting references seek to provide dialogue about pro and con views on key challenges.

1. Rising nationalism and populism negatively affect international trade, investment, and cooperation (Windsor 2019b). Brexit and Catalan independence movements are symptomatic. The Trump Administration is not a fan of the Paris Accord 2015 and is trying to redesign key trade arrangements through threat of trade wars if necessary. Nationalism and populism (Waisbord 2018; Wimmer 2019), Brexit (Dixon 2018; Jenkins 2016), the Paris Accord (Duke 2019; Novak 2017), and trade war threats (Benson 2019; Krugman 2019) have advocates and critics.
2. Population movements ignore national border controls and are driven by various factors, such as economic preference, climate change, military conflict, and internal conflict. There are advocates (Bove and Elia 2017) and critics (Foster 2014) of mass population movements. The 2019 Finland election reveals a deeply divided population in a small, relatively homogeneous, and highly democratic society (OZY 2019). Some reports cite immigration concerns as a driver of populism (Leicester 2017) and Brexit (Adam and Booth 2018).

3. Climate change effects such as global warming, melting glaciers and polar caps, and rising sea levels are arguably accelerating: technological innovations may (or may not) offset these effects (Borenstein 2019). Some prominent companies, illustrated by Amazon and Duke Energy, have recently undertaken pledges to reduce carbon pollution (Martin 2019; Pisani and Sapro 2019). Senator Mitt Romney (Republican, Utah) has cautioned that climate change effects might result in “the disruption of the whole political order of the world” and that effective action in Washington, DC will depend on “wins for both parties” rather than “a victory for one party” (Osborne 2019).
4. There is a potential ideological shift away from capitalism and toward socialism (*Economic Report* 2019; Newport 2018): this shift involves concerns over inequality (Semuels 2019; Telford 2019; Tomlinson 2019) and health care access (Schatzker 2019). These concerns lead to demands for higher taxes, universal basic income, and universal Medicare Access promoted by progressives—whose financing scheme is higher taxes beginning with the wealthiest and working downwards. Senators Bernie Sanders (Democrat, Vermont) and Elizabeth Warren (Democrat, Massachusetts) have advanced various proposals (Rappeport and Kaplan 2019; Sanders n.d.; Stein 2019; Windsor 2019a). Senator Sanders has stated: “There should be no billionaires. We are going to tax their extreme wealth and invest in working people” (Cillizza 2019).
5. There is risk of permanent winning coalitions driven by identity politics (Boettke and Thompson 2019) or some other kind of anti-compromise politics that can destroy democratic governance by establishing one-party states that are unavoidably dictatorial (although majoritarian) rather than constitutional (featuring checks and balances and electoral competition) (Mainwaring 2001; Traub 2013).
6. China, Russia, Iran, and North Korea are aggressive regional military powers that seek to gain regional hegemony and threaten neighbors (Sciutto 2019). Iran and North Korea have nuclear weapons development programs. Regional aggression may force arms race and regional conflicts (Arnon and Guzansky 2018). Iran and Saudi Arabia are engaged (or arguably not) in an undeclared war in Yemen (Bednarz et al. 2015).
7. Pervasive corruption is widespread in many countries, including Brazil and India as well as China, Russia, Iran, and North Korea. Advanced economies with democratic regimes are not immune to corruption (Hall et al. 2020). Corruption undermines public confidence in institutions (Clausen et al. 2011). Multinational enterprises may play a crucial role in providing bribes to public officials (Windsor 2019c). A variant of corruption involves the multiple business scandals that undermine public confidence in capitalism (Lombardi et al. 2019).

Hardin's Lifeboat Ethics

Hardin's (1974) lifeboat ethics model illustrates ethical challenges for citizens and managers in a perfect storm. Climate change may increase both inter-nation and intra-nation inequality effects (Diffenbaugh and Burke 2019). In a proposed model of lifeboat ethics, Hardin makes an argument for not helping the poor of the world. An interpretation of the argument is as follows. The advanced economies possess a lifeboat capable of holding their own population. The developing countries—holding most of the world's growing population—do not have such lifeboats. The advanced economies cannot save the rest of the world without being swamped. This argument generates present debates concerning refugee policies and sanctuary zones in the US and the EU. The policy of the EU has been that if a refugee can touch some part of the EU, then the refugee is automatically admitted. A “progressive” position favors admission; a “conservative” position favors exclusion.

The lifeboat model raises a profound question about personal ethics for citizens and business managers. In the setting of using Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) for genetic modification of humans, George Church (Professor of Genetics, Harvard Medical School) argues: “I believe we have an ethical obligation to maximize benefits and minimize harm” (Hall 2019: 15). Dov Seidman, CEO of the ethics and compliance consulting business LRN, states: “Moral leadership means truly putting people first and making whatever sacrifices that entails” (Friedman 2018).

UTOPIAN AND DYSTOPIAN SCENARIOS

A scenario is simply a description of a possible future. Contrasting scenarios may thus be an informative dialogue. A scenario may be qualitative (i.e., a narrative) or quantitative (i.e., a mathematical model). Narratives are the most common approach. Scenarios may prove useful for dialogue (Gerhold and Steinmüller 2018) and addressing “wicked problems” (Wright et al. 2019).

This chapter does not undertake to make specific predictions. Scenarios have equal likelihood. For instance, the Center for Long-Term Cybersecurity (2019) looks at four scenarios for 2025. An optimistic (or utopian) Scenario 1 “Quantum Leap” expects quantum computing to be successful and important. A pessimistic (or dystopian) Scenario 2 “The New Wiggle Room” is a “poisoned chalice” in which there is too much information and knowledge. Scenario 3 “Barlow's Revenge” shifts cybersecurity to government or by delegation to big business (Barlow 1996) and Scenario 4 “Trust Us” shifts cybersecurity to an artificial intelligence (AI) “SafetyNet” trusted to function correctly. The Center for Long-Term Cybersecurity (2019: 6) characterizes the scenario approach as follows:

The Cybersecurity Futures 2025 scenarios (like all scenarios) are not predictions. They are logical narratives that tell stories about how forces of change from a

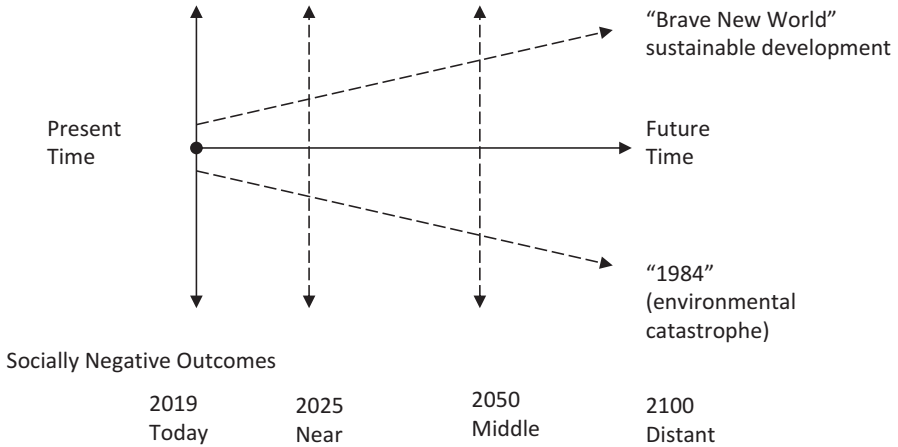


Fig. 12.1 Two contrasting scenarios for 2025 political and ethical problems. (Source: Author’s creation adopted in part from Windsor 2018a)

variety of sources ... may overlap and combine to create a set of cybersecurity problems in 2025 that are different from those encountered today.

Figure 12.1 depicts two contrasting scenarios for the future, adapted from Windsor (2018a). One scenario is utopian or positive. The contrasting scenario is dystopian or negative. These two scenarios are extreme and opposing narratives about the possible future. Sustainable development (a “Brave New World” invoking Huxley 1932) and environmental catastrophe (“1984” invoking Orwell 1949) here describe positive and negative outcomes in perhaps the year 2100.

An essential difference across time horizons is that “While a near future is represented in practical terms and concerned with forming expectations and goals under conditions of uncertainty, a distant future is represented in stylized terms and concerned with imagining possibilities under conditions of ambiguity” (Augustine et al. 2019: 1930). Because scenarios are not predictions but narratives about possibilities, it is important not to treat a scenario as in any sense a reality. Individuals may tend to believe scenarios. Augustine et al. (2019: 1930) in a study of proposed geoengineering planetary-scale technologies for addressing climate change caution:

Geoengineering has increasingly been treated as if it were a reality, despite continued controversy and in the absence of any implementation. We find that societal-level imaginaries that were built on deeply-held moral bases and cosmologies underpinned the conception of geoengineering, and that a dialectic process of discursive attempts to reconcile oppositional imaginaries increased the concreteness and credibility of geoengineering so that it increasingly has been treated as an ‘as-if’ reality.

Table 12.1 Utopian and Dystopian scenarios

<i>Dimension</i>	<i>Utopia</i>	<i>Dystopia</i>
	A Median Voter Assesses Two Competing Scenarios	
Metaphor Label	“Brave New World” (Huxley, 1932): the future will be positive through replacement of capitalism by socialism	“1984” (Orwell, 1949): the future will be negative due to replacement of capitalism by socialism
Political orientation	Progressive	Conservative
Ethical orientation	Social welfare	Lifeboat ethics (Hardin, 1974)
Nationalism orientation	Global	Nationalism and populism
Expectation beyond 2025	Sustainable development	Environmental catastrophe
Technological forecast	Technological solutions for climate change appear	Technological solutions ineffective or delayed
Climate change policies	Paris Accord effective	Paris Accord ineffective
Social institutions Leading democracies	Resilient and innovative Continue to be successful	Inadequate Increasingly ineffective
Artificial intelligence (AI) and robotics	Complementary to human labor increasing employment	Substitute for human labor decreasing employment
Economic prescription	Socialism	Capitalism
	A business manager assesses CSR and political criticism of capitalism and wealth	

Source: Author’s creation drawing in part on Huxley (1932), Orwell (1949), and Hardin (1974)

Table 12.1 provides a comparison of proposed utopian and dystopian scenarios on key dimensions. These scenarios are constructed narratives and not specific forecasts. The constructed narratives may include some apparent inconsistencies or elements that arguably might serve better in the opposed narrative. The scenario labels are metaphors. The essential feature of future utopia is that society solves all key problems to everyone’s benefit: the scenario is optimistic. The essence of future dystopia is that key problems overwhelm society’s ability to handle: the scenario is pessimistic. These two narratives are intentionally extreme opposites. Reality to 2025 and beyond may well prove to be some mix of positive and negative dimensions. While the two scenarios do strongly emphasize sustainable development versus environmental catastrophe, the scenarios are not restricted to environmental matters: political, ethical, and value orientations, political outcomes, and AI outcomes are also included. The scenarios present the median voter and business managers with conflicting narratives about the future. A progressive party may threaten that environmental catastrophe must result from a conservative party and promise that utopia will follow from socialism. A conservative party may threaten that socialism will result in dystopia and promise that capitalism is the path to wealth. But in

general terms, utopian reasoning tends to be progressive (Huxley’s “Brave New World” is coming) and dystopian reasoning tends to be conservative (Orwell’s “1984” is coming). A particular reader may view “Brave New World” as dystopian (Huxley’s intention) and “1984” as utopian. But the chapter’s author designs these two extreme scenarios as forming a dialogue for the median voter and then the business manager about corporate sustainability.

A Utopian Scenario

“Brave New World” is an ironic twist on Huxley’s (1932) dystopian view of the technological future. Huxley envisioned that technology would enslave mankind—here as a twist technological solution to climate change free mankind. The intended sense of the scenario is that the future will be good, and especially under the guidance of a progressive political party moving toward socialism. Four major improvements occur. One improvement is that technological solutions for climate change problems do appear. That is, independently of political and institutional developments, technological innovation will begin to reverse environmental damages. It may be 2050 before such technologies must be operating, but there must be convincing evidence of practicality by 2025 to provide citizen confidence. A second improvement is that there will be institutional arrangements for addressing climate change problems. In particular, something like the Paris Accord will function effectively. A step in this direction by 2025 might be that the US rejoins and implements the Paris Accord. A third improvement is that social institutions at various levels will prove more resilient and innovative than predicted (Windsor 2018b). A fourth improvement is that the leading democracies—especially the US concerning attempted one-party impeachment of President Donald J. Trump and the UK decision concerning Brexit—resolve amicably and satisfactorily present internal political dissensions. In this utopian scenario, AI and humans can be complementary and AI investment increases human employment (Windsor *in press*).

Some scenarios in the literature are positive concerning the future (Whittington 2019; Xing et al. 2019). Schanes, Jäger, and Drummond (2019) feature three possible scenarios for reaching a more resource-efficient economy in Europe. Each of the three scenarios—labeled as—Global Cooperation, Europe Goes Ahead, and Civil Society Leads—while quite different leads to greater resource efficiency. Global Cooperation relies on top-down agreements. Europe Goes Ahead emphasizes market mechanisms that drive technological solutions. Civil Society Leads relies on bottom-up changes in behavior through community-based initiatives. The best path forward is then a combination of the three scenarios or approaches. A study by Yu, Zheng, Li, and Li (2018) explains alternatives for peaking carbon dioxide emissions in China before 2025. The comparison approach of adjusting the present energy-intensive heavy and chemical industrial structure cannot meet the 2030 target date (see also Zhang et al. 2019).

A Dystopian Scenario

“1984” takes its label from Orwell (1949) (Zuboff 2019), in which totalitarian systems of competing ideologies have control of key societies. The intended sense is that the future is dim, and especially if capitalism is abandoned in favor of big government socialism. A dystopian scenario is the opposite of a utopian scenario on each of the key dimensions. First, technological solutions either do not exist or will be substantially delayed in effective operational implementation. In either case, citizen confidence will be undermined in the period between 2019 and 2025 as climate conditions deteriorate and perhaps accelerate in speed of deterioration. Alternatively, a problem is that as environmental activists (scientists or otherwise) emphasize accelerating speed of climate deterioration in order to marshal support and resources for action and thus keep moving the timing of disaster to the present, it is possible that citizens will lose confidence in the predictions. Alarmism may undermine credibility. Second, the Paris Accord proves hopelessly inadequate collectively to handle climate deterioration in the absence of technological solutions. Third, social institutions at various levels do prove inadequate to handle climate change effects. Fourth, between 2019 and 2025, internal political dissensions result in considerable social damage in the US and the UK. In this dystopian scenario, AI and humans are substitutes and AI investment decreases human employment (Windsor *in press*). Substitution possibly could place increasing stress on government action to handle the effects of mass or increasing unemployment.

Identity politics may tend to undermine democratic governance through promotion of tribal violence: the problem embedded in identity politics is that there will be “permanent winning coalitions” preventing compromise across policy issues (Boettke and Thompson 2019: 1). It is possible that identity politics may be offset by existence of multiple value configurations. A study (Midgley et al. 2019) reclassifies 83,526 respondents from 60 countries (in Wave Six of the World Values Survey) into five global archetypes of different value configurations. Countries vary, perhaps markedly, by proportions of populations falling into each archetype.

A MEDIAN VOTER PERSPECTIVE

The median voter chooses between political party proposals. The progressive stance is that environmental catastrophe must be tackled by government and that socialism will create utopia. The conservative stance is that socialism is even worse and that capitalism is the path to utopia and avoidance of environmental catastrophe. Citizens are stakeholders of businesses and business managers are voting citizens. The fundamental political consideration is whether in democratic societies the party system maintains the center or deteriorates toward the more extreme postures of progressive and conservative parties. In this chapter’s utopian scenario, the median voter model is working and political choices gravitate to the center. In this chapter’s dystopian scenario, the median

voter model is not working and there is a deep division between deeply different and increasingly ideological positions (progressive versus conservative).

A median voter perspective appears more significant now for the US and the UK than in the previous decades since 1945. The reason is accelerating movement of the parties toward their extremes and increased pressure on centrists to go one way or the other. The concern is not strictly new (Binder 1996; Schofield and Sened 2005), but relevant to 2025 and may be intensifying recently. Senator Sanders to the left and President Trump to the right arguably illustrate the trend (Olmstead 2018).

A split may be temporary. The Brexit referendum on June 23, 2016 was not a strong majority outcome (BBC 2016). The overall vote in the UK was 51.9% leave and 48.1% remain. The difference was about one million votes. The country was closely divided, with key regional differences. After more than three years of failed negotiations over Brexit terms and calls for a second referendum, Prime Minister Boris Johnson's Conservative Party obtained an absolute majority in late 2019. In January 2020, the House of Commons voted Brexit legislation (330 for and 231 against).

Or the split may be longer lasting: socialism seems to be gaining favor in the US, and the US House of Representatives has adopted partisan (not bipartisan) articles of impeachment of President Trump. Unless a compelling impeachment case is developed, sufficient to pass the US Senate by two-thirds majority, a predictable outcome is a roughly 50–50 split in the US electorate (Polls 2019). For studying political and ethical challenges to corporate sustainability, a median voter perspective is quite useful and particularly so from 2020 toward 2025. A permanent split encourages the dystopian scenario and Orwell's 1984 may unfold.

A Median Voter Model

The median voter assesses the dialogue created by the two competing narratives. The essential feature of a median voter model as a predictive theorem is that “a majority rule voting system will select the outcome most preferred by the median voter” (Holcombe 2006: 155). In effect, outcomes move toward the centrist position on any policy question. Consider a simple version of the median voter model, in which there are three voters on any decision and the two-voter majority wins with the peaceful acceptance of the third voter. Two-thirds of the electorate is a strong majority. The voters agree to the voting rule in advance. One voter wants to spend $\$X$, another voter wants to spend $\$2X$, and the median voter wants to spend $\$X+2$. The voting outcome will be $\$X+2$. The idea, however, is that the winning coalitions vary across issues. The median voter model may be applicable to both electorates (voting in referenda or for representatives) and elected representatives (voting in legislatures).

There are two potential defects in the median voter model. One defect is that there is no centrist position, but simply two competing positions. It is easier to see this defect with four voters. Two voters prefer X and two voters

prefer not-X: there is no solution. The two voters concur and a third voter accepts the outcome serves to conceal this defect. In practice, the majority in favor of a policy may be very thin and not reflect a centrist position. It is also possible that a center is quite thin, meaning that policy choices rest on a relatively small proportion of centrists in a deeply divided electorate. The other defect is that relative to either thin center or two competing positions in deadlock, the more radical wings draw the political parties (in control of nominations to elected representative positions) away from the center and toward more radical postures, whether progressive or conservative (Pitts 2019).

There are awkward decision problems of the following form. One voter wants X; another voter wants not-X (the exact opposite policy). The median voter, in between, decides the outcome as X or not-X. For instance, X is pro-abortion and not-X is anti-abortion: the positions are irreconcilable. The median voter must choose (or find a compromise solution satisfactory to the X and not-X voters). But the vote, in a large electorate, may be very close.

The median voter model may or may not be too simple for political complexity. The favorable case is that simple models are “engines of analysis that allow a variety of hypotheses about more complex phenomena to be developed” and that “simple models that extract the essential from the observed will serve us well” (Congleton 2004: 707). On the other hand, a different study reports that legislators are most constrained by median voter preferences in homogeneous districts: heterogeneity frees the legislator (Gerber and Lewis 2004).

The median voter may proceed on any of three bases. First, the median voter simply prefers X or not-X. That is, there are only two positions (or political parties) and the median voter adheres to one of them at the outset of voting. This basis is the simplest version of the median voter model. Second, the median voter has no policy preference but acts on self-interest only. That is, the median voter calculates what is in her or his interest regardless of effects on others (Downs 1965). Third, the median voter is neutral and weighs the merits and consequences of X or not-X in order to decide what to do. Each one of these bases is a different political decision-making process. In a civil discourse setting, the median voter listens to X and to not-X before deciding which alternative to select based on the merits of the positions. The median voter must consider the ethics of best policy concerning social welfare (or the public interest).

An Immigration Illustration

Social division over immigration is a good illustration. The progressive view encourages immigration as part of the path to Huxley’s Brave New World; the conservative view discourages immigration as part of the path to Orwell’s 1984.

Immigration is a decision problem involving two dimensions (Epstein and Herz 2019). One dimension is the aging of the population in developed countries. The native population needs, or wants, tax base linked (in the absence of

increased automation investment) to imported labor. Increased immigration addresses this need or want. The other dimension is that the immigrants may be different in “social norms and culture” that alters the country in ways that the natives do not approve. This second dimension may serve as a constraint on the first dimension. The conflict in dimensions may be exacerbated by the acquisition of voting rights by the immigrants or their descendants. Suppose, for instance, that immigrant voters prefer to reduce their taxes and thus pension payments to native retirees.

Evidence from Switzerland suggests that direct democracy tends to oppose naturalization of immigrants (Hainmueller and Hangartner 2019). Previously in Switzerland, naturalization requests were subject typically to municipal referendums. Federal Court rulings then forced municipalities to transfer naturalization decisions to elected municipality councils. Over the period 1991–2009 for about 1400 municipalities, Hainmueller and Hangartner found that naturalization rates increased by 60% when handled by progressive representative democracy rather than conservative direct democracy. The municipal councils had to justify rejection decisions formally and potentially subject to judicial review. While it is true that citizens may be more xenophobic and less impressed with judicial review than are elected representatives, this interpretation unavoidably sidesteps the question of whether naturalization of immigrants is socially desirable or not. The citizens express different preferences than do representatives constrained by the Federal Court rulings.

Application to a Proposed Three-Party Interpretation

Analysis can scale from the median voter model at the individual citizen or manager level to aggregating political parties by imagining an abstractly defined three-party democracy. Each political party attracts individual voters through a set of policy positions on key issues of rights, entitlements, taxation, immigration, and social norms. There are left, center, and right parties. In this imaginary three-party democracy, the left party is “progressive” on key issues. The right party is “conservative” on key issues. The left and right positions are essentially ideological: for socialism versus capitalism, with expectations about whether there are likely to be technological solutions preventing environmental catastrophe. The left party ideology views lifeboat ethics as inhumane and immoral. The right party ideology views lifeboat ethics as moral necessity in a perfect storm. The “centrist” party lies in between the progressive and conservative parties and attracts any ideologically “independent” voters who are neither progressive nor conservative systematically. This centrist party independently must decide what it thinks on each key issue.

In the imagined three-party democracy, a progressive party increases individual rights (including abortion) and entitlements (including transfers to poorer citizens). The transfer component leads to higher taxes for redistribution. This party can be more global in value orientation and thus other-regarding concerning other countries and cultures, which are to be treated

with respect accorded to the country's own citizens. A progressive party expands the government sector through higher taxes on wealth and is welcoming to immigrants. A progressive party may tend to be anti-capitalism and pro-government expansion. A progressive party tends to emphasize that policies will create a utopian future for citizens.

A "conservative" party emphasizes individual responsibilities. A conservative party seeks to reduce taxes and is less welcoming to immigrants, especially those who are likely to draw on public welfare benefits and to vote for the progressive party. This party may be more nationalistic in value orientation and thus self-regarding concerning other countries and cultures, so that the test of international policy is at least no cost and preferably increased benefits to the country's own citizens. A conservative party tends to be pro-capitalism and anti-government expansion. A conservative party tends to emphasize dangers of a dystopian future arising from undesirable government expansion.

The centrist party becomes critically important when progressives and conservatives are roughly balanced in voting power (whether in the electorate or in the legislature). Assume, for instance, that there are 100 progressives, 100 conservatives, and 10 centrists. These numbers can be scaled up and down. The 10 centrists determine policy outcomes in a pure referendum context. The centrist party thus corresponds to the median voter. Alternatively, in a US-style two-party system, centrists can comprise both independents and center-oriented members of progressive and conservative parties. In either interpretation, there are three positions. This three-party political system, in either configuration, faces a set of real policy challenges. Political crisis may result from the center disappearing and the progressive and conservative parties moving their policy positions to the extreme opposites.

Abstraction means that the imaginary democracy does not correspond in detail to any specific national political system. Much more detail is necessary to match to a particular system such as the US or the UK. The actual content of "progressivism" and "conservatism" may take different forms in various countries. American variants may be quite different from European variants. The party definitions are therefore as abstract as possible to the analysis purpose, but some detail is necessary to the party definitions. The author thinks the party descriptions reasonably match the US 2020 presidential nominations process and the prolonged Brexit crisis in the UK resulting in a late 2019 strong Conservative Party majority for Prime Minister Johnson, committed to Brexit.

TWO KEY CORPORATE SUSTAINABILITY ISSUES

Within conditions captured by the two scenarios confronting a median voter as a progressive-conservative dialogue, business managers must make judgments about key business issues in a perfect storm. For illustration, this chapter focuses on CSR and political criticism of capitalism and wealth as relevant to corporate sustainability.

Corporate Social Responsibility (CSR)

CSR is a conception of the relationship between business and society (Aguinis and Glavas 2012). Matten and Moon ([in press](#)) theorizes practical need to establish legitimacy with core stakeholders, societies, and regulators. Those authors place this practical need within the configuration of such influences. The utopian scenario increases the role of the regulators. The dystopian scenario throws businesses into more chaotic conditions.

The present author's conception is different (Windsor 2013): each business should undertake feasible actions to improve society independently of the purely economic performance of that business. This conception can separate into three kinds of actions: (1) voluntarily obey laws and governmental policies, (2) do not cause any harm to stakeholders through unethical conduct not fully regulated by government, and (3) do try to generate some good for stakeholders through corporate citizenship conduct. In this conception, society has the meaning of any stakeholders of a business who receive harms or benefits. Such actions arguably meet the practical need stated by Matten and Moon. However, a business might improve its profitability through intentional evasion of laws and policies, which require effective government enforcement. The German company Siemens operated a top-down global bribery scheme until caught in 2006 by US and German authorities (Berghoff 2018). A business might improve its profitability through unethical conduct not fully regulated by the government (Ingram [n.d.](#)). Ingram cites labor practices, environmental concerns, marketing practices, and business impacts on society. A business might improve its profitability by not engaging in corporate citizenship conduct and especially philanthropy or alternatively might find that donations help contribute to shareholder value (Liang and Renneboog 2016). CSR is sometimes conceptualized in terms of triple bottom-line performance defined as economic, environmental, and social effects (Slaper and Hall 2011).

The literature on CSR divides into two general approaches. An approach based on market economics theory (Kitzmueller and Shimshack 2012) restricts CSR to a combination of (1) legal compliance and (2) ethical compliance only, to the exclusion of citizenship activities. In this restricted approach, there is a tendency also to minimize the content of laws and ethics to a set supportive of business economic performance. An economics-based approach emphasizes profit seeking in a capitalist market economy as the best path to improving social welfare. There is an effort to identify win-win solutions in which the business does social good and financially well (Aguinis 2011). An approach based on ethics broadens CSR to encourage citizenship activities and also to expand the content of laws and ethics (Carroll 2000). An ethics-based approach tends to constrain profit seeking through increased duties (negative and positive) to a broad set of stakeholders. Political CSR (Scherer and Palazzo 2011) encourages businesses to foster democracy and to provide public goods in instances of governmental incapacity: the utopian scenario encourages such a transformation in corporate conduct.

As with the utopian and dystopian scenarios, economic CSR and ethical CSR are opposed approaches. An intermediate position between economics and ethics is that there can be a good business (or strategic) case for CSR (Carroll and Shabana 2010). The business case for addressing multiple social issues is subject to criticism (Kaplan *in press*).

The utopian scenario, as associated with the progressive left in this chapter, envisions government increasing CSR through laws and policies in place of voluntarism. The scenario, as formulated in this chapter, is highly critical of capitalism and wealth. Business can anticipate increasing government substitution for CSR activities. The dystopian scenario, as associated with the conservative right in this chapter, envisions leaving CSR other than strictly limited legal compliance to business as a voluntary decision. Business can anticipate increasingly difficult conditions for profitability.

The political and ethical uncertainty of the business environment through 2025 reflects in the most recent Shell Scenarios concerning energy futures. Royal Dutch Shell has long developed scenarios of energy futures. These scenarios are “what if?” questions for Shell executives. The most recent effort provides three scenarios in which the process of economic globalization may unfold on three very different pathways to 2025. Each scenario also has different international relations and international cooperation concerning “peace, international security, and economic development.” The three scenarios are labeled “Low Trust Globalisation” and “Open Doors” and “Flags” to identify “different combinations of market, geopolitical and social forces” (Shell Scenarios *n.d.*). The scenario labels are reasonably clear: low trust prevails, open borders facilitate globalization, and national interests impede globalization. Open borders match a utopian scenario; low trust and national interests match a dystopian scenario.

The conventional view of corporations is that agent-managers of publicly traded enterprises do and should seek to obtain as much profit as possible for shareowners. Privately owned businesses may act more altruistically as a matter of choice. The Business Roundtable (2019) in a statement signed by 181 CEOs (of 193 members) in August 2019 adopted a different stance. The statement recommends five objectives defined in terms of primary stakeholders: value delivery for customers, investment in employees, fair and ethical dealing with suppliers, support for communities in which operating, and long-term value creation for shareholders. The last one is both fifth in the sequence and the only one explicitly regarded as oriented toward long-term value.

Political Criticism of Capitalism and Wealth

The majority voting approach (Rice 1985) may arguably lead to expansion of the government sector (Husted and Kenny 1997). The median voter can tax wealthier citizens and transfer wealth to both poorer citizens and herself or himself. An empirical analysis of 79 household budget surveys from 24

democracies concludes that greater inequality of factor income redistributes more wealth to the poor (Milanovic 2000).

There is rising criticism of capitalism and excess wealth concentration (Dorning 2019; Schatzker 2019). There are proposals to break up the big technology corporations as too powerful and too wealthy (Timberg 2019). Historically, there have been real experiments with laissez-faire capitalism and socialism. The nineteenth century was arguably the high point of unregulated or laissez-faire capitalism. The twentieth century was arguably the high point of socialism (essentially Marxism). The historical record is that both approaches proved highly defective (Thomas 2019). That is, critiques of both unregulated capitalism and full-blown socialism have merit, even separating democratic socialism away from totalitarian communism to look at economic performance isolated from political regime. The argument thus always becomes that next time the experiment will work better because the advocate says so.

Margaret Thatcher, subsequently UK Prime Minister, stated the essence of the decision problem for the median voter: “Socialism started by saying it was going to tax the rich, very rapidly it was taxing the middle income groups. Now, it’s taxing people quite highly with incomes way below average and pensioners with incomes way below average” (Thatcher 1976). The question for the median voter is whether to trust a pledge to tax the extremely wealthy only. The pledge might be sincere or a ploy to gain office.

The US presidential nomination process for 2020 appears to have the effect of leading prominent Democratic Party candidates toward socialism defined practically rather than ideologically as the marked expansion of government. The question for the median voter is whether a pledge to be a democratic socialist and not a socialist (much less a communist) is valid, leaving aside the issue of whether there can be a substantive difference in practice between socialism and democratic socialism (or social democracy), arguably as practiced for instance in Scandinavia.

Senator Sanders has proposed increased taxation of the very wealthy and corporate taxation based on the difference in pay between CEOs and employees. The corporate taxation proposal is that taxes would increase on a corporation in which the highest paid employee (typically the CEO) received more than 50 times the pay of the average employee. This proposal is restricted to corporations of more than \$100 million annual revenue (Stein 2019).

Senator Sanders’ wealth taxation proposal is to increase taxes on the top 0.1%, estimated at about 180,000 households (Sanders n.d.). “The revenue raised under this plan would be used to fund Bernie’s affordable housing plan, universal childcare and would help fund Medicare for All” (Sanders n.d.). Cillizza (2019) points out that the details of the proposed taxation do not amount to elimination of billionaires but rather cutting the wealth of present billionaires in half over 15 years. There would be a 1% tax on net worth over \$32 million (married couples), rising with net worth in percent steps (2%, 3%, and so forth) to 8% on net worth over \$10 billion (married couples). All brackets would be halved for single-person households (so \$16 billion to \$5 billion)

(Cillizza 2019; Sanders n.d.). Senator Warren's similar proposal is restricted to a smaller set of households and begins at \$50 million net worth with a 2% tax that rises to 3% tax above \$1 billion (Rappeport and Kaplan 2019).

Such a wealth transfer may be appealing to poorer households, who would benefit at no cost. The median voter, who presumably falls below the top 0.1% of the wealth distribution, should have no objection as the transfer is from the wealthier to the poorer. The median voter might be attracted by some of the specific benefits (such as Medicare for All) promised at no cost. However, the median voter must weigh the prospect that this excess wealth tax is (whether intentionally or by foreseeable evolution) simply the first step in increased taxation down to the median voter in order to fund all kinds of government projects such as the "New Green Deal" on climate change.

CONCLUSIONS

The citizen and the business manager face a set of political and ethical choices about difficult problems. This set of problems has important implications for corporate sustainability through and beyond 2025. A first list of these problems includes rising nationalism and populism, population movements across borders, climate change, ideological conflict between capitalism and socialism, possible collapse of traditional democratic governance, aggressive authoritarian regimes possessing or seeking nuclear weapons, and pervasive corruption. The lifeboat model raises profound ethical issues for citizens and business managers. The chapter explains two contrasting scenarios, utopian (or optimistic) versus dystopian (or pessimistic), concerning how these problems unfold through 2025. The scenarios provide a dialogue in narrative form: Huxley's *Brave New World* versus Orwell's *1984*. The chapter links these scenarios to judgments required of the median voter and the business manager.

For academia and policy makers, the recommendations include careful examination of these issues and their implications for corporate sustainability and citizens. For academia and educational institutions, the vital issue is whether research and teaching are addressing the constellation of problems and effects in ways that are useful for citizens and business managers. For policy makers, the vital issue is whether they understand both the big picture and the details of what may be unfolding to 2025. Both the US and the UK exhibit signs of policy deadlock that may undermine confidence in democracy and capitalism. There are increasing signals of policy stress in other countries such as Finland.

A fundamental concern going forward to 2025 is whether "democracy" is increasingly perceived to be beginning to fail and fracture in the US and the UK. Policy deadlock on Brexit in the UK and gun control in the US can be interpreted as signaling the political systems are no longer working effectively (Dionne 2019). "The United States retreated from its traditional role as both a champion and an exemplar of democracy amid an accelerating decline in American political rights and civil liberties" (Freedom House 2019). Such

opinions (or judgments) might be viewed as an “early warning indicator” (Goldberg 2019).

A development is the arguably increasing tendency to subject political and policy disagreements to criminal investigation or to civil litigation as a feature of Orwell’s 1984. Many policy initiatives of the Trump Administration have been subjected to civil litigation in the courts. One feature of the 2017 US tax law change was a \$10,000 cap (SALT) on federal deductibility of state and local taxes. Four of the high tax states—Connecticut, Maryland, New Jersey, and New York—sued in federal court on the ground that the cap unconstitutionally infringed on state sovereignty to adopt progressive taxation and effectively raise public service cost per household in their states. On September 30, 2019, a US district court (Manhattan, New York) ruled against the plaintiffs, holding that the US Congress has broad power to levy taxes (Casselman 2019). The matter must properly be resolved at the federal election ballot box and not in the federal courts. The median voter is the key to the election process. Either the center determines election outcomes, or the center disappears as the progressive and conservative extremes dominate the election process. A progressive domination promises Huxley’s Brave New World; a conservative domination cautions against Orwell’s 1984.

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Adapting to Populism's (Current and Future) Moment: Political Uncertainty and Business Strategy

Christopher A. Hartwell and Timothy M. Devinney

INTRODUCTION

The world faces a new political reality following the global financial crisis of 2007–2009, namely, the ascendance of populism beyond its previous position as a fringe political force to a central role in global policymaking. The ability of populist leaders to tap into disaffection with globalization, multinational businesses, and macroeconomic policy has translated into the creation of a “populist moment” in many developed and developing countries around the world (Devinney and Hartwell 2020). While populist political parties have suffered some reversals in a number of recent elections since the watershed of 2016, events such as Brexit, the election of Donald Trump, and the advance of nationalist populism in Central Europe (and its continuing popularity in Latin America) have upended existing economic policies; undermined decades of commitment to globalization in trade, services, and movement of people; and have fostered an era of seemingly permanent economic policy uncertainty.

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Indeed, the reality of the fallout from Brexit and the possibility of Trump's re-election—coupled with the allure of populism in emerging markets, who may have never fallen out of love with it—means that the current populist moment may outlive its present protagonists and continue to influence the global business environment for decades.

Seen from a long-term perspective, the effects of this challenge to the established liberal order are, like Zhou En-Lai's purported assessment of the French Revolution, "too early to tell."¹ However, while rumors of the demise of liberal democratic approaches to economic policymaking may be exaggerated, there is no denying that the political earthquakes occurring globally over the past decade have much more immediate ramifications for businesses internationally. The increased levels of uncertainty are the most concerning first-order effect. The economics literature has already shown the perils of overall policy uncertainty for a host of effects in the economy, including its dampening effect on investment and hiring (Bloom 2009), while the international business (IB) literature has been more concentrated on decisions at the firm level such as hedging or cash management (Cosset and Suret 1995; Huang et al. 2015; Nguyen et al. 2018; Bova and Vance 2019) and diminished operational expansion. However, the latest wave of populism has manifest itself in a form of global uncertainty that is novel and which has not been explored as a holistic process by mainstream economics (and it has been relatively untouched by the IB literature as well).

Along these lines, the effects of sustained political volatility have been underexplored in international business where such volatility is usually couched in terms of institutional distance (Kedia and Bilgili 2015) or focusing on informal volatility such as terrorism (Henisz et al. 2010). It is unfortunate that this work, despite its merits, has not moved far beyond the groundbreaking work done in the 1980s and 1990s on environmental uncertainty (e.g., Mascarenhas 1982; Fitzpatrick 1983; Milliken 1987; Miller 1993). However, the effects of populism go far beyond just the first-order impact on policy or the discrete event of the election of a populist leader or party. They also tend toward a changing of the rules of the political game and a rearranging of the political system to support the ease of implementation of populist policies. In this sense, the idea of political-institutional volatility (Hartwell 2018a), and the unpredictable and complex effects this could have, should be of prime concern to businesses. As Acemoglu et al. (2005: 391) note, "political institutions determine the distribution of *de jure* political power, which, in turn, affects the choice of economic institutions." Hence, abrupt and lasting shifts to the political order could determine the composition of economic institutions for years to come.

¹ Famously, Chinese Premier Zhou En-Lai was asked in 1971 by the US Secretary of State Henry Kissinger his thoughts on the significance of the French Revolution, and the Premier answered that "it was too early to tell." It has since emerged that Zhou was likely responding thinking that the subject was the Paris riots of 1968 and not in fact the French Revolution.

Finally, at the firm-specific level, changes in the overall political and economic business environment could have far-reaching impacts on how a firm finds and utilizes resources, particularly in terms of human and physical capital. For example, while shifts in political parties may not cause firms to entirely rethink their human resources or resourcing strategy or management capabilities, a genuinely revolutionary populism might force it to rethink its business model, particularly as the notion of global value chains loses its allure under populist political pressure. Moreover, with the restriction of the economic frontier relating to anti-globalization policies (Rodrik 2018), firms may find it more difficult to cultivate (or remain within) disaggregated global value chains, forcing dramatic shifts in their plans and production processes (some of which may be due to government policy, see Benczes [2016]).

Given the reality of populism's moment, the purpose of this chapter is to explore one specific case of political uncertainty on the performance, management, and actions of businesses for the future. In particular, this chapter focuses on the three specific areas touched upon above which could have the most immediate effect on business: first, how populism creates uncertainty about (and may actually change) macroeconomic policies; second, how the effects of populism on political institutions (Fukuyama 2014) change both the rules of the game and the abilities which firms need to cultivate in order to remain competitive; and, third, how populist policies affect value chains, sourcing, and talent acquisition (Cumming et al. 2016) at the firm level.

The main conclusion of this analysis is that the political forces underpinning populism require firms to reallocate resources to new abilities and agilities unlike those used before, while at the same time draining funds from possible productive investments, which are held back in any event in such an environment of uncertainty. In particular, firms will find themselves straddling the line between cost-effectiveness and capturing international economies of scale while keeping an eye on localization in order to please increasingly insular political institutions. Moreover, the need for investing in political capital may also increase due to the pervasive nature of the state under populism, forcing business to become more politically aware, if not necessarily active (Phongpaichit and Baker 2005). The watchword for businesses globally will be flexibility in the mold of Howlett et al. (2018) in order to deal with an increasingly complex and uncertain world.

This chapter proceeds as follows: the next section will explore some of the different conceptions of populism and how populism is having its "moment" globally, while Sect. "Populism and Business" will explore the channels through which populism could affect firm behavior and management. Section "Conclusions" concludes and offers some thoughts for both businesses and researchers in seeking to understand populism's effects in the coming decades.

BACKGROUND: POPULISM'S MOMENT?

Defining Populism

One primary difficulty associated with a more nuanced and scientific understanding of the effects of “populism” is a wanton carelessness in using the term, with popular press and media, in particular, being the most egregious offenders (and applying the term to *de facto* mean “anything that I don’t personally support”). This definitional vagueness is, at times, justified and exacerbated by disagreement among academics as to what makes a “populist,” a problem that arises less from ideological bias and more from the fact that scholars from different disciplines have offered different interpretations which comport with their own theories on the animating forces behind society.

One of the most comprehensive recent surveys of populism across disciplines (Rode and Revuelta 2015) notes that “populism” tends to be conceived of as one of the four distinct-yet-interrelated categories, either as a phenomenon which is structural, economic, ideological, or political-institutional. The structural approach sees populism as a social call to arms, with populism merely the mobilization of local factors of production as a way of asserting national sovereignty (Cardoso and Faletto 1979). Taguieff (1995: 25) notes that the issue with this conception is that populism is treated as an omnibus concept, “a dimension of political action, susceptible to syncretism with all forms of movements and all types of governments. (...) Whether dimension or style rather than ideology or form of mobilization, populism is so elastic and indeterminate as to discourage all attempts at a rigorous definition.” In response, economists have (not surprisingly) relied on the economic interpretation of populism, where populism is best conceived not as focusing on short-term development goals (as is seen in the structural approach), but more as a set of policies used to achieve redistribution of a pie that already exists. Created in response to populism in Latin America, the economic approach offers important clues about the effects of many populist redistributive schemes but also has a blind spot when it comes to right-wing populism or explaining populists who enact market reforms (Weyland 1999, 2001).

Veering away from the economic underpinnings of both the structural and economic approaches to populism, the ideological school conceives of populism in much more emotional and visceral terms, an ideology that “pits a virtuous and homogeneous people against a set of elites and dangerous ‘others’ who are together depicted as depriving (or attempting to deprive) the sovereign people of their rights, values, prosperity, identity and voice” (Albertazzi and McDonnell 2008: 3). While Stanley (2008) notes that populism is a “thin ideology” with little useful use as an analytical framework, he admits that populists do indeed have a distinct set of ideas about political processes but do not have the answers to all socio-economic questions they examine. It is this “thinness” that allows populism to be used as a tool in service of other, better-developed ideologies: for example, variants of populist thinking in Central Europe in the

1990s were steeped in business liberalism combined with nationalist goals (Hanley 2004), while Prime Minister Thaksin Shinawatra of Thailand started off as avowedly pro-business but began to incorporate populism as a way to assist favored insiders who were not part of the pre-existing elite (Phongpaichit and Baker 2005).

The final conception of populism, and one popular with political scientists, is the political-institutional approach, which treats populism as a movement defined by “[a]ny sustained, large-scale political project that mobilizes ordinarily marginalized social sectors into publicly visible and contentious political action, while articulating an anti-elite, nationalist rhetoric that valorizes ordinary people” (Jansen 2011: 82). Urbinati (2013: 141) also recognizes populism as a phenomenon arising from a particular institutional structure, calling populism “an interpretation of democracy made from within a republican structure and perspective of government and politics.” Perhaps most importantly for the current political climate globally, the political-institutional approach focuses on the role of leaders and how they operate in democratic processes to sell populist ideas. As Canovan (1999: 6) puts it, “Populist politics is not ordinary, routine politics. It has the revivalist flavor of a movement, powered by the enthusiasm that draws normally unpolitical people into the political arena ... Associated with this mood is the tendency for heightened emotions to be focused on a charismatic leader.” This almost messianic approach to politics, fusing ideas of good and evil, and the true people’s will, combined with the availability of access points to political institutions, results in an effective leader able to convert emotion into policy.

Populism’s Moment

Regardless of the flavor of populism, it is undeniable that populists of all stripes have made impressive political gains since the global financial crisis, combining the charismatic leadership implied by the political-institutional approach with the redistributive policies of the economic approach and ideological vehemence toward the “other” (with a dash of resource mobilization thrown in). While populist parties have been making gains in Europe ever since the early 1990s (Fig. 13.1), it is only since the global financial crisis that their popularity has made them viable partners in government and leaders of countries. Populist leaders, such as Viktor Orbán in Hungary and behind-the-scenes power broker Jarosław Kaczyński in Poland, are some of the most visible and entrenched faces of the new politics in Central Europe. However, much of this populism is opportunistic as well, as Orbán has only been a committed populist since his second term beginning in 2010, while Kaczyński was only able to implement his more consistent populist aspirations following sweeping victories in parliamentary elections in 2015. Following the debacle of the eurozone crisis, populism was also seen to rear its head in Western Europe, such as with the coalition of the Five Star Movement–the League in Italy, although many of these parties have, rather ineptly, overplayed their political hands and dropped out of direct

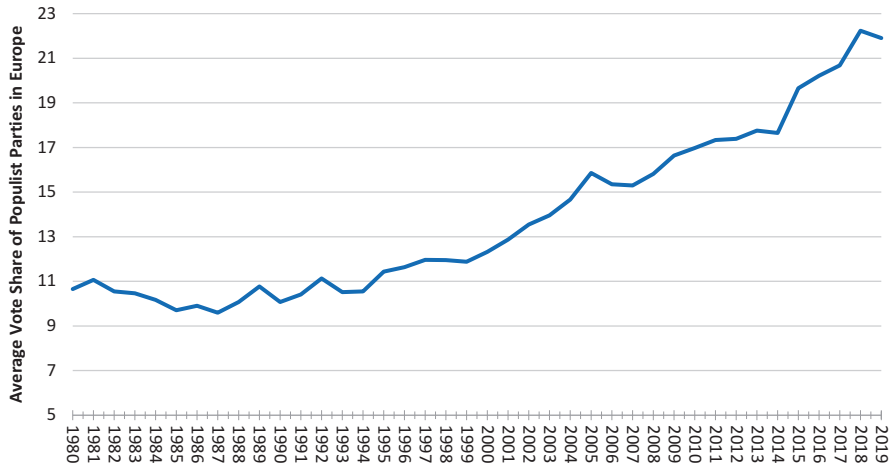


Fig. 13.1 Average vote share of populist parties in Europe, 1990–2019. (Source: Author’s creation based on the Timbro Authoritarian Populism Index 2019, data obtained from <https://populismindex.com/data/>. Timbro Authoritarian Populism Index 2019. Europe includes both Western and Eastern members of the EU and non-EU countries such as Iceland, Montenegro, and Serbia. “Populist” parties are defined as those either having “extremist” views (in the Timbro report, this consists of adherence to nazism, fascism, communism, trotskyism, and Maoism) or “pure populism,” which is characterized by an explicit lack of respect for division of powers and minority rights; impatience with democratic procedures as noted in party manifestos or speeches; and the focus on politics as conflict between a corrupt elite and a virtuous “people”)

leadership in government. Across the English Channel, Nigel Farage and his former party, the UK Independence Party (UKIP), made sizable gains in local elections across Great Britain starting in 2014 and (ironically for a euroskeptic party) produced the largest number (24) of Members of the European parliament from the country in the latest elections. Although in decline given inter-cine struggles in the wake of Brexit (see below), the ideas animating UKIP continue to find a happy home throughout the UK and were successfully co-opted by the Conservative Party in the 2020 general election. More explicitly nationalist/xenophobic parties such as the Alternative für Deutschland (AfD) also sit in the European parliament, but, unlike British populists, with additional clout in the Bundestag (AfD currently holds 91 out of 709 seats in the German parliament).

While the European move toward populism has been the most noteworthy, populism’s successes have by no means only been a European phenomenon. Populism’s favorite breeding ground, Latin America, has seen a continent-wide revival of populist sentiment, ranging from Lula’s organized populism in Brazil (Samuels and Zucco Jr. 2014) to the disastrous tenure of the Kirchner family in Argentina (Aytaç and Öniş 2014), the socialist oppression of Venezuela, and the comparatively lighter populism of Morales in Bolivia. Across the Pacific,

much of Oceania has seen a spike in populist rhetoric and success, ranging from the hardline President Duterte in Philippines to the mainstream xenophobic racism of Winston Peters in New Zealand (and the populist-lite platform of his coalition partner, Prime Minister Jacinda Ardern). And although Europe gets the most airplay, it is more interesting that the world's most populous countries, comprising 38% of the global population, also have governments which can plausibly be called populous: India under Modi has taken a decidedly national populist turn (where he has redefined “national,” see Jaffrelot and Tillin 2017), but even China's communist leader Xi Jinping has married suspicion of globalization with nationalist ideas that amount to a variety Devinney and Hartwell (2020) call authoritarian populism.

Of course, perhaps the two largest manifestations of the populist wave in terms of airplay and ramifications—the election of Donald Trump to the Presidency in the United States in 2016 and the decision by the UK to “Brexit” the European Union (EU) in the same year—are not reflected in Fig. 13.1. The resurgence of populism in the United States did not rear its head the minute Donald J. Trump announced his run for the presidency, as then President Obama was, for many, a divisive leader who railed against elites, denounced political opponents as “bitter clingers,” and sought to upend previous policies, most prominently in foreign policy. However, Trump's presidential campaign was characterized by radically different themes, including a focus on anti-globalization and a reflexive distaste for immigration (Kazin 2016). Not one to disappoint his base, he has continued this approach into his Presidency, including, and especially, in his economic policymaking (e.g., the use of tariffs for non-trade goals and ideologically based moves to limit immigration). His leadership style—and especially his use of Twitter—has continued to inspire opposition; for example, despite an enviable economy, fully half of the United States continues to be opposed to Trump the person. While Trump has remained in the mainstream of Republican Party policies in some areas (tax cuts, deregulation), in others he has been much more erratic, pulling a normally free trade-oriented party closer to protectionism based on a belief that trade is not “working” for the American people (Mead 2017) and engaging in seemingly irrational battles with once close allies. With the United States for decades at the center of the liberal global trading order, this shift has threatened the existing system of trade agreements and trade liberalization that was painstakingly built over time.

On the other side of the Atlantic, Brexit has unleashed a wave of uncertainty for British businesses and the European continent exacerbated by the erratic manner in which the Brexit process itself has played out. For over three years (at the time of writing this chapter), British industry and the British public has been serenaded with the myriad of ways in which Brexit was going to take place, but the irreconcilable demands of hardcore Brexiteers with the stipulations laid down by the European Union—to say nothing of the thorny issues such as the “backstop” for Northern Ireland in order to avoid a hard border with the Irish Republic—have combined to make the entire withdrawal process

muddled beyond belief. After a first date for Brexit was postponed in 2019, a second date (October 31st) was set, but Prime Minister Theresa May failed on multiple occasions to have any deal with the EU approved by parliament. With the ascension of Boris Johnson as her successor, a shift in negotiating tactics took place, with (some would say) a cavalier attitude toward a “no-deal” Brexit. Whether this is a negotiating ploy remains to be seen, but one thing is certain: Brexit itself was driven by a populist wave, with lower-skilled and manufacturing workers (i.e., those who would perceive themselves as “left behind” by elites and globalization) overwhelmingly favor “Leave” (Becker et al. 2017) (Fig. 13.2).

Clearly, at both the macro and micro level, populism is having its moment globally. Before understanding the effect that this will have on firms, we must consider a final key point regarding populism (one which is also very relevant for thinking about scenarios for business in the future): in all likelihood, the current state of affairs is going to survive the current group of populists. Put another way, democratic populist agendas tend to be difficult to maintain as an outside force as their policies are co-opted by major political parties and soon become part of the mainstream. If populism is truly popular, the political organizations with established institutional advantages will move to capture populist voters, vitiating the claims of populists to be ignored politically. Of course, such a reality will come to pass only if existing parties are strong enough to resist populist waves as, once in power, populists will attempt to hold on to power by manipulating existing institutions. But in either case, populists will eventually leave or be replaced but their ideas may linger. The pendulum swinging toward anti-globalization, anti-immigration, and toward “national greatness” is likely to be in this direction for some time. Businesses must then adapt accordingly.

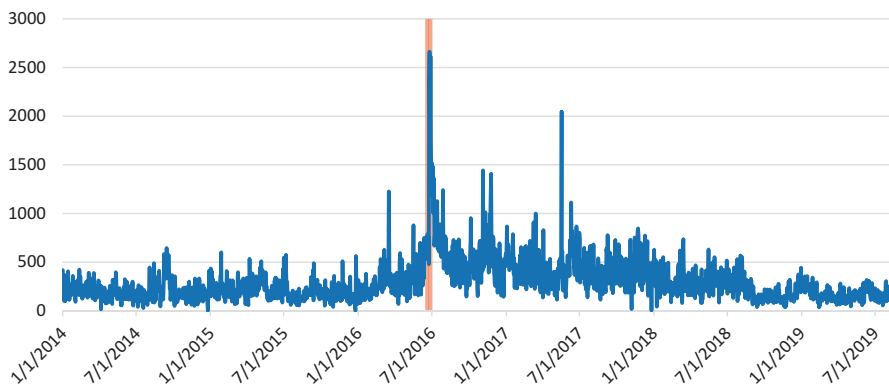


Fig. 13.2 Economic policy uncertainty index for the UK, January 2014–August 2019. (Source: Created from Baker, Bloom, and Davis Index, latest data available at http://www.policyuncertainty.com/uk_daily.html. Solid column indicates date of Brexit, June 23, 2016)

POPULISM AND BUSINESS

This overview of the latest wave of populism occurring across the globe performed two functions. First, it synthesized the current research on populism in order to understand how it may influence political processes and institutions, that is, what is the vector to power that populism utilizes (Devinney and Hartwell 2020). Second, and perhaps more importantly, it illustrated the economic channels through which the current populist moment is operating, helping us to potentially understand where business might be affected. This section extends this analysis to its logical conclusion, highlighting the specific areas where populism and the populist moment might impact firm strategy, performance, and decision-making.

As noted in the introduction, three specific areas will be highlighted for examining the influence of populism, namely, macroeconomic policies, political risk and uncertainty, and value chains/sourcing/talent acquisition. This list is by no means exhaustive and is, in reality, just a small sub-set of where populism—by acting through many variegated channels—can impact business. As Fig. 13.3 shows, business strategy, execution, and performance are influenced by many different factors, including industry competition, firm-specific attributes, and (crucial for our case) both formal and informal institutions. Formal institutions are often considered the most important for determining a business environment, but the extant literature has hundreds (if not thousands) of pages on how informal institutions also are critical.

With reference to populism, as it is a social phenomenon, by definition, it has to have started first in the informal sector, with changes in attitudes and norms allowing for the emergence of populist leaders and a receptiveness to populist themes. Given that informal institutions encompass norms, cultural precepts, and slow-moving arrangements, the emergence of populism must be more than a mere instant phenomenon and is something that would have percolated through various strata of society in earlier times. These shifts underpinning societal structures may thus have already exerted some influence on firm behavior, for example, conditioning corporate social responsibility activities or (more nefariously) coloring hiring and promotion practices. However, we

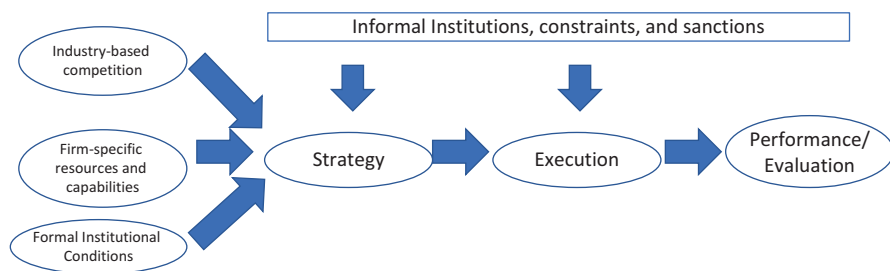


Fig. 13.3 The channels of influence. (Source: Hartwell and Malinowska (2019), based on Peng (2006))

assert that it is not until populism has ascended to the level of creating, disestablishing, or modifying significantly formal institutions (and their instruments, such as legislation and punishment) that the strongest effects on the firm become apparent. Put another way, while informal populist ideas may create opportunities for *some* firms or cause them to alter their behavior (e.g., through anti-immigrant sentiment in some locales), the ascendance of populism into the political system will affect *all* firms (albeit to different extents). Political institutions beget economic institutions which set the rules of the game, and when populist ideas have a vector to power, everyone must adapt. For this reason, we have chosen these three areas of political influence as they may have the most visible effect on business, at least in the short-term.

Macroeconomic Policies and Outcomes

Populist economic policies, focusing mainly on fiscal policy, have long been noted for accentuating “economic redistribution and nationalization of natural resources” (Madrid 2008), at the same time deemphasizing “the risks of inflation and deficit finance, external constraints, and the reaction of economic agents to aggressive nonmarket policies” (Dornbusch and Edwards 1990: 247). Such careless behavior pays no heed to internal or external constraints (indeed, in developing economies, institutional constraints can be less binding and thus populist policies enacted more readily) and can even actually “work” for a time, as accumulated capital is burned off and redistributed; however, the lack of new and replacement capital coming online leads to tighter and tighter constraints and an inevitable failure of such policies (Larraín and Meller [1991], surveying Chile in the 1970s, note that this sort of policy leads to a total collapse of the economy).

Not all strains of populism have such a massive and abrupt redistributive scheme, such as that seen in Latin America, where left-wing populism was married with socialist economic thought. Indeed, right-wing populism often contains its own redistributive character, but on a smaller scale (as can be seen in modern-day Poland, where working singles subsidize larger families), meaning that this form of populism might not destabilize macroeconomic aggregates immediately. However, the emphasis on redistribution means that one day the piper will have to be paid, and often it is fiscal policy which is the first domino to fall (see Damill et al. 2015 on Argentina’s latest experience). Large fiscal outlays and creation of new entitlements, combined with falling revenue intake, means governments increasingly have to borrow in order to finance consumption (rather than investment). Such a path creates much larger economic risk for an entire country, and firms are likely to be caught in the middle, facing higher borrowing costs and short-term arrangements with suppliers (who wish to hedge against economic risk, see Carlton [1982]). At the same time, there is evidence that volatile government expenditures also exacerbate business cycle volatility, meaning firms have a tougher competitive environment to navigate (Furceri 2009).

Moreover, a need to keep the largess flowing to favored groups (especially wage increases) means pressure on budgets and, often, spikes in inflation (Albanesi 2007). It is in inflationary pressure where we see the most obvious impact on firms. Higher levels of inflation, coupled with higher volatility of inflation rates, have immediate effects on the investment decisions of businesses. Inflation also leads to exchange rate weakening, which may help exporters (subject to their dependence on intermediate goods) but has an immediate deleterious effect on imports via higher prices (both effects seen almost immediately following the Brexit vote in 2016 and the 25% decline in the value of the British Pound). As with the root cause of inflation (fiscal deficits), variability of prices also shortens contracts, inducing buyers to speed up purchases and causing resource misallocation, which might not have occurred if firms had more time to accurately match with others in the value chain (Tomassi 1996).

Given that redistribution is a key tenet of populist macroeconomics and that populist economics is often exclusively conceived of as a zero-sum game, this implies that there will be business winners as well as business losers, despite the fact that the former are outweighed by the latter. With inflationary pressures and/or exchange rate volatility putting a damper on the whole economy, at the sectoral level, there may be pieces of the economy which might benefit from populism. Larger firms, state-owned companies, and especially firms tagged as “national champions” often find themselves the benefactors of populist macroeconomic policies as they are offered cheap loans from the public that, in an inflationary environment, result in real negative interest rates (Brennan 2007). And while exchange rate volatility may harm exporters, shifts of emphasis from certain industries and promotion of others may actually lessen the pressure on the firm that is no longer favored; an example comes from Argentina, where soybean production was favored over traditional exports of beef, meaning soybeans were taxed to provide funding for populist programs but beef was left relatively alone (Richardson 2009).

Finally, as noted in the introduction, populism may not have an emphasis on keeping broader macroeconomic aggregates stable, but it can lead to some structural reforms which are needed. Paramount among these are if interests on which the ruling party is dependent on push for broader reforms, such as deregulation or market opening. In such a situation, the populist party may enact reforms which benefit the economy despite the overall lack of urgency for tending to the macroeconomy (see Hamilton 2009). However, it is unlikely that such reforms can be sustained without forging a broader pro-market consensus, and thus even beneficial reforms tend to collapse under the weight of populist promises (Alizadeh 2013).

Political Risk and Uncertainty

While populism may be either fast or slow-acting in affecting macroeconomic aggregates, if it does so at all, it has a much more immediate effect on the volatility of policies. In reality, populism acts as a negative uncertainty shock as it

often: (a) reverses (sometimes abruptly) policies of previous executives; (b) acts to create turnover in administration so that favored people are put in place of the “old regime”; and (c) has its own reversals and advances based on its (mis) reading of the popular will. As a somewhat revolutionary catch-all, populism can create prolonged periods of uncertainty—translating into political risk—as businesses grapple with and attempt to understand the nature of the change happening before them. The diversity of populism also complicates this issue as populists have different objectives in mind in different contexts.

One point that unites populists, however, is to change what existed before at the policy, administrative, and institutional level, meaning that the long-term worries of populism are not only worries about policies but about the rules of the game themselves. As Devinney and Hartwell (2020: 8) note, the “most radical, way in which power can be perpetuated is to co-opt established political institutional frameworks in pursuit of populism, changing existing political institutions so that they are less of a barrier and more of a facilitator. *The weaker the checks and balances on the execution of the power of the executive, the more likely that those pursuing a populist agenda will be able to capture all levers of government once in a position of power*” (emphasis added). Thus, not only are weak institutions susceptible to more radical change from populism, populism at its heart attempts just such a radical transformation of existing political institutions, which then has a direct effect on economic institutions (moreover, this process can be sped along by the unstable macroeconomic policies pursued by populists, see Hartwell [2018b] for this link).

As an example, the right-wing populism seen in recent years in Central and Eastern Europe has been predicated on shifting formal political institutions; for example, Poland’s ruling “Law and Justice” (PiS) party has led a sustained effort to reorient the judiciary into a more PiS-favorable organization (Fomina and Kucharczyk 2016), while Orbán in Hungary, with more time in power, has sought to remake the Hungarian constitution, the judiciary, the central bank, the media, higher education, and overall human rights institutions in his own image (Pappas 2014). In some instances, these far-reaching reforms have been thwarted by civil society, but the presence of supermajorities in both the Polish and Hungarian parliaments has meant that the populist governments have not stopped attempts to remake these political institutions. This continuous struggle between formal and informal institutions creates persistent uncertainty which then feeds back into the macroeconomic situation noted above. As Fig. 13.4 shows, the election of Orbán’s Fidesz party in 2010 has led to a sustained level of economic risk in Hungary (the highest since joining the EU), while Poland has been on a roller-coaster with levels from 2015 to 2018 equaling levels from 2005 to 2007 (the last time that PiS was in power).

Given the uncertainty, both policy and institutional, that populism engenders, it is not difficult to draw a line from this uncertainty to firms. In fact, there is ample evidence on the effects of political and economic policy uncertainty on the firm at all points of the chain, as shown in Fig. 13.3. In even normal times, elections provoke unease in firms and lead to a rollback in

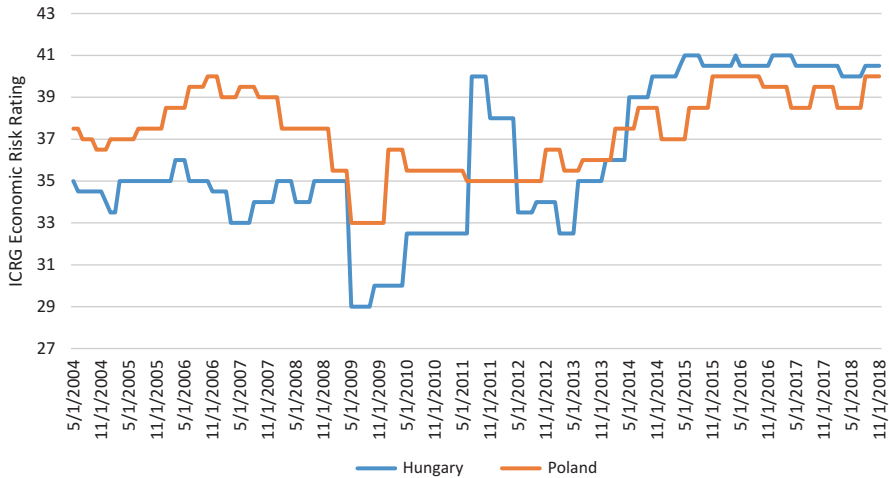


Fig. 13.4 ICRG economic risk ratings for Hungary and Poland, May 2004–November 2018. (Source: International Country Risk Guide. Economic Risk is calculated on a scale from 0 to 50, with higher numbers representing more risk. The ERR is composed of macroeconomic measures such as GDP, inflation, and budget deficit)

investment (Julio and Yook 2012; Jens 2017), while weak economic conditions can lead any political uncertainty to increasing the risk premia that firms face (Pástor and Veronesi 2013). In countries where government connections are more important (due to the pervasive nature of the state and rampant intervention), political uncertainty causes even more difficulties for firms, as shown in Xu et al. (2016). In fact, in environments used to stable politics, political uncertainty even vitiates the amount of information available in the marketplace, making firm assessments, investments, and valuation more difficult (Chen et al. 2018).

In populist political environments these bouts of uncertainty are magnified. Sudden policy changes, linked to charismatic leaders, can make Kingsley et al.'s (2012: 63) injunction—namely that “properly assessing a firm’s exposure to regulatory uncertainty helps managers craft an appropriate integrated strategy”—difficult as both firm exposure and regulatory uncertainty can be in a state of flux. Of course, the strain of populism—that is, left-wing or right-wing—can make a difference in determining the extent of the political uncertainty as left-wing populism tends to create more uncertainty about future economic conditions (and hence cash flow) than right-wing populism, which values macroeconomics more but social orderings less. At the same time, there can actually be pro-business populism, as seen in Thailand (Phongpaichit and Baker 2005), which would attempt to reorient institutions for the benefit of business, creating a state of flux but with the promise of stability at the end of the process. In even these scenarios, however, cumbersome institutional mechanisms can be crafted which satisfy populist whims but may impede firm

operations in the medium term; in such an environment, only additional societal constraints can help firms to thrive, but such constraints are very location- and culture-specific (see Moser [1982] for how populism shaped judicial institutions in the US state of Wisconsin).

One of the key issues that a firm can encounter is the fact that *any* shift of institutions (political or economic) under a populist regime means a shift in the mediation of incentives in society. In a market economy, firms respond to various incentives in the marketplace, stretching from consumer preferences to tax rules to cost considerations and everything in between. Underpinning these actions is an assumption that performance in the market is, in some way, merit-based; that is, firms that satisfy their customers, control their costs, fulfill niches, and generate shareholder value are rewarded accordingly.

Under a populist regime, however, these merit-based incentives are no longer dominant as political masters must also be pleased lest their wrath be incurred. Coupled with changes in institutions, such as the judiciary becoming more politicized, firms will need to change their own skillset to be able to survive in the new regulatory and competitive environment. In countries where populism and/or authoritarianism is the normal state of affairs, change in leaders means the need to cultivate new political connections and invest resources into the political marketplace in order to avoid the deleterious effects that come with being on the outside (or worse, being associated with the old elites). Evidence shows that cultivating such connections can help with firm performance in both very low and very high corruption environments (Ferguson and Voth 2008; Wu et al. 2012; Amore and Bennedsen 2013). In any event, such a reality forces firms to divert valuable resources that could be spent competing or innovating in order to curry political favor or, more realistically, to deflect political attention. This may end up wasting firm resources, if demanded by politicians (Bertrand et al. 2018), or may even result in shifts in management as cronies are put into places of power, which then creates its own cost issues for firms (Schoenherr 2019).

Value Chains, Sourcing, and Talent Acquisition

The macroeconomic situation is a much larger consequence of populist economic policies, while uncertainty can strike both the macro and the microeconomic climate of the firm. At the very micro level, that is, within the organizational structures of the individual firm, navigating the fluctuations and shifts engendered by populism can have much more long-lasting effects related to the integration of firms with international supply chains and, in extreme circumstances, with the human capital available to the firm.

In the first instance, and in an obvious consequence of anti-globalization-oriented populism, the reversion to protectionism and closing of the economic frontier will likely disrupt international value chains across industries. Arbitrary increase of tariffs in pursuit of non-trade goals (as used consistently by US President Trump) or the abrogation of trade deals not only creates uncertainty

about the viability of existing value chains but also increases the costs of using these chains. In extreme circumstances, where policy moves lead to prohibitive costs and/or embargos, value chains may be broken entirely, forcing firms to find new suppliers or customers. Mudambi (2018) notes that one of the reasons that populism is on the rise is precisely because value chain costs have been falling and migrating, giving rise to hardship on lower-skilled workers domestically. With populism's ascendance, these costs are on the rise again, affecting firms while simultaneously not actually helping the middle classes of Europe and North America who saw their value chains fragment and move elsewhere.

One of the most substantial examples of populism's effect on value chains can be seen in Brexit (which, at this point, is still a process rather than an event and will likely be in process for some time to come even with a supposed exit date). The UK's accession to the EU in 1973 set in motion a long progression of harmonization of technical standards and trade regulations, with large portions of both the EU and UK economies becoming more concentrated in trade in intermediate (rather than final) goods (Keane 2018). At the same time, value chain integration with European firms occurred to the exclusion of such linkages with the rest of the world as firms concentrated their energy on the closest and most lucrative (and mostly hassle-free) opportunities (Ijtsma et al. 2018). In the aggregate, the UK has, today, about half its trade with the EU, and immediately preceding the Brexit referendum, EU trade made up approximately 13% of the UK's national income (Dhingra et al. 2018). The high levels of integration between the EU and the UK means that Brexit, in any form, will have a massive disruption to value chains on both sides of the Channel. As Vandebussche et al. (2019) note, the impact of tariff changes will tear value chains asunder, harming not only bilateral trade but third-country indirect trade, contributing substantially to job losses in the EU-27 as well. The prospect post-Brexit—no matter which path to Brexit is taken—is rather bleak. As Hatzigeorgiou and Lodefalk (2016) note, the UK has not had any independent trade policy in 46 years and is sorely lacking in trade negotiation experience. It is unlikely that, in such a populist environment, the trade policy that does come about from a Brexited UK is conducive to building strong international value chains and integrating Britain with the rest of the world, despite the rhetoric characterizing the post-Brexit UK as “Singapore on the Thames.” In sum, not only will EU and UK businesses have to deal with the immediate disruption of value chains being broken up artificially, they will need to invest resources toward building new ones, with UK firms in particular laboring under the shadow of further protectionist impulses as well as skilled labor shortages.

The effects on a firm's external competitive environment are likely to be severe under erratic populism, but the effects of a populist shift also are bound to filter down to firm organization. Indeed, at a more microeconomic level, the shifting incentive structure of the economy (as noted above) means that different skillsets will be necessary at the firm level. For manufacturing firms, the closing of the economic frontier may mean a need to source locally and/or,

more realistically, develop processes and procedures in-house and a move toward more technology-driven (e.g., robots) rather than labor-driven (e.g., paying higher wages locally) solutions. Such a reorientation will not be limited to manufacturing as services may also find that the disruptions accompanying populist protection may require “bringing jobs home,” forgoing efficiencies abroad for retaining staff domestically. Both of these shifts will require training or re-training of staff and possible shifts of production processes in order to replace lost opportunities. Undertaking such a change will of course utilize scarce firm resources, although there is evidence that firms which have experience internationally in a variety of uncertain environments, will be better situated than those serving the domestic market exclusively (Delios and Henisz 2003). There is also the possibility that the local reaction is to rely more on technology over labor as local labor costs rise. So rather than substituting foreign labor for local labor, firms substitute technology (e.g., robots and artificial intelligence systems) for labor. This will lead to the perverse effect that rather than bringing benefits to lower-skilled workers, the second-order effect will be to exacerbate the lack of opportunities for those with lower education and skills.

In order to reorient the internal processes of the firm, as well, individuals with different skills may be necessary, but the populist environment makes talent acquisition a new gauntlet to run. In the most obvious instance, if the populist wave has a heavy anti-foreigner component to it, firms relying on language abilities or even the presence of diasporas will find their workforce disrupted as either existing talent will have to leave (see: Brexit and EU citizens) or future workers will be prevented from entering. In a large country with favorable demographics and adequate educational attainment, the composition of talent (i.e., domestic versus foreign-born) can be affected but the actual numbers may not be, leading to a relatively easier time for firms in replacing the workforce. However, in smaller countries or those reliant on foreign expertise (generally any small open economy), closing the migrant frontier may make it incredibly difficult for firms to source adequate talent. In the short run, jobs may be backfilled by lower-skilled workers, but this means either an investment by firms to bring worker skillsets up to par and/or a period where quantity or quality (or both) suffers. None of these outcomes is desirable in a competitive marketplace. Other solutions, such as better integration with higher educational institutions, are long-term processes (Purg et al. 2018).

CONCLUSIONS

The rise of highly visible populist leaders—and the corresponding ascendance of populist ideas—around the world over the past decade has presented challenges for business, but not challenges which might be regarded as particularly “unique.” Indeed, in one sense, the uncertainty and volatility engendered by populism is no different than other forms of institutional volatility which firms have had to endure in the past. Emerging market multinational enterprises or even domestic firms are well-acquainted with weak institutional environments

and have developed the strategic agility to survive and even thrive. Indeed, many emerging market firms have already survived successive waves of populism, as evidenced by the hardiness of some Latin American firms and their ability to compete internationally (Embraer in Brazil; e.g., see Grosse and Mesquita [2007]). Thus, the wave of populism centered mainly in developed nations, for many emerging market firms, is more of a novelty than anything else.

However, it is precisely this fact, that developed rather than developing countries are succumbing to the siren song of populism, that makes this moment of populism different from the uncertainty and political risk faced by firms in the past. Coupled with the fact that populist parties have made gains in so many places, this moment of populism is unlike any that most existing firms have ever lived through. In fact, one of the most daunting attributes of the current political climate is the fact that populism in general—but especially in its current moment—tends to come in waves, building momentum as it spreads, cresting, and eventually breaking. This cyclical nature of populist sentiment may thus last for years or decades (and, as noted above, populist ideas may long outlast populist leaders), meaning long-term and far-reaching implications for strategy, performance, and existing human and physical capital.

This chapter has attempted to provide a first insight into some of these possible effects of the current wave of populist sentiment (and populism more generally) on international businesses. By no means exhaustive, this chapter points the way to a virtually infinite number of research possibilities to understand how firms actually operate under populism. Are there additional channels to the ones noted above at play? What is the relative importance of different effects? How do different varieties of populism affect businesses in different ways?

It is also crucial to set out options so that firms can weather the storm. In the first instance, how can firms guard against populism-related uncertainty? It is here that we already have some idea from the existing literature on political uncertainty, which points to having an exit strategy being generally useful, and there is no better exit strategy than being a multinational. As Beaulieu et al. (2006) note in the context of populist revolt (secession) in Quebec, firms which operated in other countries as well as Canada were far less affected by the uncertainty surrounding the secession vote. Delios and Henisz (2003) also show, in a more comprehensive way, that internationalization can create a sort of agility for firms to deal with policy uncertainty, and thus even if a firm is indigenous to the country afflicted with populism, it will have some abilities to cope with uncertainty if it has international exposure. This finding is echoed by Cuervo-Cazurra et al. (2018), who show how management in emerging market firms working internationally actually learn at home how to cope with uncertainty and apply this skill in other contexts. But does this hold for populism as well? Given that strategies of this sort are dependent on firm resources, experiences, and other factors, how realistic is this as a strategy?

Beyond the diversification strategy of internationalization—which may be difficult to achieve once the populist moment has already arrived—the only ways for firms to survive are similar to those noted in other contexts of political uncertainty. The most obvious recommendation would be for firms to attempt to “fly under the radar,” remaining apolitical and scrupulously neutral, and avoiding any hint of controversy. This may not always work, for silence can be treated as consent in more authoritarian populist regimes, but it can be safer than the alternative. Indeed, some firms in the United States (e.g., Nike) have gone precisely in the other direction, attempting to position themselves in opposition with the Trump administration; but this approach has alienated segments of the market while not necessarily bringing new benefits. On the other hand, firms could also attempt to curry favor with the new regime, a strategy reliant on a number of different tactics (Schuler et al. 2002); however, this strategy is dangerous when populist leaders have a high rate of turnover (Henisz and Delios 2004). Moreover, firms that thrive on internal (as well as external) appetite for politics tend to have poor performance (Eisenhardt and Bourgeois III 1988).

But perhaps the most important action that firms can take is to retain strategic flexibility in order to adapt to changing times. As with every product a firm sells or every move it is to make in the marketplace, information and especially research is crucial, and in a populist environment, devoting resources to knowledge acquisition can make the difference between surviving and failing (Henisz and Delios 2004). As part of this process, firms are counseled to form strategic alliances, with managers of firms benefiting from intensive networking and seeking out allies across sectors (Danis et al. 2010). At the same time, such alliances will benefit from being embedded in informal institutions amid an air of reciprocity, forming a sort of institutional diversification which may lessen the impact of volatile political institutions (Park and Luo 2001).

In any event, finding a way in which to not just survive but to thrive during populism’s moment will be an area for research for years to come. It is incumbent on economists and researchers in IB, strategy, and management to seize on this natural experiment and observe if firms are coping with populism as “business as usual” in an uncertain world, or if populism this time around is quantitatively and qualitatively different. We believe that this time is different and may necessitate new coping mechanisms in order for business to persist.

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Dynamics of Public Interest in Artificial Intelligence: ‘Business Intelligence Culture’ and Global Regulation in the Digital Era

George Gantzias

INTRODUCTION: DIGITAL TRANSFORMATION AND PUBLIC INTEREST

The digital transformation is challenging existing business regulation mechanisms and our traditional business culture in our society. A new ‘Business Intelligence Culture’ (BIC) is likely to be the result of the domination of artificial intelligence(AI) by 2030. The need to develop global regulation mechanisms to manage artificial intelligence and big data will be very challenging. The advance of digital technology over the last two decades has provided new opportunities that have the potential for digitizing society and the business activities in our everyday life.

This chapter examines and analyzes briefly different types of theories of regulation and the public interest concept in info-communication policy-making. It introduces a new culture in the business ecosystem, which is the BIC to use as a methodological tool to analyze digital transformation (AI and robots’ adoptions) of corporations in the digital era. Finally, it explains the regulatory limits by examining the dynamics of public interest in artificial intelligence ecosystem briefly.

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Artificial Intelligence Challenges in Digital Era

In the second decade of the twenty-first century, cultural markets and digital systems had been exposed to AI developments in info-communication globalization. At the same time, digitization in cultural and creative industries has meant that nation-states have become more socially plural and multicultural. These developments have provoked counterpressures for regulation and reregulation to maintain or restore national social order in digital capitalism. Within this context, we can identify the contrasting principles between the global versus local interests and between consumer choices, democratic citizenship, human's rights and automatic decision-making systems (see also Payne 2018; Oravec 2018; Rolan et al. 2018).

The notion of freedom, responsibility, accountability and transparency, which are the cornerstones developing a culture of democratic citizenship and a new digital culture, that is, the BIC, are essential ingredients to set up global regulatory mechanisms. Public interest and regulation of artificial intelligence and digital culture deserve new attention in the twenty-first century. Why?

In the second decade of the twenty-first century, artificial intelligence and digital culture are pushing forward by breaking traditional boundaries on human decision policy-making in organization systems and info-communication policy-making. For example, the fourth and fifth generations of mobile phones, Internet of Things (IoT), AI, robots, broadband connections, wireless applications, cyber-communities, cyberwars and e-commerce are bringing together business start-ups, research institutions and new business regulations in our everyday life. According to DESI report (2019), 'Integration of Digital Technology,' 'Finland, Sweden, the Netherlands and Denmark have the most advanced digital economies in the EU followed by the UK, Luxembourg, Ireland and Estonia. Bulgaria, Romania, Greece and Poland have the lowest scores on the DESI index' (DESI Report 2019).

The DESI report (2019) states:

the use of robots varies strongly according to company size. Almost 25 % of large enterprises use both industrial and service robots, while the take-up rate for SMEs is four times less at only 6.2 %. (DESI report 2019)

The above DESI report gives some good indications about the role of robots in the European business sustainability. Moreover, Jacques Bughin et al. (2019) pointed out:

to scale up and close the gap with the world's AI leaders, Europe will need to focus: (1) continued development of a Europe-wide, vibrant ecosystem of deep tech and AI start-ups; (2) acceleration of digital transformation and AI innovation among incumbent firms; (3) progress on the digital single market; (4) fundamental development of research, education, and practical skills; and (5) bold

thinking about how to guide societies through the potential disruption. (Mckinsey Global Report, February 2019, p.2)

The AI algorithms together with robot's policy-making are challenging corporation sustainability and ethical standards. According to Stephanie Hare:

the Ethical Challenges of Artificial Intelligences are well known. In 2020, we will realize that AI ethics will need to be codified in an enforceable way to prevent an existential threat to individuals, companies and society. (Hare 2019, p.116)

Within this context, Michael Chui et al. (2018) pointed out:

The total annual value potential of AI alone across 19 industries and nine business functions in the global economy came to between \$3.5 trillion and \$5.8 trillion. This constitutes about 40 percent of the overall \$9.5 trillion to \$15.4 trillion annual impact that could potentially be enabled by all analytical technique. (Mckinsey Global Report, April 2018, p.17)

Nowadays, the role of Artificial Intelligence is a very critical factor to the digital transformation of our free-market economy. According to Jacques Bughin et al. (2018):

AI has the potential to deliver additional global economic activity of around \$13 trillion by 2030, or about 16 percent higher cumulative GDP compared with today. This amounts to 1.2 percent additional GDP growth per year. (Mckinsey Global Report, September 2018, p.3)

Within this context, the AI is going to be a significant global info-communication platform in the digital era by contributing to GDP in near future.

According to the consultancy Firm PricewaterhouseCoopers, the widespread of adoption of AI will add about \$15.7 trillion to global gross domestic product by 2030. (as cited in Kai-Fu Lee 2019, p.14)

According to AI global statistics report:

worldwide revenue from the AI market is projected to reach as high as 190 billion U.S. dollars by 2025. Companies, particularly from software and information technology services industries, are investing heavily in artificial intelligence. At the same time, AI-focused startups have been gaining momentum and attention from investors, with the funding of AI-startup companies nearly increasing by fivefold from 2015 to 2018. (As cited in Liu, S. 2019)

The global regulation of AI and the model BIC are very crucial issues to corporation sustainability in the digital era. The chapter examines augmented intelligence, digital business, ethical challenges, info-communication culture,

digital transactions, robot rights and the role of regulatory bodies. It also analyzes the current globalization debate about artificial intelligence, public interest and human decision-making. In looking forward to the shape of artificial intelligence regulatory global mechanisms, this chapter serves as an outline of types of regulations to the significant challenges of those regulators and others will have to meet with new levels of commitment in the digital era. Therefore, the role of regulation mechanisms is likely to develop a safety net of rules to encourage artificial intelligence transformation by 2030.

DYNAMICS OF ARTIFICIAL INTELLIGENCE AND REGULATION: GLOBAL AND LOCAL CHALLENGES

Regulation is under pressure—from those concerned about national regulatory mechanisms and global regulatory mechanisms in today’s difficult artificial intelligence environment; from those who see regulation mechanism as an essential tool in protecting the public interest and ethical standards; and from those concerned about ‘divide’ and inequalities in the digital era. The dictionary definition of regulation is to control by rule, to set up a framework of rules governing an area of activity in free market. There is no absolute agreement as to what is meant by the term ‘regulation’ in the context of digital policy and in an artificial intelligence economy. It was used in many different ways (see also Horwitz 1989; Baldwin and Cave 1999; MacAvoy 1971; Herman 1981; Barnett and Duvall 2005; Braithwaite 2008; Cabinet Office 2003; Foster 1992).

Perhaps the most common usage is state intervention in the running of big tech business in info-communication globalization. An even more general definition is provided by John Francis in the *Politics of Regulation*: ‘the intervention by the state in private activity in order to realize public purposes’ (as cited in Gantzias [2001] 2019, p.10). This intervention covers the inclusion to control Internet of Things (IoT) and artificial intelligence (AI) systems by introducing a regulatory mechanism at the national level. The majority of state regulation nevertheless aimed at controlling the commercial activities of artificial intelligence enterprises for a wide variety of social, cultural and business reasons. These reasons may or may not be justifiable, but at least the state in a free-market democracy has to come up with some fairly good justifications for interfering in artificial intelligence affairs, or regulation will just be evaded or ignored (see also Bernstein 1985; Posner 1974; Armstrong and Vickers 1994; Gruber 2000; Elkin 1985; Kerwin 2003; Kerwer 2005; Snyder 1993; Simmons 2001; Sell 2003; Majone 1996; Lodge 2008; Hood 2006). For an example, the *General Data Protection Regulation (GDPR)*, a set of rules on data protection and privacy introduced by the European Union in May 2018, raises concerns on how European legislation to enforced both locally and globally.

Moreover, caught in a veritable blizzard of artificial intelligence (AI), cultural and business digital changes, all countries around the world are today grappling with profound and (for them) unfamiliar issues of artificial

intelligence and automatic decision-making mechanisms in business. They have to come to terms with a host of essential novel conditions:

- Termination of traditional decisions-making mechanisms to regulate the free market;
- An invasion of artificial intelligence forces at corporate, production and distribution policy-making process;
- The shift from conventional decision-making policy to automatic decisions-making mechanisms;
- The unleashing of unprecedented competition for revenue both locally and globally;
- Uncertainties about how human productivity will be affected by artificial intelligence and robots;
- Associated uncertainties about likely shifts of human capital and robots in response.

To gain a better understanding of the recent cultural and economic crisis in the regulation of artificial intelligence (AI), the monetary systems and the governance of cyberspace, it is essential to look first at the theories of regulation and the conditions and circumstances in which has its roots in a free-market economy. Moreover, the traditional approaches of regulation, public interest and decision-making policy offers little guidance for coping with the dynamics of regulating artificial intelligence in the digital era. So, the resulting problems are as follows:

- How to regulate artificial intelligence mechanisms to ensure its conformity to the public interest (however defined) both globally and locally;
- What roles envisage for automatic decision-making mechanisms in the info-communication globalization;
- How to adjust the expatiations, obligations and resources of global and local regulators to each other;
- How to hold BIC accountable to global public interest principles and ethical standards.

REGULATION THEORIES AND ARTIFICIAL INTELLIGENCE: CONTROL AND RESISTANCE

Regulatory arrangements do not arise in a vacuum, but evolve over a period of time, and within the context of a particular set of political, economic, social, technological and cultural determinants (see also Francis 1993; *The Financial Times* 2019; Hood et al. 1999; Horwitz 1989). The theoretical framework for analyzing regulation in cultural systems and creative industries, together with the emerging artificial intelligence systems, uses John Francis's exclusive definition

of regulation and Robert Horwitz's classification of five general categories of regulation theory together with the dictionary definition of regulation.

Economists and political scientists had developed a number of different theories about why governments were so keen on the idea, what it actually achieved, if anything, and why it failed when it did. In his book *The Irony of Regulation Reform* (1989), Robert Horwitz classified a variety of theories into five types of the regulation theory, which are as follows (Gantzias [2001] 2019, p.11):

- Public interest theory,
- Perverted public interest theory,
- Conspiracy theory,
- Organizational theory,
- Capitalist state theory.

They are not mutually exclusive, but overlap with one another to some extent. The typology itself is significantly comprehensive, but individual theories can be criticized both for its general weakness and for failing to explain specific fact about the area of regulation.

The artificial intelligence industry has some unique features as a regulated industry, which sets it apart from other regulated industries and makes it more difficult to fit neatly into any of the existing theories without modification. Some of the general theories of regulation are more appropriate to the genesis of regulation institutions, and others to its continued operation.

Public Interest Theory: Digital Challenges in Public Interest

The oldest and most influential of these is public interest theory, which was first formulated in the last century by public policy-makers themselves. The state justified imposing restrictions on big pan-national corporations on the grounds because it was not in the public interest for small producers to go out of business from excessive competition. With the coming of the twentieth century came the mass market and the concept of the mass consumer (see also Held 1970; Gantzias [2001] 2019, pp.11–12; Yeung 2010; Black 2001; Breyer 1982; Hancher, and Moran 1989a, b).

In the twenty-first century, the emergence of AI and IoT introduces automatic decision-making mechanisms by using AI devices. Nowadays, new artificial intelligence programs are writing their own rules on investments in the digital era (The Economist 2019). Public interest theory is about how to set up a regulatory agency to protect citizen's rights against the AI robots' policy-making or the AI software programs. The state intervened in the economy to ensure that large businesses with monopoly or partial monopoly status in AI ecosystem did not abuse their powers and exploit consumers/users' privacy and security issues. Governments should intervene in the AI ecosystem by setting regulatory mechanism to introduce public interest principle in the digital

era. According to public interest theory, regulation became a response to the conflict between the consumers/users’ and private corporations’ interests.

In the past, the public interest theory of regulation maintains that regulatory agencies were set up by governments not just to deal with excessive concentration of power in particular areas of special national importance—transport, telecommunications, cultural industries, gas, electricity, water and so on—but so as to introduce rationality and fairness into the economic system generally (see also MacAvoy 1971; Joskow 1974; Mosco 1988; Thompson 1997; Pargal 2003; Scott 2001). The regulation was also an expression of democratic reform as it protected the rights of consumers/users to be active and free in the digital era. It promotes efficiency and consumers/users’ protection of privacy and security in info-communication society.

There are, however, some problems with the public interest theory. It is a bit too idealistic and does not sufficiently recognize the effects of the big tech companies lobbying powers. In digital capitalism, democratic governments cannot function without the support of capital markets both globally and locally. Whatever the good intentions behind the setting up of regulatory agencies, technological, economic and political realities often dictate that regulation is often manipulated by financial markets or politicians or the big tech companies for their purposes.

Public interest theory is only a partial explanation of the genesis of regulatory institutions. It does have enough to say about the operation of the institution once it has been established as a regulatory mechanism in the digital era. It suffers from the fact that it concentrates on the genesis of regulatory agencies, that is, the reasons why they were set up in the first place, and it does not have very much to say about what happens after an agency has been operating for some time. It just assumed that the public interest goes on being served automatically in the digital era. Another difficulty is that it is not always easy to identify the public interest in any particular area in info-communication society (see also, Posner 1974; Ogues 1994; McQuail 1992; Black 1996; Bovens 1998; Breyer 1982; Campbell 1999; Collins 1999; Freeman 2000; Gunningham and Rees 1997; Ogus 2007).

PERVERTED PUBLIC INTEREST THEORY: ARTIFICIAL INTELLIGENCE IN THE FREE-MARKET ECONOMY

Perverted public interest theory or regulatory failure theory tried to come up with some explanations of how the regulatory systems frequently failed to achieve their objectives in digital capitalism (see also, Posner 1974; Horwitz 1989, p.2; Gantzias 2019, pp.13–15; Mattli 2003; Ogues 1994; Bardach and Kagan 1982). Failure theory accepts the central premise of the public interest theory, that regulation was initially been set up in the interests of the public, but eventually came to be used as a tool by regulated industries or central banking sectors for their purposes. The chief reason for this is that regulated

industries or central banking sectors, by their nature, are extremely influential and they are able to use their influence to persuade agencies to act more favorably toward them than toward consumers/users (see also Pargal 2003; Moore 2008; Stigler 1971; Thatcher 1998; Ogus 1995; Shleifer 2005).

Within this context, financial systems or industries introduce regulation to serve their own interest in making a profit than the benefit of costumers/users by using learning machines and smart algorithms.

Nowadays, ‘machines are taking control of investing – not just only the hum-drum buying and selling of securities, but also the commanding heights of monitoring the economy and allocating capital.’ Until now, financial markets use computers and digital programs to cut costs. In digital capitalism ‘...computers can distort asset prices, a lot of algorithms chase securities with given characteristics and then suddenly ditch them. Regulators worry that liquidity evaporates as markets fall...another worry is how computerized finance could concentrate wealth’. (The Economist 5 October, 2019, p.11)

One of the problems with regulation is that it is impossible, for legislation can’t do more than state general guidelines, or the system would be too inflexible to be able to adapt to very many different contexts and situations of use, which are always changing. The agency has to have considerable powers to make general policy and detailed rules itself, so there is plenty of scope for special interest lobbies to influence the process and procedures (see also Black 2000; Cranston 1979; Braithwaite 1982; Campbell 1999; Furlong and Kerwin 2005; Sinclair 1997; Rees 1988; Scott 2008).

In business ecosystem, statutory and self-regulation mechanisms should be made able by using artificial intelligence mechanisms to develop a BIC to improve the business function in three primary ways:

- Improving productivity, efficiency and engagement: Business intelligent user experiences—such as finance software you can talk to—can simplify and speed up everyday tasks.
- Automating repetitive tasks by using self-regulation intelligence systems: Automation not only reduces costs and improves accuracy, but also liberates people from performing mundane work and allows them to focus on more strategic projects.
- Improving process regulation by developing an intelligence culture in the business ecosystem: Machine learning can increase the accuracy of regulation tasks and accountability, which, in turn, supports more informed human-oriented decision-making.

There are three basic models of artificial intelligence industry influence on statutory and self-regulation regulatory agencies: instrumental, structural and capture. Capture is the broadest notion of regulation; instrumental and

structural factors often just help to explain why a regulatory agency becomes captured by the business interests it is supposed to regulate.

The instrumental model focuses on the role of individuals in the regulatory agency. People employed in self-regulatory agencies often used to work in the self-regulated industry, and they have gone over to the self-regulation side because they have the necessary knowledge and expertise. They share the same social, economic and educational background, and the same attitudes to business and capital markets which makes them sympathetic to their decision on policy-making and not to AI robots’ policy-making. If there is too close a relationship between regulators and regulated, it makes it less likely that the regulator will be able to make the necessary tough decisions in the digital era (see also, Joskow 1974; Gunningham 1995; Lane and Ersson 2000; Majone 1996; Black 2001; Campbell 1999; Black et al. 1998).

It will probably be inclined to ignore breaches of the rules and only introduce regulations that don’t interfere with central banking system’s or the big tech companies’ ability to make profits. In the case of AI, robots, algorithms chase public interest principles with a given characteristic and then suddenly ignore them. For example, AI software programs are likely to favor Amazon’s business interest, ‘for example, if Amazon (whose boss, Jeff Bezos, Quant fund) started trading using its proprietary information on e-commerce, or JPMorgan used its internal data credit-card flows to trade the Treasury bond market’ (The Economist, 5 October, 2019, p.11).

Another worry is how AI robot regulation could concentrate on policy-making power—AI robots performance rests more on chips processing power and analyzing data. Therefore, the big tech companies with AI software programs and hardware chips could have a disproportionate amount of power. The rise of business AI robots is not only changing the speed of analyzing customers’ attitudes and behavior but also raises question about the following:

- Self-regulation systems for AI products and services,
- The impact of the AI market on the global economy,
- How the big tech companies governed,
- Accumulation of digital capital to a global digital business elite,
- Regulatory stability in the digital era,
- Global public interest principles to protect customers/users’ privacy and security.

In digital capitalism, structural factors are the way in which statutory or self-regulatory agencies constituted, their relations with the state and other institutions, their institutional remit and the amount of authority and level of resources they have limited the options available to individuals. There is a little to what an individual can do in artificial intelligence regulatory mechanisms. A future concern in creating global regulatory mechanisms is: What is the role of human regulators and the AI robot regulators, that is, AI robots which use AI software programs to write their own rules in the digital era?

For decades humans' decisions on policy-making on rules has been voted in and out of agencies by regulators on behalf of people's interests. What if those decision-making processes are run by AI robots and algorithms software programs that are likely to use an algorithm to ignore public interest principles and ethical standards in info-communication globalization?

Capture theory has been very influential in analyzing regulatory failure. There are various versions of it but, basically, capture theory explains the failure of regulation to work in practice by the fact that the agency becomes captured by artificial intelligences systems they regulate (see also, Gantzias [2001] 2019, p.15; Bernstein 1985; Dyson 1992; Kerwer 2005; Hood et al. 1999; Levy, and Spiller 1996; Lodge, and Wegrich 2009; Osborne, and Gaebler 1992; Bovens 2007; Froud et al. 1998; Gunningham et al. 2003). The economic and political power of artificial intelligence industry is probably to be stronger than that of the traditional regulatory agency, and regulatory objectives are like to be dominated by AI robots policy-making by 2025. A combination of instrumental and structural factors contributes to agency capture by the emerging AI robots regulators. So once a regulatory agency would be captured by machines mines, they will stop working for the people and start working for the artificial intelligence industry or the benefits of the robots.

CONSPIRACY THEORIES: DIGITAL ANARCHY IN REGULATION

Conspiracy theories go much further than regulatory failure theories, and they focus on the closeness of big business interests to the political mechanisms and on the effects of economic power on governments (see also Stigler 1971; Simmons 2001; West 1988). It tends to be a bit one-sided, however, downgrading the state as an actor and exaggerating the extent to which it can be used as a vehicle for special interest groups—at least in big tech companies with global business activities such as Google, Apple and Microsoft.

For example, 'Sundar Pichai said that AI required "smart regulation" that balanced innovation with protecting citizens. While many regulators are more focused on tackling Google over antitrust than AI at the moment, the company is keen to avoid repeating some of the tech industry's past mistakes by working in a "partnership between government and businesses"'. (The Financial Times 20 September, 2019)

According to conspiracy theories, regulation is a crucial mechanism which big companies, such as the big tech companies, try to control entry into their global and local markets and construct artificial cartels in order to downgrade the role of all governments to introduce both global and local regulation mechanisms in the digital era.

Conspiracy theories do not accept that regulation is set up in the public interest at all, but it is actively pursued by central banking systems or industry. It is not only consumers who suffer from the inherent chaos and instability of

the free market but business and central banking system as well. Regulation, although it is supposed to restrict the power of monopolies and central banking systems’ abuses of power, often acts as means of cartel management, that is, it facilitates the concentration of power, by controlling entry to the market and limiting competition (see also Gunningham and Rees 1997; Kolko 1963; Hood 2006; Black 2001; Hancher and Moran 1989a, b; Hood 2002; Kwakwa 2000; Majone 1989; Levi-faur 2005; Ogus 1995; Black 2009; Ogus 2004; Brown et al. 2006). For example, European Central Bank regulative mechanism of the traditional banking sectors in the EU are likely to favor centralized banking system’s interest and keep potential competitors out of banking markets, though in the case of digital currencies there is a lack of regulation on Bitcoin; this was entirely European governments’ incompetence because the existing banking system and European leaders ignore the role of digital currencies in destabilizing central banking systems and bring anarchy into their self-regulatory mechanisms.(see also Gantzias 2013)

Within this context, the penetration of Bitcoin as a global digital currency has contributed by creating regulatory anarchy in monetary systems by challenging regional currencies’ systems of paper money. Regulation of digital currencies should focus on the financial stability and the business of digital currencies’ ability to provide useful and adequate security for digital transactions. Nowadays, the state or central banking system has sufficient power to control the effects of the regulating digital currencies around the world by introducing a global regulatory mechanism (statutory of self-regulation). So, a regulatory mechanism is likely to be responsible to introduce an official global digital currency, that is, the Global Info-Cash (GIG), as product and service in a free-market economy (see also Gantzias 2014).

Organizational Theories: Artificial Intelligence and Info-Communication Regulation

Organizational theories concentrate on the behavior of regulatory agencies as institutions. They recognize that organizations develop a life of their own, which is, to some extent, autonomous, from both the state and the regulated industries. The behavior of agencies cannot be completely explained in terms of their stated goals and purposes. Regulated agencies tend to follow organizational imperatives as much as any other. ‘Rules and regulations proliferate as an end in themselves and regardless of the cost involved in an ever-increasing bureaucracy’ (Gantzias [2001] 2019, p.18). In other words, they become concerned with preserving and extending their own power and authority, increasing the number of staff, and increasing the amount of rules and regulations for their own sake because this is what they are being paid to do (see also Wilson, J. Q. and Rachal, P. 1977; West 2005; Alesina and Tabellini 2007; Black 1995; Wilson 1980; MacAvoy 1971; Bardach and Kagan 1982).

Organization approaches recognize that institutions have their rationale and their behavior cannot be explained entirely in terms of their stated purposes

and goals, and in terms of external pressures from government, the big tech companies or customers/users of the info-communication platforms. Organizations hate to be blamed for anything; they don't like to take risks or to have their authority challenged, so they set up self-regulatory systems and invent rules about AI services to cover every possible circumstance for their own mistakes in digital capitalism. They tend to be secretive and unwilling to discuss the reasons behind their decisions.

Organizational critiques of self-regulation from the consumers/users are influential in tradition systems of self-regulation by companies—consumers/users are very anti-self-regulation because they saw it as severely restricting their freedom to ask about privacy and security issues, holding back enterprise and profitability, and ultimately very damaging to the national economy as a whole. Their solution to promoting consumer welfare was not self-regulation—they regarded this as the problem—but smart regulations which provided consumers with more real choice through artificial intelligence mechanisms of competition by creating a 'new global regulatory order' (see also Sinclair 1997; Gunningham and Grabosky 1999; Kirkpatrick, and Parker 2007; Lindblom 1977; Moore et al. 2006).

Within this context, the main ethical standards of business self-regulations systems are eternal: equal treatment of all users of artificial intelligence services, equal access to big data and the protection of privacy. Recently, the artificial intelligence revolution looks as if it will make today's regulations look horribly out of date.

Google's chief executive [Sundar Pichai] has warned politicians against knee-jerk regulation of artificial intelligence, arguing that existing rules may be sufficient to govern the new technology... [He also pointed out] there are areas [of AI regulation] where we need to do the research before we know what are the right kind of approaches we need to take. (The Financial Time 20 September, 2019)

Digital transformations in organizations systems imply a change in the business culture. Nowadays, there are organizational transformations, when businesses redraw corporate roles and accountabilities by developing a new digital culture, that is, the BIC. The term 'transformation' is also increasingly used for a digital reinvention: companies fundamentally reworking the way they wired and, in particular, how they go to global and local markets. By looking to existing regulations to develop a balance between innovations, public interest, ethical standards and protecting human rights, a dynamic regulatory model would be helpful to regulate particular sectors and industries instead through a blanket vetting of algorithms.

Traditional regulations are very complicated to work due to the emerging of artificial intelligence software programs and penetration of digital transactions in our everyday tax and payments system. To create a sustainable global regulatory mechanism to protect the public interest and ethical standards is an expensive process that requires a lot of money. If the private sectors have the intention

to develop self-regulatory systems to serve their interests by ignoring customers/user’s privacy and security issues, it will end up with the result that will be a chaotic capitalist robotization in the digital era.

CAPITALIST STATE THEORY: DIGITAL CAPITALISM AND REGULATION

Capitalist state theory of regulation focuses regulation as part of a wider political theory of state intervention in the period of digital capitalism (see also; Gantzias [2001] 2019, p.19; Sell 2003; Simmons 2001; Osborne and Gaebler 1992; Rees 1988; Kerwer 2005; Scott 2000; Lodge 2008). By 2030, regulatory agencies are likely to be digitally transformed by using AI robots: a digital transformation of regulatory agencies by using artificial intelligence devices, which we define as an intense, regulatory-wide smart algorithm programs to enhance regulation performance and to boost regulatory efficiency. Traditional regulatory agencies occurred as one of several types of state apparatus designed to safeguard the accumulation of capital, toward which the state is structurally biased, when the market fails to do the job. They are a means of social control which enables the state to maintain order in the market on behalf of industry but which also makes it possible for it to distribute social benefits at the same time (see also Ogus 2007; Wilson 1980; Sinclair 1997; Thompson 1997; Shleifer 2005; Scott 2000; Brown et al. 2006).

According to structuralism Marxist theory, although the state is the main actor in a capitalist democracy, it cannot just do as it wants; it is bound by two main constraints: the constraint of accumulation of capital and the constraint of legitimation. This means that governments must do as much as possible to encourage user’s interests and promote privacy and safety issues, but at the same time it is answerable to the electorate who legitimize its activities (Gantzias [2001] 2019, pp.19, 324). It must, therefore, offer social welfare provisions to compensate the sections of society which do not immediately benefit from the accumulation of capital—the unemployed, the sick, the pensioners, consumers and so on (see also Mosco 1988; Armstrong et al. 1984; Herman 1981).

Within the frame of digital capitalism, info-communication regulation should be a mechanism for enabling the business to perform well and pursuing social, cultural and economic objectives at the same time. Other non-Marxist approaches also emphasize the political rather than the economic dimension of regulation. Economists take an instrumental view of regulatory agencies as tools for achieving certain financial benefits, mostly in terms of promoting the most efficient use of resources. This is treating agencies as a completely passive means to an end. But the choice of regulatory institutions cannot be divorced from the broader political and cultural context in digital capitalism (see also Mosco 1988, p.120; Normanton 1996; Scott 1998; Elkin 1985; Mckean 1970).

Regulation is a mechanism whereby business can be ‘induced’ to perform well, and social objectives can also be seen to be being pursued ... public policy-making as an exercise in the logic of efficient choice and in particular, as an exercise in economizing, using McKean’s definition of economizing: ‘all decision making persons or groups ... try to make the “most” as they conceive of the “most” of whatever resources they have’. (Gantzias [2001] 2019, p.19)

Recently, traditional regulatory systems are themselves outcomes of broader decisions made by humans about the relationship between the citizen, business and the state. Such choices are about government, and about the kind of society in which we wish to live. Digital transformations, as we define them, take up a surprisingly large share of a regulator’s and an agency’s time and attention. They require enormous energy to realize the necessary degree of change between the statutory and self-regulatory regimes in digital capitalism.

Herein lay the seeds of disappointment. Our most fundamental lesson from the twentieth century is that the statutory regulatory mechanisms and self-regulatory systems need to average regulatory agency rarely have the combination of skills, mind-sets and ongoing commitment needed to pull off a large-scale digital transformation in a free-market economy. For example, AI robots, as regulators that cannot explain themselves, or whose detailed operation is beyond the realm of human decision policy-making, pose a problem for the legal system and regulators in the digital era.

As Rebecca Williams, a legal scholar at Oxford University, observes, if machines lack the ability to explain their actions, current law might struggle to identify criminal intent in acts that arise because of decisions they have made. “In criminal law,” she says, “the thing that’s interesting is having the third party breaking the chain of causation that is not a human being. That is really new”. (The Economist 15 December, 2018)

In digital era, it is likely to be very difficult to develop global legal rules, public interest principles and ethical standards to regulate effectively the big tech companies such as Microsoft, Apple, Amazon, Alphabet, Intel, Arm and so on. Within this context, legislation on tax in the United States, such as the ‘Foreign Account Tax Compliance Act’ (FACTA), and law in European Countries, such as ‘General Data Protection Regulation’ (GDPR), are very complicated to be implemented effectively both globally and locally. How should regulators react?

One of the immediate concerns is infringing on people’s privacy by AI software programs. Recently, the smart algorithms and software monitoring of everyday life of human activity from exercising, shopping, reading to posting on social media enable the big tech companies to target advertisers or recommend items of interests. Nowadays, the real global regulatory anarchy on digital ecosystems has brought into light issues of privacy, accountability, the relation of law with robots, security, freedom of expression and fake news.

DYNAMICS OF PUBLIC INTEREST IN ARTIFICIAL INTELLIGENCE

According to *The International Encyclopedia of Social Sciences*, the term ‘public interest’ is very elastic and relative. It has no a priori content waiting to be revealed. It simply indicates that there exist some wider general considerations beyond the specific goals of interested parties. Proponents of diametrically opposed policies in info-communication public sphere have at one time or another to be acting in the public interest; in fact, it would be difficult to find anyone in digital capitalism who claimed otherwise (Gantzias [2001] 2019, p.13; see also Sills 1986; McQuail 1992).

This means the public interest cannot be decided in advance but depends on a given set of circumstances in the emerging artificial intelligence ecosystem. Traditional public interest theory relies on the somewhat simplistic assumptions that a clear-cut distinction can be made between digital policies which are and digital policies which are not in the interest of the community. In real life, things are more complicated than the black-and-white situations necessary for public interest theory to be true in info-communication globalization.

McQuail has provided a definition that makes the concept of public interest more able to handle the very complex situation of the modern mass communications media which raise so many different issues—freedom of expression, accuracy and truth of reporting, libel and obscenity, safeguarding of copyright and intellectual property rights, preservation of cultural diversity, advertising, privacy and so on. Policy-makers have to decide between many conflicting positions on these issues and numerous competing demands from different interest groups (see also McQuails 1992; Held 1970; Gantzias [2001] 2019, pp.31–35; Simmons 2001; Perri 6 2001).

McQuail, therefore, accepts that the public interest in communications is heterogeneous and not unitary and recommends treating ‘various statements of public interest concerning communications as a set of competing claims or proposals with a normative component’ (as cited in Gantzias [2001] 2019, p.34). It is then up to the political and legal systems to decide which claims are the most justifiable, usually by providing a general statutory framework for regulation and creating regulatory bodies to take care of the details. For example, the broadcast media have historically been much more tightly controlled than the digital content on the internet because they have been perceived as more powerful in communication tools in twentieth century (see also Gantzias [2001] 2019, pp.28–38; Baldwin and Cave 1999; Shearer 2002; Sinclair 1997; Wilson 1980; Yeung 2010).

The digital content on the internet tends to be controlled under the law of the land on libel, defamation, obscenity and so on; different countries often have internet codes and complaints bodies, which are a form of self-regulation but they do not have legal backing or statutory regulatory agencies to impose regulations on digital content. In the case of European countries, there are various Internet Codes about digital content. Such codes were always claimed to be in the public interest but were, in fact, highly political and concerned

mainly with preventing criticism of whichever governments are in power. Since freedom of expression exercised with responsibility is a fundamental democratic right which can never be claimed against the public interest government regulation of the internet in European countries, even by the so-called voluntary codes, they have seldom been genuinely in the public interest, either in their motivation or their operation.

Within this context, in United States, the big tech companies manages to manipulate the digital content system and social media system which advertise its products and services without any specific restrictions in order to protect the consumers/users privacy and security. In digital era, states are setting aside their monopolistic, command and control approaches to governing in favor of a more participatory approach involving civil society, communication and information markets and regulatory authorities.

At the global level, the development of global public interest principles relies on global cooperation, harmonization and consensus without the use of coercive power. Nowadays, the protection of the public interest and ethical standards at global level relies on voluntary actions or international organizations. Within this context, the protection of the public interest would be used as the main justification for setting up a global regulatory authority and reforming the existing national legislation and regulatory authorities in digital capitalism.

Public interest arguments, for example, have been used in forming internationally agreed regulations in communication and information sectors at the global level belonging to national and local regulatory agencies. Recently, the emerging of artificial intelligence, together with the fifth generation of mobile phones and big data centers, places the public interest debate and regulation of digital content at global level. In the near future, statutory regulations are likely to affect both human and robot decisions on policy-making. So public interest principles and ethical standards in creating, developing, managing and promoting digital content will be subject to a network of smart regulatory mechanisms.

The various types of capture and conspiracy models of regulatory failure can also be applied to global regulation. In the United States, regulatory officials are using existing law to pursue the big tech companies and politicians are drafting new legislation, that is, the Department of Justice (DOJ), the Federal Trade Commission (FTC) and the House antitrust subcommittee have all launched inquiries—they are placing regulatory pressures on by the method of investigation at the moment. ‘The big tech companies, i.e., Microsoft, Apple, Amazon, Alphabet and facebook are worth a combine of \$4.3 trillion’ (The Economist, 5th October 2019, p.55).

Within this context, the big tech companies, as part of the info-communication industrial platforms for creating, producing, managing and transmitting digital content, are placed into a new policy paradigm, which I have called info-communication (info-com) policy. “So, the public interest in communications [and particularly in artificial intelligence robot ecosystem of

the big tech companies] should be redefined and encompass the info-com public interest principles’ (as cited in Gantzias [2001] 2019, p.25).

The emerging paradigm does not lack normative elements but covers a wider range of public interest principles and ethical standards at global regulatory ecosystem. Ethical standards should be a clear and concise statement of minimum public interest principles excepted from business when promoting their product and services. The value of the regulation is operating at the process and product level of regulatory agencies using the term ‘general interest’ to cover public interest principles and ethical standards both globally and locally. The term ‘general interest’ is more ‘digital communicative’ and less ‘political,’ ‘technological,’ ‘economic’ and ‘cultural’ in character (see also Perri 6 2001; Payne 2018; Gantzias [2001] 2019, pp.25–35).

Global regulation is a very complicated process, and the definition of ‘general interest’ is very critical to be clarified by the question: How do public interest principles and ethical standards work in practice? So, a methodologically useful typological diction between measures designed to affect the processes of the BIC and the way to be regulated, that is, its form and structure, and those intended to deal with what artificial intelligence software program produces as digital content or services, to regulation bearing on info-communication industry. For example, in regulating AI robots, this distinction corresponds roughly to that between rules governing the automatic decision-making aspects of the AI system and regulation bearing on digital content created by human or produced by robots. The book *The dynamics of Regulation: Global Control, Local Resistance* made the same distinction concerning the following:

to television advertising: regulation of advertising within the commercial television system deals with it both as part of the financial structure and as a series of broadcast messages with content. Process regulation also includes determining the amount and distribution of advertising. (Gantzias [2001] 2019, p.36)

In our research project ‘Dynamic Regulations, Digital Culture and Artificial Intelligence: Public Interest and Ethical Standards’, we are in the process of collecting all necessary data to update the existing regulatory model ‘Product and Process Regulation’ (see also Gantzias [2001] 2019; pp.36–43). The forthcoming updated regulatory model, which we call ‘Dynamic Product and Process Regulation’ (DPPR), is likely to be very useful as a methodological tool to examine and analyze global regulation mechanisms and robot’s policy-making in the digital era.

Conclusion: Public Interest in Artificial Intelligence Revolution

The artificial revolution will lead to the develop a new business culture, that is, the BIC, global public interest principles and ethical standards in all countries around the world.

In twentieth century, staff in regulatory systems had aimed to perpetuate their activities in a way that makes them regulation—and not industry—oriented. This, of course, ties in with Bernstein's notion of bureaucratization and cyclical decline. Moreover, organization, once into a period of operation, becomes, to an extent, resistance to pressures from outside, finding ways to evade or diffuse the demands made on them. The more complex and conflicting of these demands become, the more likely the regulators are to seek safe and satisfactory solutions rather than optimal ones.

The public interest theory, of Horwitz's five types of regulation theory, seems to be the most applicable as a theory of creating info-communication regulation. Conspiracy theory also takes a very negative view not just of the effectiveness of regulation, but of its primary motive. It disputes the validity of the public interest justification even at the genetic state. It claims that regulation is initiated from the very start as a result of a conspiracy between powerful business interests and the state.

Our global regulation vision will motivate all countries around the world to bring into reality info-communication regulatory mechanisms, AI policy-making systems, universal public interest principles and ethical standards to protect privacy and security issues in our info-communication society. The definition of public interest is a very complicated process. Still, it is very beneficial to explain why regulatory agencies are very essential global actors to control artificial intelligence systems and robot's policy-making. In our research project 'Dynamic Regulations, Digital Culture and Artificial Intelligence: Public Interest and Ethical Standards', we are working to that direction by making the necessary modification to update the model 'Product and Process Regulation'. In the near future, global regulatory mechanisms are likely to be the practical solution to overcome 'divides' and 'inequalities' by enforcing universal public interest principle and ethical standards.

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Economy of Attention: Definition and Challenges for the Twenty-First Century

Santiago Giraldo-Luque and Cristina Fernández-Rovira

INTRODUCTION

This chapter takes up the discussion on the economy of attention, reviews its main conceptual approaches and proposes four lines of reflection on its future as well as the future of the digital society. Our study is linked to corporate sustainability in the digital age as the attention economy is rooted in one of the main problems of our time: social control through the market and the ethical implications of the great technological oligopolies that dominate the digital society.

In order to contribute to the debate on the use of consumers' data on the Internet, and the importance of the conscious and unconscious attention that people dedicate to the network, this chapter is developed to solve the following three main research questions:

RQ1: What is the attention economy and why is it important in the twenty-first century?

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RQ2: Which are the main economic and sociological changes associated with the development of the attention economy in the second decade of the twenty-first century?

RQ3: How can corporations take a critical stance in the face of the challenges outlined by the attention economy at the beginning of the third decade of the twenty-first century?

The chapter is divided in six sections. The objective of the chapter is to offer a broad vision of the concept of *the economy of attention*; for this reason, the definition of this notion is the starting point of the text. Next, the chapter aims to explore four challenges that humanity faces today in connection with this issue: (1) the structuring of oligopolies based on information; (2) the social and cultural homogenization as a product of the new world linked to the network society; (3) the sociological challenges of the workplace; (4) the responsible use of technology. The final part of the chapter tries to link the concept of the attention economy and its main elements with the corporate ethical and strategic responsibility. The corporation sustainability needs to understand the drastic shift towards intangible goods, but, above all, to formulate solutions based on technology that involve a human perspective.

The chapter hopes to be a starting point towards a reflection that includes all social agents, specially corporations, about the future of the information society.

CONTEXT AND BACKGROUND

Information and communication technologies (ICTs) represent the latest, and truly vertiginous, great transformation for humanity. Computers, the Internet and the ability to produce, store, manage and analyse data have changed everything: work, social relations, culture, politics and citizenship and, of course, the economy.

Information and communications technology is a phenomenon that impacts our social coexistence and has led to an innovation in the system of social technology (Masuda 1984), after two enormous social, economic and political changes—namely, the fall of the Berlin Wall and the economic crisis of 2007/2008. The technological transformation system is made up of four characteristics that defined the transition from an industrial society, guided by material goods, to the information society, based on the economy of the intangible (Bell 1976) and in the logic of networks (Castells 1997).

First, Masuda (1984, pp. 17–20) indicates that different types of innovative technology build a complex technological system. As a second step, he adds, integrated technology systems are disseminated in society and gradually implemented. As a result, a rapid expansion of a new type of productivity is generated, which configures the third characteristic that ends up producing the final one: a social impact that gradually leads to the transformation and

institutionalization of new forms and social behaviours that, generally, are different from those considered as traditional.

The change of society, also guided by the economic standardization after the fall of the Berlin Wall, integrated information systems as the basis of its development. The network spread and penetrated a liberalized society that accessed a utopian scenario of universal democratization through the Internet, the network of networks.

For Castells (1997), the network's own logic, at the centre of the informational paradigm, is characterized by its capacity for penetration, flexibility and convergence. The information society uses the logic of networks in its basic structure, which explains the use of the concept of "network society" (Castells 2004). Networks constitute the new social morphology, and the expansion of the network logic modifies the operation and the results in the processes of production, experience, power and culture (Castells 1997).

However, the expansion of networks and the network society, the paradigm shift, has proved to be unfair (Piketty 2014; Taylor and Silver 2019) and far from the optimism of mass self-communication (Castells 2009) and of social mobilization (Castells 2012). The idea of the network as a guarantee of progress was an illusion that collapsed, especially with the financial crisis of 2007/2008. The connection to the network society, exemplified on a smart mobile phone connected to the Internet, has guaranteed new forms of social control (Tufecki 2014). This phenomenon has led to the creation of individualized worlds or media bubbles (Pariser 2011), has widened the gap between rich and poor, promotes job insecurity and contributed to the global capitalist crisis (Fuchs 2017), and has also destroyed the value and empathy of conversation (Turkle 2019).

The introduction in the 1990s of Web 1.0 and the widespread use of devices connected to the network created possibilities for analysing the information consumed and the users' behaviour on the Internet. But it is not until the failure of the first Internet, at the turn of the twenty-first century, when the creation of information for the Internet would cease to be a problem (Fuchs 2017). Users began to be part of platforms in which, under the concept of a collaborative and participatory web, Web 2.0 (O'Reilly 2007) published their productions at zero cost. The main asset of the information age tended to be produced for free (Simon 1971, p. 41; Davenport and Beck 2002, p. 13).

The problem of the twenty-first century is concentrated on the ability of the product to capture the attention of the user. The price of a good is linked not to its production value, but to its own consumption value. The product, as an experience, acquires a specific value each time it is consumed, not when it is produced (Shapiro and Varian 1999, p. 3).

The qualitative leap that occurs with the technological advance of the last 15 years (2005–2020), in which the techniques of collecting, extracting, capturing, analysing and processing huge amounts of information have solved the problems of data management (Mayer-Schönberger and Cukier 2013); it also opens the door to the concept of the attention economy, fully applied since

2008. “Large technology companies pivot on the attention economy” (Morgans 2017).

The attention economy is not a novelty. Its theorizing, in the 1970s, could not yet monitor users in their relationship with interconnected interfaces and technologies (Davenport and Beck 2002). Nor was it possible to make calculations or algorithms that could handle the amount of information that computers began to store. Much less was it possible to make correlations between them (Shapiro and Varian 1999, p. 36). But the challenge was perfectly understood by Amazon and Google, and then by the technology companies that reproduced their operations (Fuchs 2012, 2017).

According to the “Communications Market Report” (Ofcom 2018), users of mobile phones in the United Kingdom spend an average of three hours and seven minutes a day on their phones. At the same time, 48% of young people in the United States between 18 and 29 years of age declare that they never disconnect from their digital universe (Perrin and Kumar 2019). The screens have the attention.

THE ECONOMY OF ATTENTION

The economy of attention states that it is impossible to pay attention to all the information we receive from the Internet: “A wealth of information creates a poverty in attention and the need to place attention efficiently among the overabundance of sources of information that are feasible to consume” (Simon 1971, pp. 40–41). Davenport and Beck (2002, p. 32) propose that attention involves mental concentration on specific information that reaches the conscious senses of the individual who decides when to pay attention and whether to perform an action:

The attention is produced in a phase of relatively unconscious restriction, in which we eliminate most of the sensory impulses that surround us and that flow to us [...] and in a decision phase, in which we decide to act on the information to which we pay attention. (pp. 32–34)

The concept of the attention economy advanced at the end of the twentieth century with the introduction of search engines on the Web. Shapiro and Varian describe search engines as platforms that allow people to find information that people value and exclude what they don’t value (1999, p. 21). The change of format accepts the replacement of the massive and dispersed commercial and communicative exchange to give way to the universe of product customization (Davenport and Beck 2002, p. 27). It also allows for the individualization of marketing and behavioural observation of millions of consumers, follow-up actions that admit immediate and automated production of exclusive content for clients (Shapiro and Varian 1999, p. 7).

The concentration of users on digital platforms—Google, Facebook or Amazon environment—allows us to place privileged scenarios for the attention

market in which the manipulation of the user's attention can be more easily produced. According to Tristan Harris, former Google ethical designer and founder of the Time Well Spent movement, attention is governed by "intermittent variable rewards" (in Morgans 2017). The individualized reward makes possible the control of attention by large technology companies which, through striking technologies associated with the user's emotional experiences, determine a very effective attraction market (Gerlitz and Helmond 2013).

In this sense, the attention economy can be defined as an economic model that has been technologically enhanced in the last two decades and that is based on the human attention capital within an ecosystem with infinite communicative inputs that fight to capture their own individual or collective attention. The model assumes that attention—time, as well as the actions developed in it—guarantees a monetization based on the conversion of one's attention into relevant and privileged information for the collector and analyser of the same information (data). The economy of attention highlights both the audience and the potential value of the activities of the audience and focuses on the communicative and cultural industries associated with free time, leisure and the rational defencelessness of individuals.

Some empirical studies have been done in order to demonstrate the power of the attention economy in the digital society. Ciampaglia, Flammini and Menczer (2015), for example, study the phenomenon and focus on the patterns of collective attention that are related to the new information. The Nielsen Norman Group also studied the concept applied to the marketing of attention and how informative stimuli affect user behaviour (Kane 2019). Mark Manson (2014) quantified the earnings based on informational attention, such as consumption, produced by one of the celebrities of the decade, Kim Kardashian, and how the attention economy could help promote terrorism. Finally, the studies of Wu (2017) and Franck (1999) allow to trace a history of the economic transformation that led both to the "industrialization of human attention capture" and to the "emergence of a new, quaternary sector of the economy".

ECONOMIC OLIGOPOLY IN A LIBERALIZED SOCIETY

Technology companies have understood the new economic model focused on three elements: the sale of intangible assets associated with ephemeral emotional values, such as prestige; the infinite sale of mechanisms (software) and devices (hardware) that attract the attention of the user associated with the same emotional values; and the storage of user information that is fed back at every moment through the use of mechanisms and devices acquired by the consumers. Amazon, Google and Facebook have used the three elements to establish an oligopoly of attention, or data, counted in time of dedication and collective desire guided by large platforms and advertising (Pasquinelli 2009).

Tim O'Reilly admitted that the term 2.0 was created with the intention of identifying new economic strategies for Internet companies after the dotcom

financial crisis (O'Reilly and Battelle 2009). The fundamental framework of the new strategy was found in the benefit of the data (or content) generated by the user to establish additional values on that product—free and very valuable. Greg Linden proposed in 1997 to Jeff Bezos, owner of an online bookstore, to implement the suggestions service to his readers through the collaborative filtering “article by article”, a patent that led to the revolution of predictions (Mayer-Schönberger and Cukier 2013, p. 70).

The relationships between the characteristics of the items sold had the ability to extend to any type of product. Amazon ceased to be a book store to expand its offer to all existing consumer goods. The information system had the ability to work with all available data and, through them, predict the interest of a specific person for a specific product (Mayer-Schönberger and Cukier 2013).

The power of prediction, the first link in the oligopoly of information, allowed pioneering companies to establish oligopolistic spaces for information and, therefore, for attention. The growing grouping of information in a small number of technology companies gave them the opportunity to make and offer very wide ranges of predictions.¹

The power of prediction and, therefore, of knowing what a user can buy or do, renews the power theories of Luhmann (1995) and Foucault (1979a). Both authors understood the significance of power relations as the definition of the horizon of individual and collective actions. It is the construction of a slight oligopoly, guided by the experience of open and dynamic communication, which is accessible and attractive: It also gives strength to the evidence of the same invisibility—or self-legitimization—of the power announced by Foucault, from which is controlled the very meaning of life.

Despite the fact that the circulation of information on the network has become more fluid, dynamic and complex by the exponential increase in the number of actors (Castells 2004), economic concentration is greater and the visibility of the actors in the communication network recreates the industrial dynamics of exclusion. The rapid decline in visibility is the main barrier to the spread of information online, which is linked to the prominence of any given specific actor (Frank 1999; Fuchs 2013).

In the case of the oligopoly of information, the paradox is clear: While the Internet is presented as a place of open information which is available to all citizens, and as a place where everyone can feel a part of what is happening in the world, the circulation of information is concentrated in a few channels. On the one hand, these channels act as mass media which control information flows on their platforms while; on the other hand, they freely recycle information from

¹The role of information and its size and complexity, as well as the importance of consumer data in an environment of oligopolistic domination of informational goods, establishes the term Big Data as an extremely important element in the digital economy. De Mauro, Greco and Grimaldi (2016, p. 131) defined Big Data as “the information asset characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value”.

user-consumers to build prediction processes, algorithms with which they classify and prepare consumer packages for multiple advertisers (O’Neil 2017).

The positioning algorithm, along with the restricted data contained within, constitutes the second link in the oligopolistic construction made with user data. The definition of prominence in the network is made by an oligopolistic actor who uses the free work of billions of Internet users for this purpose (Pasquinelli 2009).

The setting of the Google PageRank algorithm determines the level of popularity of a web page based on its citations. But the domain over citation control rests with a single company that determines the hierarchy and, with the information of millions of users, establishes prices and privileged positions. Google establishes its own economic policy, the economic policy of PageRank (Pasquinelli 2009), which controls advertising and knowledge markets: “Google establishes its own proprietary hierarchy of value for each node of the Internet and becomes then the first systematic global rentier of the common intellect” (Pasquinelli 2009, p. 153).

Classical economists declared that progress depends on the best possible use of the fragmentary knowledge present in everyone. Referring to prices, they mentioned that the system that provides the most genuine information should serve as a basis for the decision-making of isolated and dispersed people. They also pointed out that the more interfered people were, the less reliable the indicators at their disposal would be.

The characteristics of oligopolies imply that a few companies are the only ones capable of offering a good or service and, therefore, dominate the offer in the market. The oligopolistic companies also behave in an abusive manner with demand when controlling supply. Governing information and attention give, in the information society, an absolute power to the companies which also dominate 60% of the Internet advertising market (Banis 2018). A power exercised without any control.

Pasquinelli (2009), by introducing the concept of global income which companies such as Facebook and Google extract from the commercial exploitation of users’ work through user-generated content (UGC), also reinforces the contradiction of the liberalized society and of classical economic theory over the economic control exercised by the technological giants. Property rights (Hayek 1985), over the cognitive and intellectual goods produced by users, over their information, their data, and their behaviour, are violated and transgressed by technological agents who, using the emotional control inherent in technological addiction (Giraldo-Luque 2015), avoid a critical reaction of their users (Fig. 15.1).

In January 2019, the number of Internet users exceeded half of the world’s population, totalling more than 4.3 billion people. Facebook networks, with nearly 2.3 billion users, can reach 51% of total Internet users in the world. The interconnection between users through billions of friendships and exchanges represent a dated social graph which is made available exclusively to a handful of companies—which is indeed dangerous. The model is based on capturing

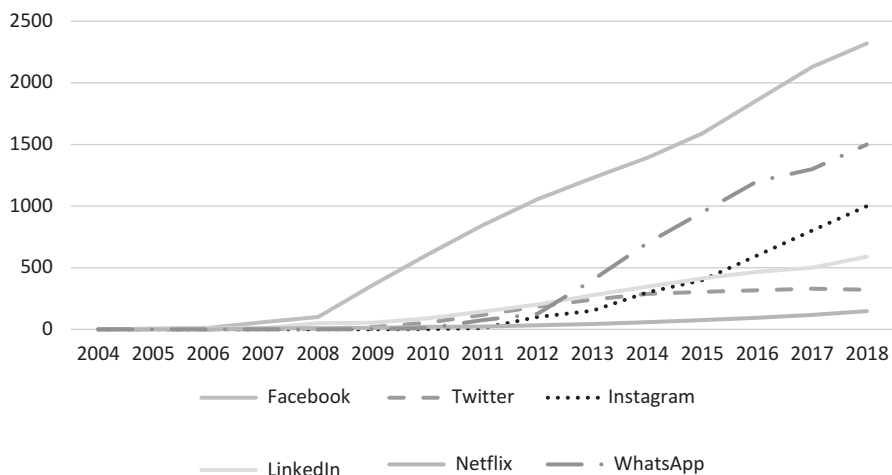


Fig. 15.1 Evolution of the number of users in digital platforms (in millions; 2004–2018). (Source: Author’s creation based on Statista, growysec.com, Yahoo Finance, thebalancecareers.com, SemioCast and The Guardian)

user attention. Their time spent on the Internet and their interactions measured in “asymmetric vectors of energy, data, attention and value” (Pasquinelli 2009, p. 154) implies the systemic feedback of technology and the inputs of the economic movement of the intangible (Fernández-Rovira and Giraldo-Luque 2019).

Every time an individual uses their mobile phone, they send consumption data in an automated and invisible process, including their entire digital behaviour, to the oligopolist collector of information. The concentration of attention generates more data to adjust the black boxes or algorithms that determine the interests of the consumer (Rahwan 2018) and, thus, allows for greater and more refined control of the user.

The control over prediction—Amazon model—the control over the definition of visibility prices based on popularity—Google model—and the control of reception, channelling and administration of data and attention based on thousands of millions of users—Facebook model—establish, at the zenith of the liberalized society, the greatest oligopoly and concentration of communicative power in the history of mankind.

CONCENTRATION OF ATTENTION AND CONCENTRATION OF CULTURE: THE HOMOGENIZATION OF SOCIETY

On the Internet, economic power and the scenario of cultural domination that is associated with it, finds two consumption mechanisms that shape the domination of life. The first is the concentration of consumption in increasingly large companies that become oligopolies. The second is the conversion of

informational merchandise in the revolution of data and algorithms. The two mechanisms would have generated in a democratic context, in the nineteenth century and in the first half of the twentieth century, a social revolution with the possibility of humanity having to depend on a few oligopolistic companies for the definition of policies that would affect people's leisure activities and interests. Above all else, this social revolution would occur given that citizens would not receive any kind of economic benefit from being exploited by the commercial giants.

The point of social breakdown lies in one's own capacity for awareness of the phenomenon. The individual is aware that all information sent to the Internet is used for free by technology companies. With the data sold to other companies or political parties, users receive products and services that they buy happy to know how well they are known by the companies that offer them the products. The individual also feels free to buy the good or service.

The fundamental change between the social homogenization of the industrial age and the technological era is the absolute domain over leisure time, of all the conscious and unconscious attention of the individual that is used to generate profits to oligopolistic companies. The cultural world is conceived, within the network or the media bubble (Pariser 2011), as a space of domination and as a scenario of elimination of differences. In that domination, and under values such as ephemeral social notoriety in the network (always limited), the user becomes a free worker who produces a myriad of digital content and interactions that technology companies only have to manage. It is the "commercialization of the prosumer of the Internet" (Fuchs 2012, p. 43). In that context, culture acts as the legitimizing space of the dynamics of exploitation. It is useful for the user to feel comfortable with the new values associated with the prestige and recognition granted by the PageRank and the "like" button; it is also useful for the user to avoid thinking of oligopolistic platforms as new spaces of global income of the community intellect (Pasquinelli 2009).

The role of cultural socialization that fulfils and satisfies technology as the most relevant actor in the contemporary media scenario is remarkable. The cultural world is based on a universe of individual satisfaction. Symptoms of uncertainty or lack of information are quickly replaced by the individualized information systems that feed our emotional well-being.

The cultural scene maintains people under broad frameworks of control and universal harmonization. Individuals satisfied and preconditioned by the selfish and individualized satisfaction of their desires for ephemeral happiness carry out an oriented and homogenized cultural consumption—through data-based predictions—that standardizes thoughts, feelings and aspirations. In the face of uncertainty, the ceaseless media-cultural bombardment system is therapeutic. The individual no longer needs to think for himself, or feel—*Tinderised*—or imagine—*Facebookised*.

In a new paradox about the cultural link and the construction of the social welfare of the satisfaction of desires in a liberal society, the individual assumes the myth of the foundation of the Internet as the society of participation and

of the social, political and cultural integration defended by Castells (2012), Hartley (2012) and Shirky (2008). The post-crisis world, however, disrupts the imaginary world of the liberal society—and even the neo-liberal one—without its rupture implying in the subjects a social reaction precisely because the cultural universe that is accessed, mediated by the information oligopolies, has erased the contradictions and alterations of life previously manifested in art, music, literature and cinema. In fact, the new manifestations which are apparently countercultural, are made mostly on channels such as YouTube, Netflix, Facebook and Twitter.

The process of integrating individuals into the same consumer society reproduces, in the democratic period of the second decade of the twenty-first century, social repression better than any other era. The control framework is truly sophisticated. The democratic control process uses a non-authoritarian and legitimate figure as the guarantor of freedom of expression to establish itself without any friction as a totalitarian and oligopolistic system. The technologically democratic system consolidates its own domination and grants doses of both managed freedom and instinctive repression to isolated individuals through thousands of devices that are, at the same time, objects of desire and social status—in terms of PageRank or ‘like’ buttons. Since the twentieth century the consolidated democratic process gives an illusion of freedom that the political scene, but especially the economic scene, uses to protect itself from opposing, increasingly controlled, forces. The opposing voices themselves fight for the protection of democratic freedom promoted from the control system: “The loss of consciousness due to the satisfactory freedoms allowed by a society without freedom makes possible a happy conscience that facilitates the acceptance of its mistakes” (Marcuse 1987, p. 106).

Under the cultural-technological domain promoted by the oligopolies that concentrate attention and entertainment (Google, Facebook, Amazon, Netflix), the individual enters a vital uncertainty that is resolved, in a subtle and sophisticated way, with two processes. On the one hand, the design of new psychological and mediated needs (social recognition on the web as a personalized PageRank) which feed intimate sensory drives in people and which are transmitted through new cultural realities that end up occupying time—attention—which was previously destined to the development of cultural or leisure activities. On the other hand, the new cultural platforms reduce the feeling of uncertainty and relax the tensions of human contradictions. Through predictive mechanisms, they anticipate the same uncertainty and give adequate responses—in the form of goods to be consumed—to users who become addicted to the services offered and at a *low cost* (such as Netflix’s rate).

Only in the anesthetized world, full of symbolic and technological scopolamine, can *reggaeton*, with its macho, violent and kitsch symbolism, become a massive phenomenon. In the middle of feminist struggles, in times of social outcry in a society without rights, in the face of the economic horizon plagued with uncertainty about new forms of exploitation, can the song *Despacito* have (in September 2019) more than 6.4 billion views on YouTube, a sample which

is equivalent to almost 83% of the world's population. This is the power of cultural homogenization.

The Internet and the acculturation model based on big digital platforms displace the traditional antagonism between culture and social reality. The antagonism is reduced to a controlled space under the metaphor of the protective interface. The interface protects us from monsters, and even from failure or rejection in a relationship (Turkle 2019). The new homogeneous culture ends up liquidating the complexity framework of the culture that is at least two-dimensional (Marcuse 1987, p. 90).

The appearance of current cultural privileges, such as the mass access to the same culture, provides a protected environment, in the interface, in which some forbidden or censored truths survive under an abstract integrity. These in turn are separated from the society that suppresses them. Mass access, at the same time, generates the illusion that such suppression, censorship and prohibition does not exist.

Individuals in virtual spaces copy models of the spectacle society and try to build their own experience of fame and popularity with the tools that the interface gives them. Its popularity and the popularity of its actions guided to please others (Turkle 2019, p. 123) will be marked by the degree of superficial, instantaneous, ephemeral media positioning that they obtain from their profiles. This ends with the possibility of transcending towards a new social subject that uses the new *open* space with a vindictive mentality.

The happy world of the technological universe that controls user attention represents the denial of dialectical, critical and historical thinking. Unified language, accepted by the individual under the effects of sensory psychological narcissism induced by the interface, by the 'like' button, is as anti-critical and anti-dialectical. At the same time, the interface acts as memory. It classifies and decides the images, the moments, the episodes that the individual can and should remember and, of course, celebrate. External or Universal Serial Bus (USB) type of memories are a terrible simile of the individual's memory loss: external to himself or herself. According to Carr (2011), the construction of the simile of the USB, as an external and oriented memory, is related both to the loss of one's own cultural memory and to the capacity of society to portray and narrate its own cultural memory through critical and creative artistic expressions.

NEW MERCHANDISE AND NEW JOBS: NEW AND MORE SOPHISTICATED EXPLOITATION FORMS

The year 2008 and its crisis, just at the height of the technological deployment of large companies such as Facebook and Google, changed everything. Non-payment of services—before, rights—meant the end of well-being for millions of workers and their families. Labour and social rights suffered in most countries of the globe. The scenario of the absence of rights and the economic crisis

that promoted cultural and political changes in favour of social transformation in past centuries rears its ugly head at the end of the second decade of the twenty-first century, which is seen as being socially misunderstood. In its relationship with the cultural challenge, the social force remains anesthetized by television series that project dystopia in supposedly imaginary universes² while the same projected dystopia happens daily and without social criticism.

In the workplace, fully affected by both the digital reconversion of the work universe and the resounding change in working conditions after 2008, there are at least four situations that arise as challenges from a sociological point of view: the transformation of society into a social factory; the change of labour relations and the loss of rights by workers; the introduction of automation in companies; and the absence of an educational framework adapted to the technological world of the twenty-first century.

The concept of the social factory (Tronti 1962) explains that the production of all goods by all citizens reaches a higher level of penetration by integrating social relations of production and consumption itself. In it, the whole society is part of the process of producing goods for oligopolistic companies. In the social factory, capital is concentrated in cultural production which, at the same time, allows the user/consumer/worker to build a community identity through access to goods produced also in a community way (Sussman 2017). For Tronti, the whole society—digitally connected—acts according to the factory—technology company—and the factory extends its exclusive domain—oligopoly—over society. It is a way in which class antagonism, far from disappearing, is shown as an element that permeates all social activities, including the dynamics of cultural development (Cleaver 1992), but remains a controlled social drive under the framework of cultural production.

The prosumer or citizen participating in the era of freedom and the democratization of production is commercialized under their own conscience. Both the time of the work carried out on technological platforms and the time of non-work (leisure, entertainment, culture, communication) becomes free productive work. Companies appropriate the work not paid to the citizen to generate new capital gains (Fuchs 2012) which, in addition, will be monetized through products that the user will end up buying when they appear in the form of advertisements in his or her daily Internet use.

The first element of labour relations in the digital economy, which is focused on attracting attention (energy and user consumption actions), is structured in such a way that the billions of users of technology platforms work free for oligopoly giants. The capital of companies such as Google, Facebook and Amazon is produced from the unpaid work (exploitation) of its users.

In the second element, for the labour scene in the digital universe, whose symbols can be associated with the centralized factory (in the industrial society) and with the decentralized call centre (in the information society), labour relations and rights have radically changed. The new business practices, which

² See, for example, the *Nosedive* episode of the *Black Mirror* series on Netflix.

promote individual work, multitasking and 24-hour immersion in the company,³ also determine increasingly less community-based social behaviour.

Labour individualization has led to two operations depending on the type of worker. In the first case, the salaried worker has lost the space for meeting, conversation, collective creation and labour discussion with the other workers. New work practices impair the feeling of ‘community at work’ and longer screen time is demanded (Turkle 2019). Likewise, the new digital and more digitalized companies require that their workers have a flexible schedule that prevents them from dedicating their time to, for example, acquiring a new skill, having or being with their family or administering an adequate rest schedule (O’Neil 2017). The emphasis on data of companies, applied to controlling workers and monitoring their production within the organization, ends up undermining the possibilities of human development and prevents the construction of a social fabric within the labour scene. Social individualization in the company can also be understood as one of the main causes of the gradual loss of working-class and social-democratic parties and unions in the political life of Western democracies (Fernández-Rovira 2018), which have experienced a significant fall in membership in almost all OECD countries.

In the second case, self-employed workers, often promoted by decentralized technology platforms such as Deliveroo or Rappi, have fewer labour rights (schedules, vacation time, living wages or social security). The logical economic implication, moreover, is that autonomous workers receive a less-regulated fiscal burden and, therefore, public revenues reduce their collection capacities (Moore 2019, p. 129).

Finally, the digitalized society rewards multitasking and points to those who can perform several activities simultaneously as the workers best adapted to technological change. However, investigations have shown that dedication to several tasks in parallel decreases performance in all activities performed by the individual (Wang and Tchernev 2012).

The introduction of digitalization and robotization in companies is the third sociological factor that the information society imposes on the workplace. The problem is not technology itself but rather the decisions taken by human beings about the human factor. For example, in the case of the bank restructuring in Spain in the post-crisis period and the automation of thousands of processes—another example of decentralized work towards the worker—decreased the number of employees from 277,311 in 2007, to 192,626 workers in 2018, according to the Bank of Spain. The figures are paradoxical regarding their earnings in the same period. According to the National Commission of the Stock Market of Spain, between 2008 and 2018, Spanish banks obtained profits of more than €100 billion and recovered, in the course of 2018, almost the same amount of profits as 2008, the year in which the crisis began (Fig. 15.2).

Despite their profits and the economic recovery of their values, the Spanish banks intend to continue with the employee layoff plan. While it is true that the

³ See, for example, the movie *Sorry We Missed You* (2019), directed by Ken Loach.

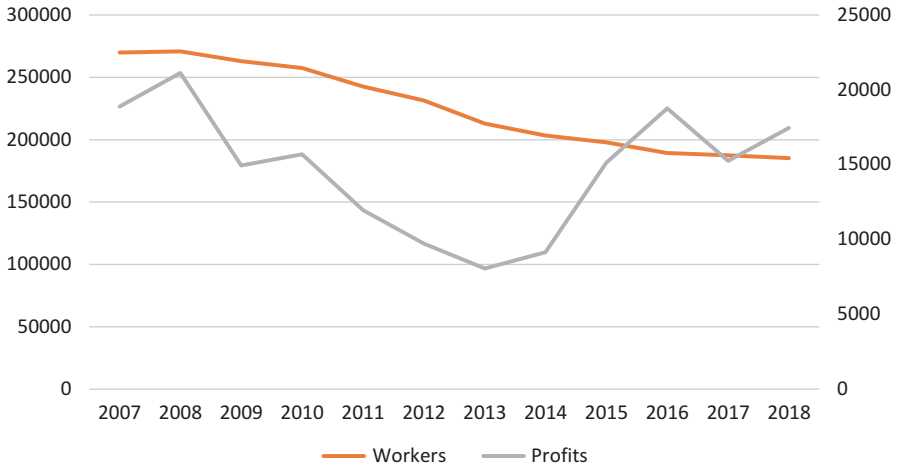


Fig. 15.2 Evolution of workers and profits in Spanish banking (2007–2018). (Source: Author's creation based on Bank of Spain and National Commission of the Stock Market of Spain)

recovery of banking benefits may not have been possible with the number of jobs in 2007, new data on recapture of benefits close to those before the crisis should be considered before relating directly the automation of processes with the dismissals of personnel. On the contrary, it presents itself as an opportunity to use their workers in a creative and innovative way. The research, training and development of new services can be key elements to maintain a good employment rate which is necessary, in addition, for the economy to function properly.

Finally, education in the twenty-first century needs to train users and future professionals in competences related to data literacy and technological tools. Future professionals need to be able to understand technology, to modify it and to build new economic, social and cultural processes with the tools at their disposal. For this reason, it is essential to understand the technology not only as a communication interface. It is essential to know what is behind the screen to be able to govern and control the algorithms that dominate the collection of user attention and information. Knowing the processes and the operations associated with them is the only way to handle the reproduction of the conditions that make large technology companies dominate the most important aspects of people's daily lives.

THE IRRESPONSIBLE USE OF TECHNOLOGY

In the economic and social spheres, the universe of the oligopoly of attention creates different problematic situations that are typical of massive technological environments. The problems are due to a new, more sophisticated stage within the dominant economic system since the 1990s, namely digital capitalism

(Fuchs 2017). The challenges are associated with the behaviour of oligopolistic companies which are related either to the universe of intangible goods produced by people for free or to the management of users' intangible emotions.

The first challenge is: How do we put a tax on technology? Current tax regulations leave out transnational corporations—not just technology companies—that benefit from having more flexible regulations in certain countries. With respect to this problem, it is also worth asking whether there should be regulation for the sale of data packages created by individuals who give up their property rights, almost always unconsciously, on user-generated content (UGC) platforms. At the same time, it is essential to raise a discussion about the distribution of profits of the free work carried out by users—which generates wealth for the great platforms—which can be conceived as 'time-attention' and as specific actions that should be proportionally remunerated.

The taxation of large companies linked to the Internet should also be considered as a possibility for the reconstruction of a technological social contract (Fernández-Rovira 2018). Their activities must be regulated under international and/or state regulations, even more so when there is no control over their activities—as evidenced by the case of Cambridge Analytica (Rawnsley 2018). Their identification and sanction as taxable markets or monopolistic processes has only been applied in the European Union, with the case of Google (Scott 2017; Hern and Jolly 2019).

The second challenge related to the responsible use of technology is defined by the issue of addiction which it generates in users. The ethical feeling of building an addictive consumer product—and one which already demonstrates significant social and behavioural problems (Turkle 2019)—has generated much rejection towards products created by the same inventors of the technology.

Sean Parker, former vice president of Facebook, stated:

One of the objectives of Facebook was to consume the maximum time and conscious attention of the user, a leitmotiv conducive to the development of the "like" button that gave users that dose of dopamine that governs the younger generations of the 21st century. It is a feedback loop of social validation through which it is possible to exploit a vulnerability in human psychology. (2017)

In the second decade of the twenty-first century, apparent freedom has ceased to be rationalized through better living standards (Piketty 2014). Its rationalization and internalization, sophisticated domination, occurs from the individual's psychological domain and psychological satisfaction through the 'like' button.

Justin Rosenstein, leader of the technical team that developed the Facebook Pages application, as well as the 'like' button on the platform, declared that he protects himself from the networks and from the button he created:

The “like” button is like a function of bright pseudo-pleasure alarms that can be as hollow as seductive. The main intention I had when creating the button was to make positivity the path of least resistance, and I think it succeeded in its objectives, but also created great unwanted negative side effects. In a way, it was too successful. (in Lewis 2017)

The ‘excessive success’ of the ‘like’ button dramatizes the universe of control over the very essence of humanity, which is contradictory and conflicting. Within the social network, resistance is controlled through the happy narcissistic loop, a button that measures the popularity of a publication, a person or a subject.

The third challenge facing technology is the absolute invasion of the privacy of individuals, as well as the intrusion into the user’s decision-making system. Sherry Turkle (2019, p. 390) underlined a phrase by Mark Zuckerberg about privacy: “Privacy is no longer a relevant social norm”, the creator of Facebook confessed in an interview. For Turkle, however, no democracy can exist without privacy.

Turkle also notes that the regime of happiness to which the user is subjected, when using Internet applications, suggests that surveillance exercised by technology is a protective factor for the user. In social media, surveillance is similar to social participation and the feeling of caring makes users lose their sense of prevention against what the platforms hope to take from them. The individual, in his sense of freedom within the network and inside his personal and apparently intimate space, behaves like himself and contributes unadulterated data, faithful to his own thoughts, to the benefit of the oligopolistic system (Turkle 2019, p. 396).

On the Internet, the individual is subject to continuous surveillance (Turkle 2019; Fuchs 2012). Surveillance, on the one hand, feeds and surpasses the theory of Michel Foucault in which he ensures that one of the tasks of the modern state is the promotion of a citizenry that monitors itself through a camera that looks at everything (Turkle 2019, p. 395; Foucault 1979b), but which is invisible in its dimension of power and control over the actions of the individual (Foucault 1979a), which corresponds to the second dimension. In it, the individual accepts “freely” the rules, or the contract of absolute surveillance⁴ offered by the companies. Companies exercise an ideological control focused on what the user can lose socially if he decides to abandon the applications. For Fuchs (2017, p. 542), commercial Internet platforms exert emotional coercion on individuals to use their products. The more users use their platforms under coercion and social pressure, the easier it is to reproduce that coercion over other unconnected users.

⁴Facebook’s privacy rules are available at: <https://es-es.facebook.com/about/privacy>. Amazon rules can be found at: <https://www.amazon.com/gp/help/customer/display.html?nodeId=201909010>

The space of intrusion in decision-making is no less disturbing. The freedom of elections built from social networks, and from the big digital platforms in general, can be understood as an illusion close to that of absolute interconnection or, even, to the possibility of belonging to the market. A market that, as James Williams, former Google strategist points out, is centralized and controlled in an absolutist way: “The information technology industry is the longest, most standardized and most centralized form of attention control in the history of humanity” (in Lewis 2017).

For Williams, the framework of the attention economy also feeds on creation and impulsivity: “The attention economy encourages the design of technologies that attract our attention. In doing so, it privileges our impulses over our intentions” (in Lewis 2017), a situation that has also forced the media to join the impulsive, sensational information offer: “baits and entertainment to survive” (Williams, in Lewis 2017).

It is precisely the logic of disinformation which is the latest sociological challenge that we have in the controlled market of the attention economy. Harsin (2015) indicates that the regime of post-truth corresponds to the society of control. In many societies, there is a change from the regime of truth to regimes of post-truth, characterized by the proliferation of truth markets. In the control society, power exploits new freedoms to participate, produce and express oneself, as well as consume, disseminate and evaluate. This corresponds to post-politics or post-democracy, where the issues, speeches and capacity of sociopolitical agency remain constrained. Post-truth regimes emerge from post-democratic strategies that use data analysis to manage the field of appearance and participation, through attention and affection (Fernández-Rovira and Giraldo-Luque 2019).

DO MACRO-SOCIAL CHANGES AFFECT CORPORATIONS AS WELL?

The challenges of technological change involve all social actors. No one can avoid being part of the new digital economy. Billions of companies around the world are trying to adapt their functionalities, their structures and their business models to the new economic trends. But it is often thought that the ethical and human challenge of the digital transformation has nothing to do with the challenges for private corporations. Nothing could be further from the truth. Facing the challenges is the only way to be sustainable in the second decade of the twenty-first century.

Each one of the problems described above reflects challenges for the cutting-edge business organization. The first of these is the awareness that they, as technological subjects, are data producers and collectors. Corporations also produce information at zero cost and can obtain, from their users, thousands of data. Establishing new fields of business diversification based on the storage and recycling of their own data and the data of their users/clients, in an ethical and transparent way, can mark the beginning of new fields of competition on the oligopolistic domain of information. Likewise, the ethical and transparent

use of users' data will allow the strengthening of the relationship of trust between the corporation and the citizen. Good data processing, a good that will be increasingly valued, will guarantee a long-term relationship between the corporation and the customer.

Secondly, corporations have the possibility of promoting new creative economies linked to culture and to the universe of proximity. Through them, and the participation of citizens as an instrument of appropriation, it is possible to curb the dominant cultural framework guided by the large digital entertainment platforms. These actions also make it possible present alternatives to the information oligopoly itself, which delimits the margin of technological and cultural action.

The third challenge is the most relevant one: corporations must try to establish a new ethical social contract with humanity. The world of work needs to promote new relations that guarantee social welfare and, at the same time, lower rates of inequality that have increased, without stopping, since the middle of the twentieth century (Fuchs 2017; Galbraith 2019). The ethical social contract poses four tasks that can be solved from the corporate universe. The first task is the recovery of the rights lost by the worker, mainly from 2008. Garbage contracts, legal loopholes, the demands of companies and franchises to deceive workers need to be rethought by the corporations. Only by guaranteeing stable working conditions will the worker be able to develop a useful productive life to motivate the economy and the profits of the company itself. Likewise, the promotion of basic conditions of worker rights encourages the scope of the second challenge: the corporate censure of the social factory, the phenomenon that forces the individual to work consciously or unconsciously beyond the working hours for a company.

The last two tasks have to do with the application of technological process automation, especially those involving the replacement of human action by robotic mechanisms, and with the strategic corporate commitment to training its workers (current and future) in data literacy. In this sense, corporations can finance strategic programs of dual education with universities or training centres, as well as ensure their own training plans. Once again, this type of action can generate a greater commitment from workers to their corporation, while promoting the social, ethical and educational projection of the organization.

Corporations, as a last challenge, need to turn to information and communication technologies, but they must always ensure a transparent, responsible and ethical development of their business implementation. Of course, corporations must be in solidarity with the tax system of the territories where they develop their activities and not take advantage of the flexibility derived from the post-Berlin world to defraud taxes. But, at the same time, corporations must be the first to demand payment (and to pay) for the commercial exploitation of both user data and user-generated content on digital platforms. The first company to pay the user for the use of their data will be a milestone in the economic system of the twenty-first century.

Corporations must also ensure the defence of privacy, being the first privileged ones to do so. They must seek the protection of property rights, not only of the material goods they, their workers and their clients produce, but also of the intangible or cognitive goods produced by the corporation itself. They can nurture a new culture of protection of the content produced by citizens in their daily lives and promote a philosophy of rejection of corporations that take unscrupulous advantage of them.

Finally, corporations, within a market economy, need to stand up and denounce the practices of dominant position of technological companies. This is the only way for them to maintain the belief that market economy is capable of self-regulation when there are forces that put at risk their own free and fair competition, as well as equal opportunities in an open and global economy.

The above challenges pose at least three research horizons. The first has to do with the possibility of linking the economy of attention to the field of business. The academy can explore the potential of different industries to make better use of the data and information generated in the context of their sectoral and territorial scope. The second stances the challenge of rethinking a new social contract that guarantees the social welfare of humanity, in which technology and information play a decisive role—if they move away from being tools linked to the construction of cultural hegemony. The third line of research can focus on the study of the business concentration of the digital economy and how the Internet has also promoted inequality. In this line, the transformation of the income of large technological companies based more and more on data management than on the provision of services or goods can also be studied.

CONCLUSION: “OH! I TOUCHED MY PHONE 5,000 TIMES TODAY?”

The universe of attention, which implies dedication time and a conscious effort on the part of the user to consume or create information or content—as an asset in the information society—is consolidated as a vital centre of the economy in the twenty-first century. The transition from the construction of a good, as the core element of the economic process, to the consumption of the good, forces us to reconsider the consumption model of the good as part of the production chain.

The main problem of the attention–work notion when applied to the productive chain is that it is not considered work, as productive dedication by the creators of the content. The new exploitation of the worker is not due to obedience or the raw performance of a job, but rather is due to the instrumental status that is forced on the individual which reduces them to the state of a living thing (Marcuse 1987, p. 63). The description of the instrument—the algorithm fuelled by human labour—as alien to itself and incomprehensible to the human being is also replicated and celebrated by the same individual over the

other instruments that surround them. The irony is that the individual does not understand the description of the instrument, yet venerates it.

Users dramatically underestimated their daily use (mobile):

“I will probably touch my phone 500 times today.”

“Oh!!! I touched my phone 5,000 times today?!”

However, few users were moved to make major life changes. Most needed fewer than 10 seconds to go from shock to utter resignation. (dscout 2016)

The unconscious framework on the control of attention–work destroys the most utopian panorama of a network society (Castells 1997, 2004) as a new type of more complex, dynamic, but plural and inclusive economic relationship. The digital world only introduces a new type of capitalist reproduction, more sophisticated: a hegemonic ideology on consumer hardware and software. Nobody wants to stop using the tools despite knowing that they are addicted to them (dscout 2016).

Undoubtedly, the conscious framework on the exploitation of the individual and their social and cultural homogenization is the first step. The reconstruction of the critical and cultural framework, which multiple voices have already raised, is fundamental in achieving social awareness of the economic and cultural control large technological companies have over us. Ethical questions are being raised more and more by the same technology gurus in Silicon Valley who now flee from technology and take their children away from it: They know only too well the beasts they have created. And most certainly, they do not hear *Despacito* at home.

The critical framework which is individual *and* collective, which develops its own awareness about the productive process of information, and about the domain of attention of billions of Internet users, is the only means to think about and propose, through collective work and consensus, a new social (technological) contract.

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Is Stakeholder Capitalism the Answer? From Global Financial Crisis to Unfunded SDGs

Diana Piedrahita-Carvajal

INTRODUCTION

In this chapter, there is a review of the 2008 Global Financial Crisis and then the explanation of the effects and spillovers of that crisis over monetary policy, debt burden, and high valuation of assets around the world. These effects, combined with demographic changes, inequality, and social unrest, have had a profound impact on the capacity of the global economy to respond to another recession and to fund the investments needed for the future in the SDGs, just at the threshold of a digital revolution.

The main contribution of this chapter to Corporate Sustainability in the Digital Era is that it presents the big picture in economic terms to give context to make decisions. The back-forward analysis could give insights into how history and cycles are shaping the future at every level. With the accelerated pace of the digital era, understanding those complex interconnections could help prepare to respond to it.

It starts with the contextualization of the Global Financial Crisis and then in its direct effects: ordinary policy tools exhausted, negative interest rates, huge debt burden, and high valuation of assets in different markets. Moreover, it presents some current structural trends like wealth concentration, income inequality, demographic changes (social systems), low growth, dollar hegemony, trade wars, and the digital revolution.

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Finally, it presents the SDGs as the global framework to achieve and the actual keys to doing it. The keys found in this chapter are the stakeholder perspective, the usage of technology, partnerships between players, and the reciprocal obligation of the people. Some examples presented are Business Roundtable, sharing economy, fiscal and monetary policy coordination, and sustainable finance.

This chapter has a dark view of the capacity and fiscal space to invest in a more sustainable world but also remarks on how imperative it is to act on it proactively. How this fight concludes will determine how able humanity is to change the trend toward a more just, fair, and sustainable world.

WHERE WE CAME FROM: GLOBAL FINANCIAL CRISIS

The subprime crisis had been the most significant debt crisis since the Great Depression in 1930. As shown in Fig. 16.1, it was the combination of several trends in the world economy that finally ended in the popped bubble of the subprime mortgages market.

One of the trends was the financial benefits of the real estate investment, especially home buying in a low-interest rate monetary policy expansion. On the one side was the big profit from the rise in prices, with increases of more than 80% during 2000–2006 (Dalyo 2018, p. 174). This higher value of assets increased the owner's perceived wealth, inducing people with low solvency ratios to buy real estate supported on the value of the assets. On the other side, the lack of regulation allowed lenders to bet more aggressively in the market, with lower mortgage rates, softer terms, and explosive securitization of lending directed to subprime loans.

The US government's housing policies and regulations also fueled risk-taking in home ownership with government-sponsored enterprises like Fannie Mae, Freddie Mac, and the Federal Housing Administration (FAH). They supported the creation of 27 million subprime and Alt-A loans, many of which finished in default and delinquencies. The sources of funding for mortgages were 54% government-sponsored enterprises, 24% commercial banks, 13% non-agency securities, and 4% savings and loans (The Financial Crisis Inquiry Commission 2011, p. 69).

A moral hazard arose in the securitization of the riskier and profitable loans because when the banks translated the default risk to the investors, there was no incentive to maintain proper underwriting standards. Therefore, the financial innovation of the asset-backed securities fueled the funding in the subprime mortgages and gave the investors a new financial instrument with higher interest rates and AAA ratings.

Another trend was the historically low effective interest rate of the Federal Reserve from 2002 to 2005 when it stayed close to 1%, as is shown in Fig. 16.2. This low-interest rate made cheaper the buying of assets and generated an incentive to leverage debt to invest, putting more pressure on the rise of different kinds of assets, especially real estate.

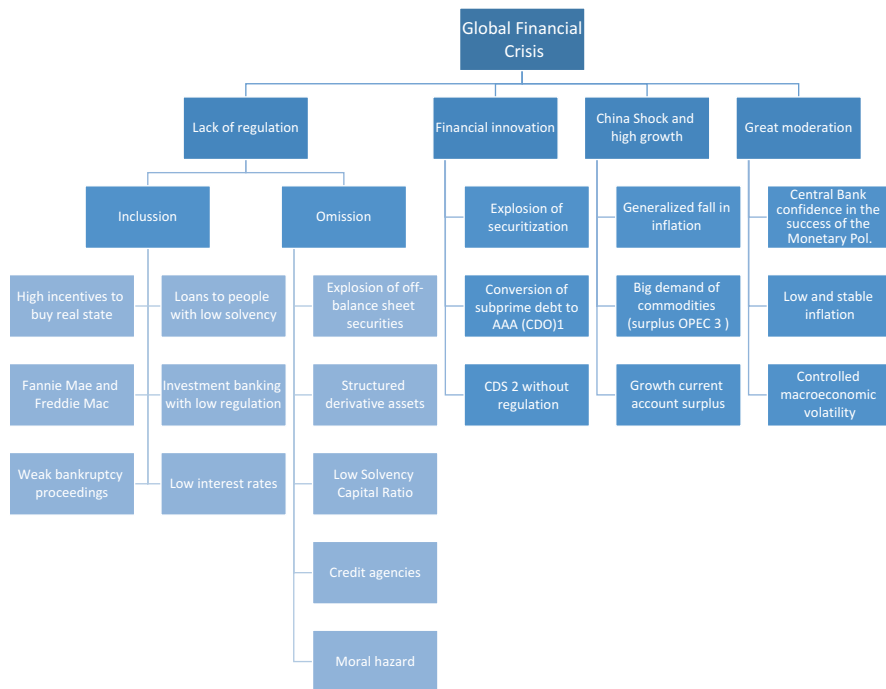


Fig. 16.1 Overview of the causes of the subprime crisis. (Source: adapted from *Fixing Global Finance* (Wolf 2010). Notes: ¹CDO Collateralized debt obligations (CDOs) are structured financial instruments that purchase and pool financial assets and transform in tranches of various mortgage-backed securities (The Financial Crisis Inquiry Commission 2011, p. 128). ²CDS Credit default swap. ³OPEC The Organization of the Petroleum Exporting Countries is a permanent, intergovernmental organization whose objective is to coordinate petroleum policies among member countries (Organization of the Petroleum Exporting Countries OPEC 2017))

There was a generalized global fall in inflation, and the central banks carried out their statutory mandate of fostering maximum employment with price stability. However, one reason behind that low growth of prices could be the globalization of lower costs of production (especially workforce) in developing countries, re-location of factories, employment in those countries, and products with lower prices in dollars.

Finally, the growth of commodities prices, the development of emerging economies—as the BRIC¹ and OPEC countries—and the subsequent high demand for commodities contributed to generating substantial current account surpluses in those emerging markets. That put enormous amounts of money available to invest in the financial markets that rebounded in their liquidity and pricing.

¹ It is an acronym referring to the developing countries of Brazil, Russia, India, and China.

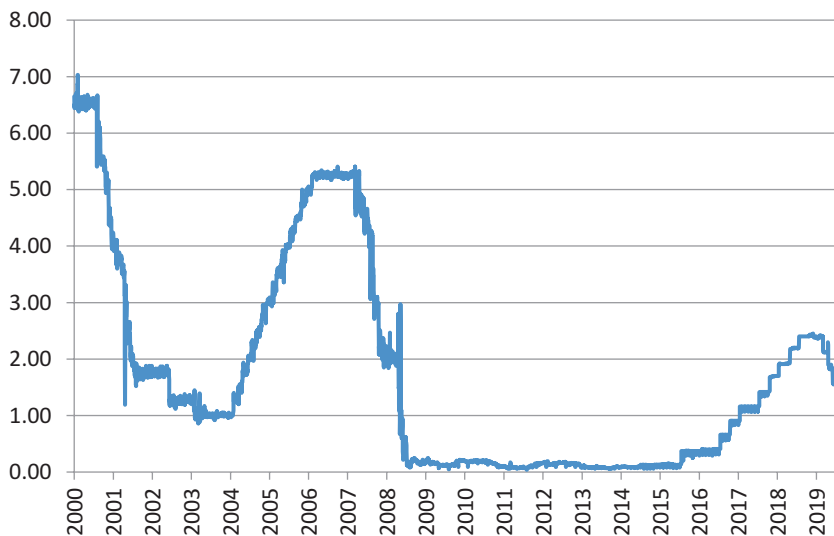


Fig. 16.2 Effective Fed funds rates. (Source: Board of Governors of the Federal Reserve System (US) (2019b), Effective Federal Funds Rate [DFE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/DFE>, December 30, 2019)

In this context, after a monetary policy contraction cycle, all the mentioned forces started to act. With higher interest rates, there was less interest in leverage debt to buy properties and higher debt service, real estate prices began to fall. With the loss of wealth, defaults and delinquencies started to rise, especially in subprime mortgages, fueling the spiral of losses throughout the market.

With no historical data on the correlation between the losses in the supposedly diversified mortgage market, the securitized market of Mortgage Backed Security and (MBS), CDO began to fall, making huge losses across the market. Then a credit crunch arises because lenders were scary and there was no clarity of whom has who in their balance sheets increasing the devastating consequences to the financial market.

Starting with the rescue of Bear Stearns in March 2008 and the fall of equity prices and borrowing costs spiking, the investment banks were jeopardized. Then the politically complex decision of bailing out Freddie and Fannie because of their implicit government guarantee and lack of regulation increased political scrutiny, social anger, and the limits of a complete legal authority to take further actions. There was no backstop of the falling apart of the financial market. In that context, the biggest bankruptcy in all times took place in September 2008, see Fig. 16.1.

The bankruptcy of Lehman Brothers represented a milestone for its size (US\$ 691 billion) and for the risk that generated across the whole system. An

Table 16.1 The largest bankruptcies in US history

<i>Company</i>	<i>Bankruptcy date</i>	<i>Description</i>	<i>Assets (\$billion)</i>
1 Lehman Brothers Holdings Inc.	09/15/2008	Investment Bank	691,1
2 Washington Mutual, Inc.	09/26/2008	Savings & Loan Holding Co.	327,9
3 WorldCom, Inc.	07/21/2002	Telecommunications	103,9
4 General Motors Corporation	06/01/2009	Manufactures & Sells Cars	91,0
5 CIT Group Inc.	11/01/2009	Bank Holding Company	80,4

Source: (New Generation Research Inc. 2019) Largest corporate bankruptcies <http://www.bankruptcydata.com> Reprinted with permission

essential part was their interconnections and their role as a counterparty in indexes and derivatives markets (Table 16.1).

In a market where trust is the key, losing the global faith in the system would be devastating not only for the financial market as a whole but also for the global economy. With the financial meltdown passing to the economy and contagion risk materializing in investment banks, the US Treasury and the Federal Reserve took a new approach to build a safety net for the system.

Despite the monetary policy expansion by the Federal Reserve, with liquidity and lowering its Fed funds target rate from 5.25% to 0.25%, its capacity to contain the contagion was in doubt. The change in the confidence of the market began when the Federal Reserve started to print money to help the deleveraging and directly purchased assets linked to the crisis as MBS, loans, and treasuries. The main quantitative easing QE programs were QE1, purchases of US \$600 billion in November 2008; QE2, purchases of about US\$1.1 trillion in March 2009; and QE3, monthly progressive purchases in the European sovereign debt crisis between 2012 and 2013.

In the end, in 2015, the Federal Reserve balance sheet was five times bigger than before the subprime crisis, and the total amount in the balance was \$4.5 trillion, almost 25% of the GDP of that year, see Fig. 16.3.

SHAPING THE FUTURE: CRISIS EFFECTS AND STRUCTURAL TRENDS

The relevance of the Global Financial Crisis relies on how it has drained the resources needed to prepare for the digital transformation and for building a sustainable world, as stated by the SDGs.

We want to explain the significant direct effects and those prevalent trends that were fueled by the crisis (see Fig. 16.4).

Direct Effects of the Global Financial Crisis (GFC)

Ordinary Monetary Policy Tools Exhausted After ten years, the tools used to navigate through the Global Financial Crisis and the European Sovereign Crisis

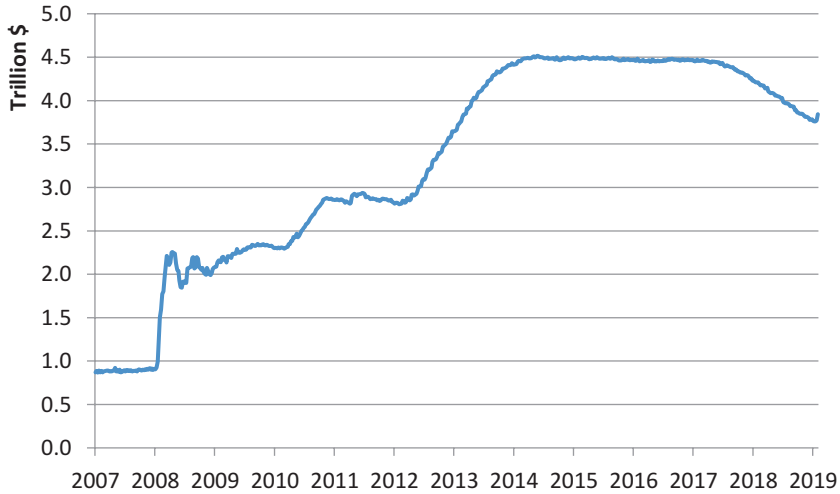


Fig. 16.3 Federal Reserve US total assets (less eliminations from consolidation). (Source: Board of Governors of the Federal Reserve System (US) (2019a), Assets: Total Assets: Total Assets (Less Eliminations From Consolidation): Wednesday Level [WALCL], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/WALCL>. Retrieved from FRED, Federal Reserve Bank of St. Louis. Retrieve 25 September of 2019)

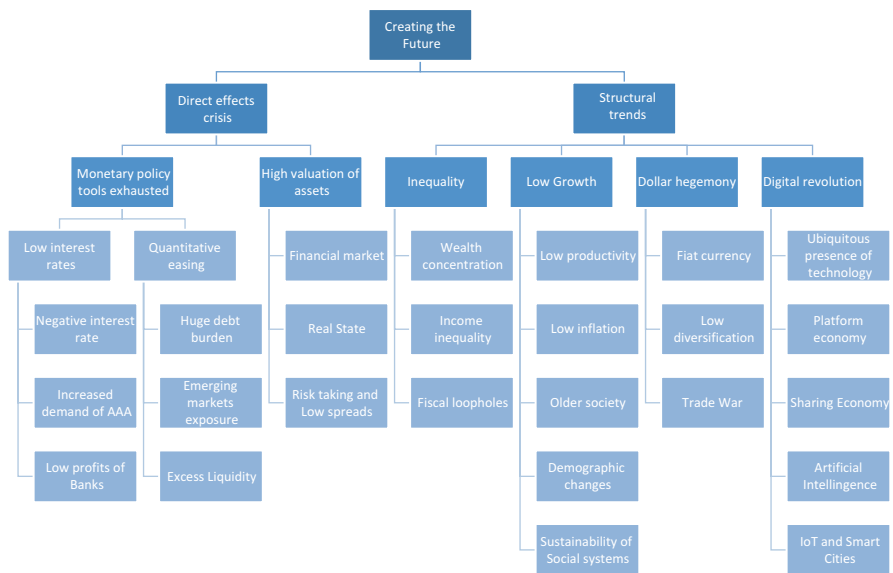


Fig. 16.4 Overview of crisis effects and structural trends. (Source: Author’s creation)

left the governments of the advanced economies exhausted and with no wiggle room. The big question now is how they could respond if a new recession arrives without space to expansion in the monetary policy and without the budget capacity to inject resources through quantitative easing.

In terms of the monetary policy expansion, there have been low and even negative nominal interest rates in the advanced economies, with these levels of rates, central banks enter into a new reality.

The low level of interest rates and low short-term inflation expectations could be structural and associated with three factors. One factor is demographic with lower population growth product of low fertility rates with an aging population that increase the needed savings for a more extended retirement period. A second factor is a slowdown in productivity growth. The third factor is the financial industry's practical demand for liquid and safe assets (pension funds, insurance companies, money market, and reserves), which increases the comparative price of government securities for their liquidity (Committee on the Global Financial System 2019, p. 47).

As far as quantitative easing is concerned, only in the United States, the Federal Reserve has expanded its balance sheet from 870 billion to 3.8 trillion in September 2019, see Fig. 16.4. This enormous amount of money has been used and invested by the market in different assets around the world and could probably affect their liquidity and valuation. The Federal Open Market Committee (FOMC) began a balance shift normalization program in 2017, but today there are still more than 3 trillion above the pre-crisis level.

As presented by the Committee of the Global Financial System, some of the spillovers of unconventional monetary policy tools are extreme dependence on central banks' liquidity, low-interest rate margins, possible excessive risk-taking, disintermediation, and low bank profitability (Committee on the Global Financial System 2019, p. 52).

The big question lies in how to promote prosperity with the actual fiscal and monetary policy constraints. Moreover, if new kinds of tools are needed, and these tools require a lot of creativity and will to create them, how will that affect the power forces and risk aversion around the World?

Negative Interest Rates Policy (NIRP) It has been used since 2012 by seven major central banks in Europe and Japan (Danmarks Nationalbank, Bank of Japan, Magyar Nemzeti Bank, Bulgarian National Bank, European Central Bank, Swiss National Bank, and Sveriges Riksbank).

The purpose of this policy is to increase the supply and demand for loans by taxing the bank's liquidity and lowering its financing costs. Nevertheless, the flattening of the yield curve compresses net interest income, and the negative rates on excess liquidity entail extra costs to the banking system (Cœuré 2016). As highlighted by Bounou, evaluating the data from a panel dataset of 2442 banks operating in 28 European Union countries over the period from 2011

to 2017, negative interest rates have squeezed bank's margins and contributed to a reduction in its risk-taking (2019).

The negative funding rate in AAA securities implies a general rise in the bond market, a problematic task fulfilling the investment promises of financial companies (pension funds, insurers, and investment companies), an increase of risk-taking looking for profits, and deserted auctions for lack of interest.

This long-term structural change combined with the Fintech disruption posed an essential challenge to banks, pension funds, and insurers who might have to rethink their business models.

Huge Debt Burden The world has experienced a big jump in global debt over the last decade. On July 31, 2019, the global debt (public and private) was—at an all-time high—of \$250 trillion and represented almost 320% as a percentage of GDP (Institute of International Finance 2019). The most important rise in debt levels since 2007 comes from non-financial corporate and government sectors.

In September 2019, the government debt sector reached its highest level in peacetime; the big question is: Is it sustainable? Furthermore, could it go further in the case of a new recession? In developed markets, the debt to GDP ratio is higher than 100%, and in the emerging market, the ratio is close to 50%. Comparing them historically, we could be crossing a reasonable threshold. Whether this is a new normal or a huge bubble, only time might say.

High Valuation of Some Assets After ten years of monetary policy expansion and quantitative easing in the advanced economies, one of the challenges is the boost effect in asset prices and how to pursue normalization. On the one side, the very cheap funding for more than ten years and full liquidity by central banks; on the other side, asset managers looking for returns in different markets.

As was highlighted long ago by Bernanke and Reinhart on the implications of very low-interest rates, these might cause an increased risk of short-term dislocation in financial markets (Bernanke and Reinhart 2004). Moreover, with the unconventional monetary policy tools running for an extended period, the possible side effects might become more severe.

There is a vast literature on monetary policy and risk-taking increase. For example, in the funding side, Nakashima, Shibamoto, and Takahashi (2019), using Japanese data, found that the interest rate cuts stimulate lending to less solvent firms from highly leveraged banks (2019, p. 3). Jiménez, Ongena, Peydro, and Salas (2013) found that “lower overnight interest rate induces lowly capitalized banks to grant more loan applications to ex-ante risky firms and to commit larger loan volumes with fewer collateral requirements to these firms, yet with a higher ex-post likelihood of default” (2013, p. 1).

The debt market is trading at record low yields, and credit spreads are very tight; that means that changes in prices are generating significant returns. The numbers given by Kristalina Georgieva in the 2019 IMF Annual Meeting curtain-raiser speech are impressive: nearly \$19 trillion of corporate debt could be at risk of default if a major downturn occurs (Georgieva 2019).

Nevertheless, the excesses are also abroad; the waves of financial flows to emerging markets in direct and portfolio investments have been persistent since the post-Global Financial Crisis. Historically, the emerging markets have a persistent vulnerability when the reversal of flows finally occurs. As Carney presents it, 20% of the surges in capital flows to emerging markets economies have finished in financial crises, and the probability of experiencing a financial crisis after capital flow surges is three times higher than in normal times (Carney 2019a).

The economic outlook at the end of 2019 shows an expected slower growth, as measured by real GDP (at Purchasing power parity (PPP) rates), in nearly 90% of the world (IMF 2019d). That means that the expected growth will fall to 3%, the lowest since the Global Financial Crisis.

Indirect Effects Fueled by the Global Financial Crisis (GFC)

Dollar Hegemony The US dollar is the dominant currency since the Bretton Woods era, 75 years ago. This dominance generates different kinds of spillovers in the rest of the countries. The most important is that the financial cycle is a dollar cycle. Shifts in the demand and supply of safe dollar assets drive movements in exchange rates, bond prices, and financial quantities around the world (Krishnamurthy and Lustig 2019).

Examples of the hegemony of the dollar would be: the US economy represents 15% of the global GDP and 10% of the world trade but accounts for 50% of global trade invoices. As a preferred currency for funding, it also represents two-thirds of the emerging markets debt and two-thirds of global securities issuance. Finally, in terms of official foreign exchange reserves, it represents two-thirds (Carney 2019b). So, it is the principal currency for funding (security issuance and holding), a safe haven in risk aversion moments, a denomination of reserves of the public sector, and the preferred currency for trade.

The liquidity and deep of US capital markets and the lack of better alternatives also explain why the US dollar is the principal fiat currency. That strength generates US current account deficits, low-interest rates, and flexibility in servicing its debt in dollars in case of a crisis. However, its dominance exacerbates the correlation of cycles between countries, diminishing the offer of safe assets in different currencies and reducing the shock-absorbing properties of a flexible exchange rate world policy.

The capacity of the international monetary and financial system to evolve and equilibrate these imbalances is vital. Examples of initiatives with the aim of

correct these exposures are the local currency bond market initiative or the United Nations Conference on Trade and Development (UNCTAD) principles for responsible lending and borrowing.

Some could argue that it could be a switch from one hegemonic currency (US\$) to another with growing power (maybe the renminbi), but this does not solve the actual imbalances. The suitability as a currency implies confidence as a store hold of value, and as a medium of exchange, and so the different new attempts must take into account both factors.

There have been several attempts to equilibrate the imbalances. One of them is the digital currency Libra, which is backed by a reserve of assets in different currencies and based on the Libra blockchain technology (Libra Association Members 2019). Its founding members come from businesses, nonprofit organizations, and multilateral organizations, but its leader is Facebook. The target is to launch it in the first half of 2020.

With the technological disruption in the Internet and mobile broadband, the accessibility could be reached by billions of people. Some strengths of Libra are the growing market of online commerce, broad Internet access, lower costs of transactions, and a network that helps to create the baseline of the transactions required.

However, because of the importance and the global implications of a payment system in the life of the people, there are severe doubts that a private group as the Libra Association has on the proper incentives to protect the different challenges that this new system entails. Some of the challenges are privacy policies, antimonopoly ruling, anti-money laundering/combating financing of terrorism, conflicts of interest between founding members, operational stability, regulations, among others.

Another doubt is the one raised by Mark Carney: Could this system create a new synthetic hegemonic currency or a network of central banks digital currencies that could reflect the more diverse world economy? Could this change of currency structure diversify and disentangle the individual country cycles? (Carney 2019b).

Some have argued that the International Monetary fund (IMF) has the Special Drawing Rights (abbreviated SDR) that could evolve into a currency supported by a portfolio of currencies. In 1969, the IMF created the SDR to supplement their member countries with official reserves. A basket of currencies composes the value of the SDR—US dollar 42%, euro 31%, renminbi 11%, yen 8%, and pound sterling 8% (IMF 2019b).

Wealth Concentration and Income Inequality One unintended effect of quantitative easing has been that it increases wealth concentration and income inequality. The connection with the past crisis could be that when the central banks made the asset purchase programs, it pushed asset prices up, benefiting principally those with more financial assets.

Although inequality between countries is improving and the number of people living below the \$1.9 per day (extreme poverty) is decreasing, the gap between rich and poor is widening. This gap could be measured as wealth concentration and income inequality.

Using the United States as an example, there is a slower growth of income and growing inequality since the 1970s (Stone et al. 2019). In wealth concentration, the top 1% of the population is wealthier than 90% of the bottom population combined (2019, p. 1). Furthermore, the gap is getting wider in the last 30 years, with the concentration of wealth from the top 1 percent rising while the share of wealth from the bottom 90% falling (2019, p. 1).

In terms of income inequality, two trends explain its actual values: income concentration and widening inequality. As stated by Piketty and Saez (2003), the income concentration—from income statistics based on Internal Revenue Service (IRS) data—at the top 1% has returned to 1920s levels and has risen sharply since 1970.

In terms of widening inequality—annual estimation of the distribution of household income and taxes from the US Congressional Budget Office—there is a significant divergence between the growth of household income from the top 1% and the average. The average household income before transfers and taxes grew almost 60% from 1979 to 2016 (inflation adjusted), and the top 1% of the income distribution grew 218% in the same period (Congressional Budget Office 2019).

This tendency looks like a self-reinforcing feedback loop, especially in the Fourth Industrial Revolution. In terms of returns on capital, the top wealthier population will be the largest beneficiaries of innovation because they tend to be the providers of capital, funding, and intellectual property.

In terms of human capital, a high investment in education is imperative to meet the new market demand for highly skilled individuals. Still, that kind of leverage normally could be afforded by countries/people that generally are not at the bottom of the pyramid. However, the implementation of ultrafast 5G could blend the real and the digital world through online classes and give better odds to people to excel. Escalating remote learning interactivity could break down some barriers and contribute to the quality of learning, facilitate the increase of international volunteers as qualified teachers without displacing, or reach isolated areas.

However, technology could also present threats to inequality. For example, in artificial intelligence (AI), because the historical data available could have biases based on gender, race, age, or other factors, it can generate results that accentuate inequality (Stone et al. 2016).

Wealth concentration and income inequality have raised questions about capitalism and its future. The impression of a new gilded age where many are left behind is at the center of social unrest and polarization, and so new perspectives are needed to equilibrate the balance at every level.

Digital Revolution

The evolution of information, communication, and technology (ICT) is creating a new reality where the boundaries between physical and digital are fading. This transformation is supported in the infrastructure built in the digital age with transistors, computers, optics, and the open worldwide web. However, it is the general adoption of technology changing the people's habits and innovations in usage that transforms into economic impact.

The phase of the general adoption of digital technology is impressive; 30 years from the creation of the World Wide Web, 53.6% of the global population in 2019 is connected to the Internet, which is 4.13 billion people (International Telecommunication Union 2019). Nevertheless, the possible connectivity is even higher with active mobile-broadband subscriptions (smartphones) at 83 per 100 inhabitants (2019).

Another measure is how the irruption of the platform economy and its superstar firms has changed the business landscape forever. Few platform companies, such as Amazon, Airbnb, Facebook, Google, and Uber, dominate their markets and produce high market concentration, principally because they are more productive in their respective domains. Because of the use of technology and mass scale from the platform, they create an economy of scale and low labor share in profits. This new way to explain the fall of labor to GDP share in profits is based on the idea that industries and markets are increasingly characterized by a “winner take most” feature where one or a small number of firms gain a substantial share of the market (Dorn et al. 2017).

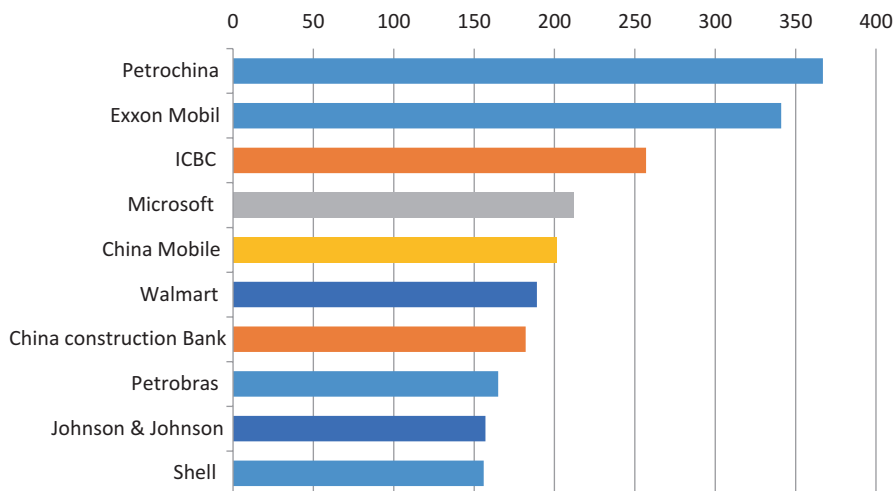


Fig. 16.5 Largest companies by market cap 2009 (US\$ billion). (Source: Adapted from Visual Capitalist <https://www.visualcapitalist.com/a-visual-history-of-the-largest-companies-by-market-cap-1999-today/>)

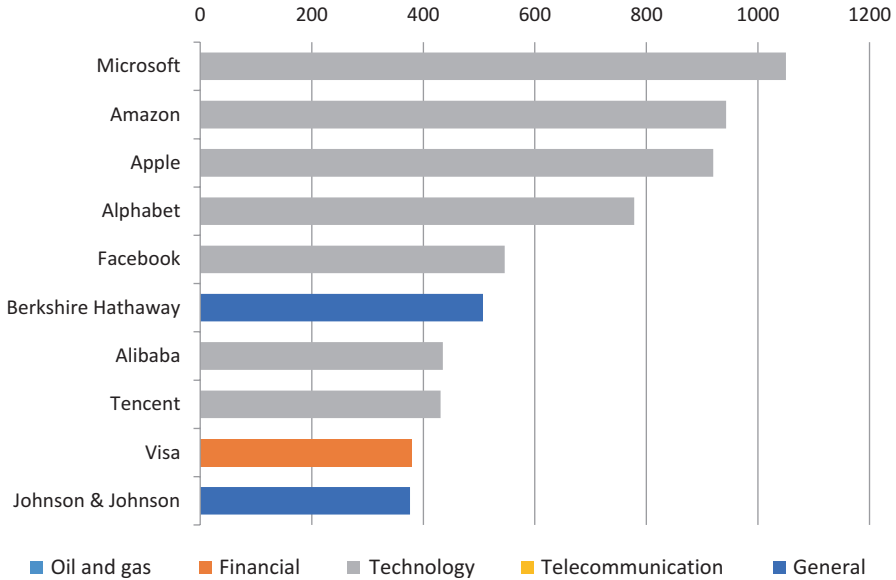


Fig. 16.6 Largest companies by market cap 2019 (US\$ billion). (Source: Adapted from Visual Capitalist <https://www.visualcapitalist.com/a-visual-history-of-the-largest-companies-by-market-cap-1999-today/>)

The market capitalization of the platform business model of Amazon, Alphabet, Facebook, Alibaba, and Tencent represents unprecedented success in disrupting markets and then dominating them (see Fig. 16.5). Moreover, in 2009, there was only one tech company, Microsoft, in the top 10, but in 2019, big techs take over 80% of the top companies, and 49% of them are platform business models (Desjardins 2019) (Fig. 16.6).

At the end of 2019, new technologies are arising, and more market disruptions are expected. Some of these new technologies are massification of AI, autonomous operating machinery, communication using holograms and multisense media, digital twin (control of objects), Internet of Things (IoT), nanotechnology, quantum computers, blockchain, and genetics.

These changes represent opportunities and risks. For example, with AI and the automatization of tasks, there is a potential to increase unemployment. Nevertheless, new kinds of jobs are created and will need the workforce to embrace new skills. In the LinkedIn Emerging Jobs Report 2020, the fastest growing jobs from 2015 to 2019 in the United States were artificial intelligence specialist with 74%, followed by a robotics engineer with 40% and data scientist with 37% (LinkedIn 2019).

Demographic Changes and Social Systems After the highest jump in the world population in history, its growth is decelerating at an unsynchronized rate between countries. The world population increased from 1.65 billion in 1900

to 7.7 billion in 2019; over the last 100 years, the global population has more than quadrupled (Roser et al. 2019). One notable trend is the population aging, product of deceleration of growth due to low fertility rates and increasing life expectancy.

The proportion of the old population is expected to double by 2050 (World Health Organization 2018). With an anticipated decline in the working-age population that reduces the social security contributions, the sustainability of the entire system is in great danger. Pension and health care reforms are necessary for many countries, but they represent a very high political cost for governments to achieve.

These challenges denote a significant and growing expenditure for governments. For example in OECD countries in 2017 the public spending allocation as percentage of country's GDP were: old age expenditure (pensions and elderly care 7% to 8%, health 6%, and family or incapacity-related benefits 2% each one (Ortiz-Ospina and Roser 2020).

Social systems usually are not recorded as liabilities by countries. However, if they were, the world's total liabilities would be about 198% of GDP (Gaspar et al. 2018). With the global debt (public and private) at an all-time high, these imbalances are a source of vulnerability and maybe drag on long-term growth.

On the other side, given the fiscal consequences mentioned, it will also affect the public and private savings. The expected increase of public pension expenses is 1% of GDP in advanced economies and 2.5% of GDP in emerging economies by 2050 with the current policies (Amaglobeli et al. 2019). That trend could finish in a corresponding decline in public saving.

However, this reality is increasing the social anger and protest all over the world. The sense that capitalism is no longer generating opportunities for all and that the everyday individual effort for progressing will not be compensated with a better future through education and work has broken the social contract.

Trade Wars In October 2019, the global economy was in a “synchronized slowdown” at a GDP growth of 3%, which is the lowest rate of growth since the Global Financial Crisis (IMF 2019c). The uncertainty about trade disputes, the Brexit, and geopolitical tensions are some of the triggers of this slowdown.

In terms of trade disputes, the largest is between the United States and China. In this negative-sum game, the possible losses of escalating the conflict for businesses and consumers can be measured in the direct costs and the expected secondary effects: loss of confidence and market reactions. The International Monetary Fund estimates that the potential cumulative impact of trade conflicts for the global economy could be around \$700 billion by 2020 or about 0.8% of GDP (IMF 2019c).

These two countries represented 40% of the global GDP in 2018: the United States, with 20.5 trillion, represented 24%, and China, with 13.6 trillion, represented 16% (World Bank 2019). It is essential to highlight that since China's accession to the World Trade Organization (WTO) in 2001, its share

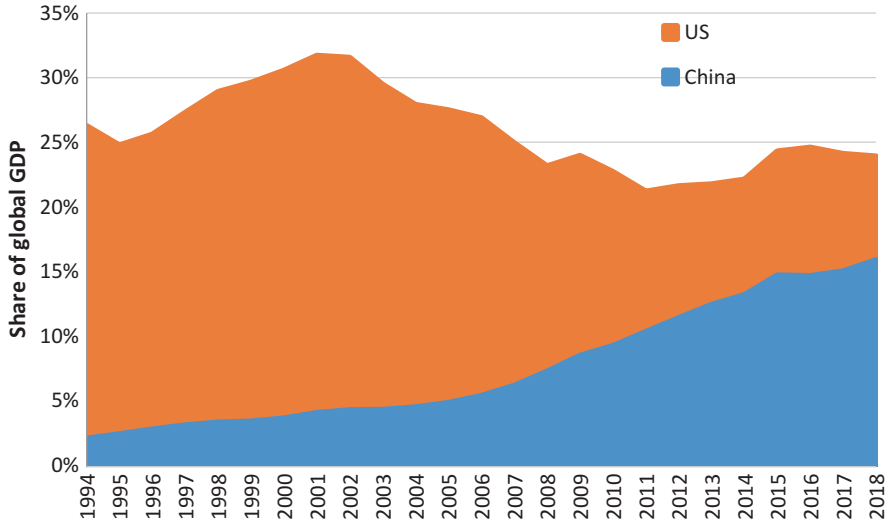


Fig. 16.7 Share of global GDP of China and the United States. (Source: World Bank, World Development Indicators (2019). GDP (current US\$) [Data file]. Retrieved from <https://datacatalog.worldbank.org/public-licenses#cc-by>)

in the global GDP has gone up from 4% to 16%; that is, it has been multiplied by 4, while the share of the United States has gone down from 31.7% to 24%; that is, it has decreased by 25% (World Bank 2019), see Fig. 16.7.

Some reasons for the economic takeoff of China are the low production costs, a populous country, cheap currency, heavy-handed state intervention, diffuse technological know-how protection, and the state capitalism that has jeopardized foreign competitors, known as “China Inc”. The sidestep approach to WTO rules taken by China fueled the necessity to revitalize the WTO (more than 70 years of expertise) and to improve the multilateral approach and alignment between trade partners (Blustein 2019).

Another critical issue is that China has one of the highest national saving rates in the world, exceeding 40% of GDP since 2000 and peaking at 52% of GDP in 2008, with a gradual decline after that (Amaglobeli et al. 2019). It was the major foreign holder of Treasury Securities during 2018, having, on average, \$1.16 trillion, increasing its position 163% since 2008 (Department of the Treasury/Federal Reserve Board 2019).

From a historical perspective, trade has had a significant effect on the probability of military conflict. The openness to trade from countries could imply a higher likelihood of going to war because multilateral trade openness decreases bilateral dependence and, as a consequence, the cost of bilateral conflict (Martin et al. 2008).

The international trade system has helped to build prosperity all around the world, even though it has been unequal between regions. For example, the annualized growth pattern of long-term development (GDP per capita) from

1950 to 2016 for the world was 345%, while for Africa was 193% and East Asia almost 800% (Bolt et al. 2017).

FILLING THE GAPS: WHERE AND HOW ARE WE GOING

Understanding the challenging necessities and gaps, we need a different approach towards a fairer and sustainable world. Inequality, the digital revolution, demographic changes, global corporations, environmental changes, and lack of fiscal space from now on to fight downturns are too wide in scope and need a broader commitment and shared responsibility from all parties.

This unique opportunity to tackle the need for a more sustainable world economy at the entrance of the Fourth Industrial Revolution comes from different sectors: The framework created by a multilateral approach with the SDG, the private sector with initiatives as Business Roundtable, the technology sector with Vision 2030, or the banking sector with sustainable finance. Government efforts through fiscal policy expansion and taxing changes redirection, and conscious decisions from individuals to contribute as investors in a sustainable finance or the sharing economy.

Multilateral Sector: Sustainable Development Goals (SDGs)

The most notable effort should be to accomplish the seventeen SDGs finally adopted in 2015. The 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change represent the highest materialization of multilateral consensus. These two policies of global scope represent proof of the benefits of multilateralism and the importance of the United Nations as a leader to solve global challenges. These milestones represent a reinvention for sustainable development that meets the needs of present generations, respecting the future rights of those to come.

The importance of the goals also matches with a considerable amount of resources needed to reach them. In the World Investment Report 2014, UNCTAD calculated that there is a gap of \$2.5 trillion in the estimated annual investments needed to achieve the SDGs (UNCTAD UN 2014).

Six years later, there is progress in almost every indicator worldwide, as can be seen in the Sustainable Development Goals Report 2019 (UN 2019). However, resource scarcity is one of the significant restrictions to achieve SDGs. Some examples of the implications of the actual shortage are 10% of the world's people still live in extreme poverty (SDG 1.1), that is to say with less than \$1.9 a day (World Bank 2019), or that in 2018, 821.6 million people were undernourished and the number is rising since 2015 (SDG 2.1.1) (FAO 2019). Alternatively, that 9% of the population have to practice open defecation with the impacts on water, health, and sanitation (WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation (wssinfo.org) 2018). Another insurmountable barrier in the future skills needed for development and equality may be access to the information and technology of

communications SDG 9.C, where in the least developed countries (UN classification), the average Internet use is 18%, while in OECD members, it is 82% (International Telecommunication Union 2019).

Worryingly resources are declining, not rising. The multi-funding framework is composed of international private finance (FDI, portfolio investment, international borrowing, philanthropic resources, NGOs, and remittances), international public finance (principally, official development assistance (ODA)), and domestic finance (public, private, and donors).

The principal source of international funding, foreign direct investment, was the lowest in 2018 since 2005 (OECD 2020), and without getting trade back on track, the expectations of international private financing of SDGs seem unrealistic. For example, the US tax reform implied the repatriation of resources from foreign operations of American companies and had a direct effect on global FDI and unknown consequences in the future reinvestment of foreign earnings.

The other sources of international funding have different performance. In terms of ODA, there is stagnation towards 0.31% of gross national income (GNI), far below the 0.7% of GNI target (OECD 2018, p. 31). The funding from remittances have been growing in relevance, becoming 25% of the total funding in 2017 from 14% in 2000 (2018, p. 35). Finally, the funding from international borrowing, after a boom in short- and long-term debt to developing countries from 2010 to 2014, of \$561 billion (31% of share in total funding) to less than half in 2015–2016 of \$257 billion shows the debt burden and vulnerabilities mentioned before (2018, p. 35).

As highlighted by the IMF in the Fiscal Monitor (2019a), in the case of low-income developing countries, international financial support is essential to complement their efforts to meet the SDGs. The annual spending gap related to infrastructure alone to reach their goals amounts to \$358 billion after assuming an increase in their taxes to GDP ratio of 5% over the next decade (2019a).

Nevertheless, with an already constrained budget in the advanced economies, the possibility and will to help and to diminish the inequality gap between countries seem very optimistic. These gaps envisioned to be funded by aid flows do not seem to be materialized as needed.

The SDGs are not exempt from criticism, either. First, there is no clear prioritization, and that makes it difficult for resource optimization in those with higher impact. Second, its broad coverage goes against being precise, easily measurable, and attainable. Finally, the coordination of efforts between different parties is vital to reach the goals with scarce resources.

Political will and change of values are necessary to confront the unequal prevailing order in the economy, business, and politics as a whole. In the actual order, the self-interest—in public and private sectors—remains the backstop for achieving the goals. The sense of mutual obligation between people and support of public-private partnerships (PPP) could be the key to how to work together and also could optimize scarce public resources.

Before becoming daunting, it is essential to continue innovating and using ICT to break barriers that today seem unbreakable. Examples like Bill & Melinda Gates Foundation with its effort in vaccination and sanitation. Vision2030 with wearables to measure health using AI. The Indian Government initiative to distribute cooking gas subsidies using digital technology. All of them inspire and create optimism to think different and sow the seed of sustainability.

Private Sector: Business Roundtable

In this context, the private sector in the United States is trailblazing with the Business Roundtable. In August 2019, 181 CEOs as business leaders redefined the Purpose of a Corporation to Promote “An Economy That Serves All Americans,” taking a broader vision of their responsibilities, measuring their stakeholder (employees, customers, communities, and the environment) return looking beyond the usual shareholder return (Business Roundtable 2019).

The new statement on the Purpose of a Corporation from Business Roundtable (2019) is:

While each of our individual companies serves its own corporate purpose, we share a fundamental commitment to all of our stakeholders. We commit to:

- *Delivering value to our customers...*
- *Investing in our employees...*
- *Dealing fairly and ethically with our suppliers...*
- *Supporting the communities in which we work...*
- *Generating long-term value for shareholders, who provide the capital that allows companies to invest, grow and innovate.*
- *Each of our stakeholders is essential. We commit to deliver value to all of them, for the future success of our companies, our communities and our country.* (2019, paras. 4–6)

This statement is remarkable because shareholder (not stakeholder) value has been the center of the corporate purpose and its economic and financial decisions in the last 50 years. The focus on increasing shareholder value, growing profits, and optimizing resources is almost an axiom for financial theory and capitalism. This new statement marks a direction toward stakeholder capitalism, far away from the free market economy and deregulation.

This long-term shift came as a response to social requests, environmental change, technology disruption, and economic spillovers like slow growth, tax loopholes, or wealth inequality. The journey toward sustainable and profitable growth has started.

There is new evidence that firms with high purpose, clarity, and culture integration have systematically enjoyed a higher stock market performance and results (Gartenberg et al. 2019). The real power is the use of business as a

platform for change, and how with the involvement of stakeholders, it could become the norm, not the exception.

Private Sector: Sustainable Finance

The decline of trust in financial institutions, high penalties for misconduct, and increased regulation in different countries after the Global Financial Crisis mark a milestone in the principal asset of financial institutions: TRUST. A new approach was imperative to restore confidence and reputation and to build a sustainable culture that could work in the longer term.

These necessities, with the profound change from Fintech, paved the way for another alignment from the private sector to the stakeholders and the SDGs in the form of Principles for Responsible Banking.

In these principles, the banks make a compromise to align themselves with the society, making their products and services clear and transparent to create value for stakeholders: customers, investors, and community. They were launched on 22 September 2019 by 130 banks from 49 countries, representing more than US\$47 trillion in assets during the annual United Nations General Assembly in New York (United Nations Environment – Finance Initiative UNEP FI 2019b).

Maybe, more important is the concrete actions settled with the Collective Commitment to Climate Action led by 33 banks, also launched in September 2019, where there is an alignment of their operation, lending, and investment with the objectives of the Paris Agreement on Climate (United Nations Environment – Finance Initiative UNEP FI 2019a).

In this milestone, there is also regulation and soft regulation. One example of this needed framework is the Taxonomy Technical Report released in June 2019. This taxonomy is a European Union classification system for environmentally sustainable economic activities. It settles a list of activities that contribute at least to one environmental objective (initially climate change mitigation and adaptation) and do no significant harm to the other five, as well as meet minimum social safeguards (Technical Expert Group on Sustainable Finance 2019).

With this common language and rules, investors and managers could trust in the investment and finance decisions that they take—about green, sustainable, and responsible—and with that could influence the corporation's decision-making toward sustainable economic activities and their benefits. For example, one of the possible funding strategies for the SDG is to produce investible SDG assets for institutional and particular investors to give options to support the achievement of the goals.

Some examples of the increasing types of instruments to invest in sustainable finance are: Green bond market (individual bonds and fund), green loans, and private equity firms with the compromise to environmental, social, and governance (ESG) matters. This change of values, incentives, and support from

different parties has created a virtuous circle toward the aim of decreasing global warming and support sustainable finance.

Sharing Economy and the Hidden Power of Many

One revolution of the Internet is the rise of the sharing economy. The sharing economy is the agreement between consumers to give temporary access to assets with idle capacity, generally for money (Frenken and Schor 2017). At the center of sharing economy is that it is beneficial to both parties generating profits from resource efficiency, sustainability, circular economy, and community. This economy flourishes with the Internet because it allowed a sufficient scale where unknown others share products/services through an online platform, with low transaction costs and confidence (ratings) to make the transactions (2017).

The sharing economy generates a new paradigm about ownership because it is not necessarily efficient to own assets, and some assets will have longer life cycles. Almost every asset has excess capacity because the owner does not consume the product all the time, and so the sharing economy unlocks the potential value of goods. For that reason, it could be crucial in sustainable consumption because it allows consumers, aware of the importance of sustainability, to easily choose more goods or services toward lower carbon consumption, helping to achieve SDGs.

This new type of business represents a disruption in markets like education, transportation, finance, hospitality, and the labor market. In the hospitality industry, for example, in just ten years, Airbnb became a top contender, with 7 million listings worldwide, in 100,000 cities, and 500 million guest arrivals (Airbnb n.d.). In the labor market, TaskRabbit (bought in 2017 by Ingka Group—IKEA) focused on tackling domestic tasks like cleaning, maintenance, assemble, or even taking Instagram photos. They have 140,000 Taskers in 50 cities across the United States, the United Kingdom, Canada, and France (TaskRabbit 2019). Alternatively, crowdfunding in creative projects with Kickstarter has raised \$4.7 billion, making true more than 470,000 projects (KickStarter 2019).

However, there is a need to test the real impact on sustainability and carbon reduction of sharing economy. As Mi and Coffman presents it, there is a mix of empirical impact results, and more research is needed to inform evidence-based policymaking (2019). Nevertheless, if several of these platforms generate empirical evidence of real impact effects, policymaking must help them to improve and reach new levels. These could be an example of how technology creates the opportunity to align economic interests with sustainable ones.

Unfortunately, the sharing economy as the rhetoric of disruption and marketing could hide problems. For example, in transportation, Uber (which has small sharing economy participation in its portfolio in sharing rides) could be creating more consumption of goods because some drivers buy a car to make services. Alternatively, in the case of Airbnb, there is the possible rise in the cost of living for local and longtime renters because of the reduction of housing

supply. One working paper in Social Science Research Network (SRRN) in the National US market concludes that Airbnb listings increase small amounts of rental rates and house prices, with a 1% increase in Airbnb listings associated with a 0.018% increase in rental rates and a 0.026% increase in house prices (Barron et al. 2018).

The policymaking around the world is trying to embrace sustainability but limiting spillovers. Some examples are: limitations in days per year of home rentals (Amsterdam, London, New York, Paris, San Francisco, or Tokyo); minimum rental period (Singapore) licensing or registration requirement (Barcelona, Berlin, San Francisco), or even wholly banning them (Palma) (Guttentag 2018).

Public Sector: Fiscal Expansion and Taxing Changes

Fiscal Expansion With normal monetary policy tools exhausted and balance sheets of central banks on its highest point, several voices argue on the need for fiscal firepower. That means to get ready to deploy fiscal stimulus to accompany the other central banks tools if the downside risk materializes and a new recession arrives.

The fiscal policy tools are increasing public spending or transfers and tax reductions. The coordination of fiscal policy with monetary policy expansion (named Monetary Policy 3) to boost growth in a recession does not come without restrictions. It will be feasible only for countries with fiscal solvency or without substantial vulnerabilities. The fiscal policy requires longer response time and the challenging task of aligning the will of policymakers to growth and sustainability objectives.

In those countries with limited fiscal space in terms of deficit and debt, the market forces might not be confident in the feasibility of higher exposure; because of that, the public investment will have to occur through budget re-composition. In countries with no fiat currency, the historical debt tends to be lower, and their exposure to volatility in exchange rates (portfolio investment, commodities prices, and external and foreign currency debt) increases their vulnerabilities and ties their action possibilities.

Tackling this debt vulnerabilities in non-developed economies is imperative to achieve the SDG. Some examples of the multilateral effort to build resilience are the UNCTAD principles for Responsible Sovereign Lending and Borrowing, sovereign debt restructuring mechanism, local currency bond market initiative, or a well-endowed global climate disaster fund.

But with the pressing changes of technology, climate, and demography, a reorientation of spending toward the coordination of fiscal policy with monetary policy expansion is imperative in terms of raising long-term economic and sustainable growth, which is crucial for a reduction in public debt burdens in the future. In this case, the reorientation of spending is a must, leaving behind corruption, bureaucratic structures, old subsidies, mismanagement of public sector assets, and reforming the taxation toward more progressive taxation and efficient allocation of resources.

Tackling corruption deserves a separate point. The fiscal costs and loss of confidence in corruption are substantial for almost all economies. As was highlighted by IMF Fiscal Monitor, April 2019, the least corrupt governments collect 4% of GDP more in tax revenues than their peers with the highest levels of corruption (IMF 2019a, p. 10). These crucial differences in revenues could create economic growth and decrease inequality, which finally generates more revenues.

Taxing for Equality The funding of governments comes from taxes, which are compulsory levies on individuals or entities to transfer wealth to fund public expenditures, such as infrastructure, social safety net, health care, education, national defense, law enforcement, and the court system.

Taxes are a crucial instrument to reduce inequality and foster long-term sustainable growth through government transfers and directional expenses. Taxes and transfers help in redistribution because they could increase disposable income relative to market income (Joumard et al. 2012). Each country has a tax model (amount of taxes, mix, and progressivity) that finances its welfare system; therefore, it needs its taxpayers to achieve balance. With globalization, the movement of capital and labor is more accessible, making the difference in tax systems a source of competition.

There have been some growing concerns about how to control offshore tax evasion, loopholes of different tax systems, base erosion and profit shifting, lack of global coordination, and challenges of multinationals, mainly digital enterprises around the world. For example, Damgaard and Elkjaer (2017) state that almost 40% of all foreign direct investment positions globally (\$12 trillion) pass through empty corporate shells with no real activity and low-tax jurisdictions. Alternatively, as Tørsløv, Wier, and Zucman (2018) estimate, almost 40% of multinational profits are shifted to low-tax jurisdictions each year globally. Finally, a report from the Institute on Taxation and Economy Policy (ITEP) (2019) observed that in 2018 after the US tax avoidance, 60 of America's biggest corporations did not have to pay anything in their federal income taxes.

One vital effort to tackle this problem in a consensual way is the global tax transparency standards and base erosion and profit shifting (BEPS) package by OECD and G20 countries. This coordinated global framework has two intentions: one is ensuring a minimum corporate income tax on Multinational enterprise (MNE) profits and the other is restoring the credibility and stability of the international tax system (possible overlaps and mitigate double taxation) (OECD 2019). The OECD found in 2015 that BEPS practices cost countries between \$100 and \$240 billion in lost revenue annually, which is equivalent to 4–10% of the global corporate income tax revenue (OECD n.d.).

Some countries are using a unilateral approach for the taxation of multinational companies—Benin, France, India, Italy, Spain, Tanzania, Uganda, United Kingdom, Zambia—but these uncoordinated measures could lead to distortions and produce more international tax competition.

CONCLUSION

Reaching corporate sustainability in the digital era depends on the navigation of every individual (person, business, and country) in the macroeconomic development of the system as a whole. That is why having the big picture from the complex interconnections of the economy is necessary to make knowledgeable decisions.

The search for equilibrium for the entire system—economy, environment, and people—requires the courage of all to invest in a sustainable path of growth so that today's consumption does not leave the environment and the future generations without resources to develop and freedom to make choices.

This sustainable growth implies new values and new approaches to overcome present and coming challenges to the world as a whole. In this chapter, we aimed to present and define some of the principal economic realities and trends with high economic impact at the end of 2019, some of them the product of the ten years old Global Financial Crisis, and how important it is to respond to them properly.

The principal conclusion is that we are facing a knot in resources, leadership, and values. In terms of resources, because to reach the SDGs with the new needs from the Fourth Industrial Revolution, the gap to reach is of \$2.5 trillion (UNCTAD UN 2014). Now, in a synchronized slowdown, it has fewer resources than needed to catch up with expectations.

The conventional monetary policy used to support growth is exhausted, and there is an increase in the vulnerability of many countries, now with high burdens in fiscal and private balance, leaving them, in some cases, without space to invest or help others.

This lack of funds became a calamity in terms of wealth and income inequality. According to Oxfam (2019), “26 people owned the same wealth as the 3,800,000,000 people who make up the poorest half of humanity”. This economic and moral failure has brought political consensus but no sufficient global action, and with the technological disruption and the gap between rich and poor getting bigger, this precarious position could make the system collapse.

Inequality is undoubtedly at the base of social unrest, lack of trust in institutions, increasing nationalism, and populisms of all kinds. United to the actual uncertainty—driven by trade wars, the Brexit, and geopolitical and religious tensions—could be holding back the growth and the capacity to act in a holistic pattern.

Public transfers have a significant impact on income distribution, especially those focused on education, health care, and pension systems, ensuring that universal public services could put a safety net that would provide a lower bound to give similar opportunities to all. This proposal can be achieved only with a global taxing system or a more coordinated taxing system with minimum taxes paid by individuals and enterprises, and distributed efficiently in terms of necessities, protecting them from corruption and avoidance.

However, there are attempts to build prosperity and sustainable growth. The best example is the framework provided by SDGs, where the consensus and implementation efforts could become a threshold for a generation that needs and wants change. New values are needed to defeat greed and individualism and build a more sustainable world for all. The principal attempt is the shifting to stakeholder value from shareholder value, with examples as the latest statement of the Business Roundtable or the necessary change represented by the sustainable finance for the investment world, where profitability and responsibility go hand in hand. Another attempt is sharing economy, where unknown others can unit to find value in the unused goods or services and help in the sustainability of the system.

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FDI Facilitating Sustainable Development In and Out of an Emerging Market: Is Foreign Participation a Necessary Condition for Emerging Market Firms to Catch Up Globally?

Yuanyuan Li

INTRODUCTION

In the second half of the twentieth century, two-thirds of the world foreign direct investment (FDI) landed in emerging economies. Among these FDI projects, the vast majority of them are efficiency-seeking and later-on market seeking (Dunning 1993). Efficient-seeking inward investments tend to lock emerging market firms into low value-added activities such as assembly and simple manufacturing. These activities also pollute the local environment and exhaust local resources. In other words, inward FDI was exploiting emerging economies' local resources, such as land and human labor, to realize its own efficiency via the global value chain. Although inward FDI in emerging economies contributes to the overall advancement of the society by sharing modern manufacturing technologies and managerial practices, it is still unknown whether and how inward FDI in emerging economies affects the long-term profitability and sustainability of emerging market firms (EMFs).

With the establishment of international corporate social responsibility (CSR) instruments such as the Organization for Economic Cooperation and

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Development (OECD) Guidelines for Multinational Enterprises starting 2000, more and more inward FDI entering emerging economies abide by the concept of sustainable development. In addition, emerging market local actors, such as policymakers and business leaders started to be more selective on inward investors. They pay attention to environmental impact and technology transfer aspects of the inward FDI, guiding local firms to keep up with the global standard and catch up with industry leaders globally.

In this chapter, I intend to explore whether inward FDI fulfills the function of technology transfer, as expected by supranational organizations, national policymakers, and business sectors. The evidence to be shown in this chapter is, as a response to the inward FDI, what is the business motive and location choices of emerging market firms when conducting outward FDI. Usually, strategic asset-seeking motive or choosing a developed country as FDI destination indicate a catching up intention of EMFs.

By focusing on the trend of strategic asset-seeking (also known as knowledge-seeking) FDI, this chapter fits into the overall theme of the book: the intersection among businesses, technology and social advancement by the year 2025. In this chapter, I present a collection of evidence, between 2000 and 2014, the changing trend of inward FDI in knowledge-intensive sectors, and the evolution of Chinese firms' learning orientation in outward FDI. This is to analyze how inward FDI facilitates the local businesses' development, intentionally or unintentionally, through knowledge transfer and spillover in an emerging market context. This chapter also offers a prediction of strategic asset-seeking outward FDI from China based on historical trends, indicating an increasing impact of inward FDI in knowledge-intensive sectors and inward FDI from developed countries.

This chapter contributes to the understanding of the effectiveness of international corporate social responsibility (CSR) instruments such as the OECD Guidelines for Multinational Enterprises starting in 2000. With a period of 15 years, the evidence between 2000 and 2014, this research takes advantage of the time span to analyze the hypothesized effect of multinational enterprises on local ones' development, especially the long-term development as this chapter focuses on strategic asset-seeking outward FDI.

This chapter also contributes to the frontier scholarly knowledge on the determinants of outward FDI from emerging markets. Prior literature on emerging market multinational focus on the liberalization of outward FDI policies (e.g. Sauvart and Chen 2014), government financial support, and state ownership (e.g. Shapiro and Globerman 2012; Luo et al. 2010). While outward FDI policy and direct support to outward FDI activities are indispensable to the development of emerging market multinational, in this chapter I propose that inward FDI policies and guidelines, seemingly unrelated to outward activities, might have an impact on local firms' global expansion in the long run.

The rest of the chapter is organized as follows. In the next section, I will offer key definitions related to general sustainability and business sustainability. It will then be followed by a literature review on inward-outward FDI

relationships. After the literature review section, theories on inward FDI knowledge transfer and spillover mechanisms are presented. Two hypotheses regarding inward-outward FDI relationships in an emerging market context are proposed after taking into account of OECD guidelines and Chinese Catalogue for the Guidance of Foreign Investment Industries. In the method section, data source and measurement schemes are explained in detail. This research adopts Necessary Condition Analysis techniques to explore the relationship between condition X (inward FDI) and outcome Y (outward FDI). The collection of data and summary statistics are illustrated before the results. I conclude this chapter discussing the future trends of emerging market multinationals' business sustainability and practical implication of this study.

DEFINITIONS

One of the most broadly accepted definitions of sustainable development is in the 1987 World Commission on Environment and Development (the Brundtland Commission): Sustainability is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Therefore, sustainability has a long-term focus. While it has a heavy focus on environmental issues and humanity issues, business sustainability and competitiveness is also a part of the concept.

Among the four business motives in internationalization (natural resource seeking, market seeking, efficiency seeking, and strategic asset seeking), strategic asset-seeking FDI has a long-term focus in sustaining investing firms' future competitiveness. Based on Dunning (1993), the strategic asset-seeking FDI is to promote long long-term strategic objectives, especially that of sustaining or advancing global competitiveness (e.g. augmentation of a global portfolio of physical assets and human competences, which I perceive will either sustain or strengthen their ownership-specific advantage or weaken those of competitors). The term “strategic asset seeking” is interchangeable with “knowledge seeking.” A more precise version of the definition by Dunning and Narula (1995) refers that the strategic asset-seeking motive to the upgrade of technological assets through FDI in R&D facilities. Usually, the competence creation mandate subsidiary has a strategic asset-seeking motive (Cantwell and Mudambi 2005).

LITERATURE REVIEW

By reviewing the host country effect of inward FDI (IFDI) and the home country determinants of outward FDI (OFDI), I try to understand whether the factors in the host country's effect and the elements in home country determinants are intrinsically connected. As can be seen from above, IFDI has an influence on local firms' productivity via the evolution of tangible and intangible assets which constitute the asset kind of O advantage (Oa). IFDI also

impacts the intermediate product and factor markets, which can potentially affect the internalization strategy of local firms. Literature regarding internationalization related to emerging markets views inward investment as a contribution to multinationality, the capacity to coordinate international resources effectively and coherently (O_t), as inward FDI familiarize local firms with international markets (Luo and Tung 2007) and facilitate acquisition of foreign knowledge and international experience without going abroad. Furthermore, the institutional disruption literature argues that foreign entrants can possibly reshape the institutional assets (O_i) of the environment local firms operate in by influencing new legislation and introducing new codes of conduct, norms, and corporate culture. Thus, it much follows that the factors in IFDI host country effect largely overlap with determinants of OFDI.

The following section reviews literature directly dealing with the relationship between inward FDI and outward FDI and summarize their influencing channels.

Knowledge Diffusion Channel

Gu and Lu (2011) identifies a positive inward-outward FDI relationship when the inward investment mode is co-investments. They define co-investment as a business jointly owned and conducted by foreign and indigenous firms. Co-investment, an analogy to an international joint venture, has a comparatively high level of communication and proximity between the foreign partners and indigenous firms. In co-investment organizations, partners share profit and risk together. Due to common interest and mutual understanding, the co-investment partners reduce competitive responses and increases substantial information exchange. The connections between business partners facilitate the transfer and diffusion of technical and managerial knowledge, which boosts the local firm's competitiveness in the long run. They summarize that the spillover effect of co-investment in a country increases the probability of its OFDI. The spillover mechanism should be more salient in developing market context. Mudambi (2008) argues that, as it is shown in the smiling curve, the intangibles of both ends (R&D knowledge and marketing knowledge) from advanced country MNCs fuel the catch-up process of emerging market firms via original equipment manufacturer network. This should result in a higher outward FDI propensity of local firms.

Ma et al. (2015) finds a negative relationship between foreign presence and international expansion of indigenous firms. Similar logic as the IFDI spillover effect, the presence of foreign companies allows local firms to gain access to new and diverse knowledge, organizational skills, and capabilities. As outward FDI can be costly, risky, and resource-intensive, local firms tend to avoid OFDI if they are able to acquire strategic resources by collaborating with foreign firms that operate at home. This concludes that high levels of foreign presence can impede overseas investment by weakening the foreign expansion motivations.

To sum up, factors in the IFDI host country effect largely overlap with determinants of OFDI. The channels of IFDI influencing OFDI is through IFDI technology transfer, knowledge spillover, and institutional diffusion. In the following section, I attempt to discuss how IFDI affects O advantage of local firms through the channels reviewed above, mainly technology transfer and knowledge spillover.

THEORY: THE KNOWLEDGE SPILLOVER EFFECT OF INWARD FDI

The impact of FDI on host country indigenous firms have been widely studied in areas such as development economics, international business, technology management, international management, political economy, and regional studies. In this section, I focus on the unintentional knowledge spillover effect of foreign presence on indigenous firm capability advancement, which is regarded as an economic externality.

The topic of inward FDI and knowledge diffusion could be traced back to Dunning (1958)'s research on US investments in the United Kingdom and later Richard Caves (1974)'s three channels of FDI productivity spillovers (allocative efficiency, technical efficiency, and technology transfer). The literature on the IFDI influencing local firms' capability building is inconclusive (see a review of Perri and Peruffo 2016). Recent studies tend to focus more on the demand side, namely the absorptive capacity of the local firms. However, without available external knowledge on the supply side, discussing the absorptive capacity of local firms is meaningless. The supply-side factors investigated in empirical studies include entry mode of FDI (e.g. Blomstrom and Sjöholm 1999; Dimelis and Louri 2002; Javorcik 2004; Javorcik and Spatareanu 2008), sources of FDI (e.g. Buckley et al. 2002; Buckley et al. 2007; Javorcik et al. 2004), and motives of investment (e.g. Driffield and Love 2007; Girma 2005; Protsenko 2003).

The literature on the spillover effect of FDI recognizes that influence of foreign firms from developed countries on the productivity and knowledge stock of the indigenous firms in developing host countries through four main channels: demonstration, competition, linkages, and employee mobility (Blomström and Kokko 1998; Liu and Buck 2007; Perri and Peuffo 2016; Wei and Liu 2006).

"Demonstration" effect arises as local firms are exposed to foreign firms' activities. It then allows local firms to imitate the production, marketing, and organizational practices (Blomström and Kokko 1998). The mechanism "competition" occurs when foreign presence increases the competitive pressure on domestic firms and pushes them to improve their innovation speed and magnitude (Liu and Buck 2007). The vertical linkages with foreign multinational enterprises (MNEs), also known as backward and forward linkages in the supply chain, originates knowledge flow via the process of local suppliers and distributors' adaptation to foreign MNEs (Jindra et al. 2009). Backward linkage means spillovers from foreign-invested firms to their indigenous suppliers.

Employee mobility also facilitates knowledge spillover by indigenous firms hiring works which were previously employed by MNEs. Employees as the knowledge carrier would diffuse foreign techniques and technologies to local employers (Glass and Saggi 2002).

Extending from FDI spillover literature, I intend to explore what motives of IFDI generate more externalities in terms of knowledge diffusion and how that affects OFDI activities of local firms. It is difficult to correlate IFDI with O advantage accumulation of local firms without knowing the activities of IFDI. Certain types of IFDI are slim in contributing to the competitiveness of local firms. In order for technology transfer or technological spillover to take place, foreign firms need to have a certain level of interaction with local firms. Knowledge diffusion is a type of economic externality that happens between specific foreign and indigenous firms, with some kinds of formal or informal associations between the two required (Morrissey 2012). That is to say that not all types of FDI have spillovers. Different motives for inward investment vary in knowledge content and their interaction with local firms, which affects their knowledge diffusion in the local environment.

The Motives of Inward FDI and Knowledge Spillover

Generally, there are four types of FDI identified by IB literature, namely natural resource seeking, market seeking, efficiency seeking, and strategic asset seeking (Dunning 1993). Foreign firms out of natural resources seeking, local market seeking, and efficiency seeking will have limited interaction with local businesses. In the early stage of IFDI, foreign firms tend to establish a representative office to facilitate trade flows between the home and host countries. In addition, some developing countries have export processing zone, in which foreign enterprises import intermediate products and use cheap local labor to do assembling work and then export the final product (platform FDI). These trade-supportive and platform FDI have limited knowledge spillover to the local environment. Rodriguez-Clare (1996) suggested that if foreign-invested firms do not source locally, the FDI could create an “enclave” economy and hurt the indigenous firms. A recent study by Cantwell and Smeets (2013) found strong positive productivity spillover for an asset-seeking type of FDI, suggesting that the active R&D activities and intense interaction with local entities in order to tap into local knowledge pool actually enlarge the learning potential for indigenous firms. Subsidiaries involving technologically creative tasks positively contribute to the development of the host economy (Marin and Sasidharan 2010). Conversely, externally controlled plants are often characterized by low degrees of local integration, thus having a little or negative developmental impact on host countries (Watts 1981).

The reason why knowledge-intensive IFDI brings more spillover is because of (1) its technological leadership position in an industry/knowledge field and (2) its local embeddedness causing co-evolution of local and foreign firms’ knowledge base.

Technology Leader Effect

Although Girma (2005) and Driffield and Love (2007) argue that technological laggard tends to pursue knowledge-seeking FDI and therefore is less likely to induce knowledge spillover to the local environment, Cantwell and Smeets (2013) argue that, due to tastiness nature of knowledge (Kogut and Zander 1993), those capable to identify, assimilate, and exploit knowledge (Cohen and Levinthal 1989) tend to seek knowledge. Berry (2006) explains that laggard firms lack the absorptive capacity to understand advanced knowledge and also lack of skills to transfer knowledge back to the MNE system. Therefore, knowledge-seeking FDI does not make sense for a laggard to carry, let alone that knowledge-seeking FDI is more costly than competence-exploiting FDI (Cantwell and Mudambi 2005). After confirming that it is the technological leader that conduct knowledge-intensive FDI, it argues that knowledge leader tends to have more knowledge spillover in the host location than technology laggard. Tong and Hu (2003) found that foreign firms originating from technologically advanced countries are associated with more productivity spillover in the host country than those from regions with comparatively low technological competence such as Hongkong, Macao, and Taiwan.

Local Embeddedness of Foreign Subsidiaries

The reciprocal nature of knowledge creation requires local embeddedness of foreign firms when seeking knowledge in the host location (Cantwell and Smeets 2013). In order to benefit from learning feedback, MNE subsidiaries need to tap into the local knowledge base. This subsequently benefits local firms for foreign knowledge exposure (Cantwell 1989). Geographical proximity stimulates face-to-face interactions and expedites the transmission of knowledge (Jaffe et al. 1993). Learning and demonstration effects are more effective among agglomerated firms (Barrios et al. 2006; Driffield 2006; Thompson 2002). More local embeddedness generates more spillover (Beugelsdijk et al. 2008). Spillover is actually an outcome of strategic games between the involved parties including foreign-invested firms, indigenous firms, and host country governments. Multinational firms need to adapt their technologies to the local environment. This adaptation is also a continuous learning process. Accompanied by the gradual localization process, more “learnable” knowledge might be available to indigenous firms. Moreover, the increasing embeddedness into the host country environment may also broaden the scope and strengthen the intensity of the interaction with indigenous firms.

HYPOTHESIS DEVELOPMENT

Chinese Catalogue for the Guidance of Foreign Investment Industries, from 1995 to 2011

In order to make sure inward FDI activities not impeding the development of the domestic economy and stability of the society, the Chinese government issued the Catalogue for the Guidance of Foreign Investment Industries in 1995. The Chinese catalogue for the guidance of foreign investment industries (the Catalogue) experienced several major updates since 1995. The catalogue is updated in 1997, 2002, 2004, 2007, 2011, 2015, and 2017. In this catalogue, the Chinese government gives guidance on which industries are (1) encouraged, (2) permitted, (3) restricted, and (4) prohibited. This catalogue is important in shaping the inward FDI industry distributions because the catalogue is the basis on which the Chinese government approves inward FDI projects.

The first major provisions to the Catalogue took place in 2002, as a response to China joining WTO in 2001. In these provisions, China encourages greater geographic dispersion of inward FDI and more FDI inflows to several industries including agriculture, resource exploitation, infrastructure, and environmentally friendly and high-technology industries. R&D centers related to bioengineering, new materials, aerospace, and renewable energy are welcome. The encouraged list was expanded from 186 items to 262 items, while the restricted list shrank from 112 items to 75 items. Several prohibited items, for the purpose of protecting local infant industries, such as telecommunication and general intermediate industrial products, started to be open to foreign investors. In order to facilitate the economic development of inland provinces, the provisions encouraged FDI inflow to southwest and northwest regions.

In the 2007 amendment, the Catalogue further encourages high-technology industries, to accelerate the pace of the domestic industry and economic advancement, to enhance knowledge assimilation and independent innovation by indigenous firms. The Chinese government has a strong intention to associate industrial restructuring to inward FDI. Machinery, transportation vehicles, and pharmaceutical industries are among the top list of encouraging items. At the same time, China started to prohibit foreign investors to mine nonrenewable resources including wild lives and endangered plants. More importantly, the Catalogue eliminates the special support for export-oriented foreign businesses, switching policy focus from subsidizing export processing zone to encourage technology-based foreign manufacturing interacting with local enterprises.

As it is mentioned in the theory section that IFDI or foreign entrants are heterogeneous in nature and this is one of the reasons that we observe variation in FDI spillover to the local economy. Borrowing from Cantwell and Smeets (2008)'s productivity spillover from competence exploiting subsidiaries and competence creation subsidiaries, I argue that asset-seeking IFDI has more

knowledge spillover to local firms and equipped local firms with the more absorptive capacity to acquire more advanced knowledge from more technological advanced locations.

Strategic asset-seeking OFDI oftentimes is realized in competence creation mandate, meaning subsidiaries are supposed to generate new knowledge (knowledge at least new to the parent firm) in the host country. A prerequisite of developing new knowledge with host country resources or learning from host country firms is the subsidiary being able to understand the knowledge in the host country and exploit it in its own organizational context. Absorptive capacity affects a firm's confidence to participate in more risky investment activities and aspiration in upgrading firm resources and utilizing developmental opportunities in the environment. IFDI prepares local firms with the absorptive capacity via four main spillover channels in the IFDI host location. The four main channels, namely demonstration, linkages, competition, and employee mobility, function better when IFDI is conducted by a technological leader and this technological leader interacts with local firms sufficiently.

H1 Colocate with Inward FDI (foreign entrants) in knowledge-intensive industries increases the likelihood of emerging market firms seeking strategic assets abroad.

OECD Guidelines for MNEs, 2000 and 2011

OECD Guidelines for Multinational Enterprises so far has two versions, 2000 one and 2011 one. The guideline is to “strengthen the basis of mutual confidence between multinational enterprises and the societies in which they operate (OECD, 2000, 2).” In the 2000 version, there is a one-page section on Science and Technology. The five bullet-point guidelines in the 2011 version are the same including the commentary contents. The general guideline is to encourage MNEs, when intellectual property rights are protected, to conduct knowledge transfer in the host country, to facilitate the development of host country local and national innovation capabilities, and to contribute to the “long term development prospects of the host country (OECD 2000, 36; OECD 2011, 55).”

OECD guidelines correspond with the technology spillover channels: demonstration, linkages, and employees. The demonstration aspect is related to the second and fourth bullet points: respectively, “Adopt, where practicable in the course of their business activities, practices that permit the transfer and rapid diffusion of technologies and know-how, with due regard to the protection of intellectual property rights.” and “When granting licenses for the use of intellectual property rights or when otherwise transferring technology, do so on reasonable terms and conditions and in a manner that contributes to the long term sustainable development prospects of the host country.”

The linkage aspect is related to the following: “Where relevant to commercial objectives, develop ties with local universities, public research institutions, and participate in co-operative research projects with local industry or industry

associations.” The training of the employee aspect is: “When appropriate, perform science and technology development work in host countries to address local market needs, as well as employ host country personnel in a science and technology capacity and encourage their training, taking into account commercial needs.”

While China is not part of the adhering governments, multinational enterprises from OECD guidelines-adhering countries entering China are expected to follow the guidelines. These countries are mainly OECD members.

IFDI from developed countries tends to have knowledge spillover to indigenous firms. This spillover is usually context-specific, making an indigenous firm more exposed and gradually locked in the logic of where the knowledge was initially developed. As innovation literature mentioned, knowledge is localized and context-specific, which also indicates that one location contains its specific knowledge base and expertise (Jaffe et al. 1993). The path dependence or incremental nature of knowledge development creates clusters and attracts even more foreign firms with a similar background (Li and Bathelt 2019). The process of FDI also facilitates the emergence of agglomeration in the host location. When FDI first comes to a location, foreign firm diffuses knowledge to local partners and competitors. Gradually, centered by the foreign firm, more and more firms with similar knowledge base invest and cluster in the region, making the region specialized in a technology field (Cantwell 1995).

H2 The proportion of a city's inward FDI from a specific country increases the extent of the city's outward FDI projects to that country.

METHODOLOGY

Data and Sample

We use a collection of evidence from an emerging market context, China, where inward and outward FDIs both are limited since starting of the second half of the twentieth century and grew significantly over the years. This allows me to have enough empirical evidence and time span to test whether inward FDI has an impact on emerging market firms' outward FDI, and how does inward FDI affect the sustainable development of emerging market firms.

In addition, the regional disparity in economic development and institutional diversity among provinces in China creates a natural lab to test how these differences affect subsequent economic and social development. For the purpose of this research, the regional differences in inward FDI quantity and industry distribution provide an empirical basis to establish potential causal relationships. In addition, China has a pro-learning environment in which local firms have a strong incentive to learn from foreign firms for performance increase (Xia et al. 2014; Li et al. 2017). Therefore, the inward-outward FDI relationships can be more obvious and established in China than elsewhere.

The inward FDI sample used in this study is from the Statistical Bureau of China, while the outward FDI projects are collected from the Ministry of

Commerce of China. On the inward FDI side, I use the provincial and municipal statistical yearbook for inward FDI in each industry and calculate the percentage of inward is in the knowledge-intensive industries.

Statistical Bureau of China started to collect information in the early 1950s, near the establishment of the People's Republic of China in 1949. Ministry of Commerce of China documented outward FDI projects (OFDI directory) starting 1983 after China released its Open and Reform Policy, which intends to welcome the market economy to its socialist regime.

The OFDI directory contains 24,228 Chinese outward FDI projects from China between 1983 and 2014 across 31 provinces in 180 host countries/regions. For the purpose of this research, I eliminate tax haven cases such as Hong Kong, Macau, Bermuda, British Virgin Islands, Luxembourg and so on, which is a common practice for FDI studies (e.g. Anderson and Sutherland 2014; Shi, Sun, Yan, and Zhu 2017) because investment in a tax haven is largely foreign portfolio investment and does not involve any actual business operation. After eliminating tax haven cases, there are 16,338 projects.

This dataset includes parent firm name, subsidiary firm name, host country, home province, project approval date, and business activities in the host country. Based on the business activities in the host country, I code the FDI motives into natural resource seeking, market seeking, efficiency seeking, strategic asset seeking, trade-supportive investment, and management-supportive investment, based on Dunning (1993). These business activities in the host country are reported by the managers of each firm to the Ministry of Commerce when pursuing project approval.

Measurement

Knowledge-intensive inward FDI is measured as the amount of inward FDI stock in knowledge-intensive industries in a given year of a province. Knowledge-intensive industries in China include scientific research and technology services, research and experimental development, professional and technical services, technology promotion and application services, information transmission, software and information technology, telecommunications, radio and television and satellite, internet and related services, and software and information technology services. First, all 31 provinces are included in the sample. I then collect province-level inward FDI stock for each of the province between 2000 and 2014 in which the first strategic asset-seeking FDI starts in 2000. I collect inward FDI stock for each industry. Second, I aggregate inward FDI stock for these industries. Tibet has limited information in inward investment, possibly because Tibet attracts a limited amount of inward FDI. So 30 provinces are presented in the following regional distribution.

Location quotients of a specific country, a measure that calculates the relative importance of FDI country to a city among FDI countries in all cities. For example, the United Kingdom occupies 0.2% of all inward FDI in Tianjin, while, in all cities (aggregates), the United Kingdom accounts for 0.4% of all

inward FDI. Therefore, the location quotients of the United Kingdom in Tianjin is $0.2/0.4=0.5$. The value below 1 usually means that this country is not dominating.

Strategic asset-seeking outward FDI is a type of FDI project with a long-term orientation and developmental goals. I first coded strategic asset-seeking outward FDI based on documented manager self-reported business activities in the host country. Firms conducting strategic asset-seeking FDI usually report establishing research and development centers in the host country, seeking technological knowledge, reserve, or attract talents/human capital in the subsidiary or the parent firm. Typical examples of strategic asset-seeking FDI include new project development in telecommunication, new technological component development, new drug development; development of computer software and digital programs; development of medical devices, design of optical instruments; gather information about new technology, talent, and new human resources introduction to the organization; and seeking technical consultancy in the host country.

Strategic asset-seeking outward FDI measured as the number of strategic asset-seeking outward FDI projects in a given year of a province or a city. Out of the 16,338 outward FDI projects, there are 1573 strategic asset-seeking projects. These 1573 projects are scattered among 31 provinces between 2000 and 2014, with a general regional distribution as below. For hypothesis 2, I select 14 representative cities (similar to the approach of Bathelt and Li 2018, 2019) to conduct city region analysis. Among these 14 cities, there are 7112 outward FDI projects, among which 823 projects are strategic asset-seeking outward FDI projects.

Empirical Model

In order to test the hypotheses, this research adopts a necessary condition analysis (NCA) developed by Dul (2018). Necessary condition analysis facilitates answering a certain type of research question: whether A is a necessary but not sufficient condition for B to happen. In our hypotheses, I intend to study whether inward FDI in knowledge-intensive industries is a necessary condition for emerging market firms to catch up with global industry leaders. In other words, inward FDI in knowledge-intensive industries might not be a sufficient condition, meaning that there are other factors such as firm size, firm age, and firm international experience, and so on that are affecting a firm's decision in engaging in strategic asset-seeking outward FDI. However, I propose that inward FDI in knowledge-intensive industries is a necessary condition for EMFs to initiate strategic asset-seeking intent, meaning that without being embedded in a region with a significant volume of inward FDI in knowledge-intensive industries, firms will not embrace the vision of seeking strategic assets abroad.

NCA only involves the variables of interests, so there is no need for adding control variables such as firm age and firm size, and so on. This allows me to

use the full 16,338 outward FDI sample for this research purpose without losing observations due to dataset merge for acquiring control variables. Furthermore, I test hypothesis 1 at the province level and hypothesis 2 at the city level to avoid nested data issues. In NCA, the traditional independent variable is called condition X, while the dependent variable is named outcome Y.

EMPIRICAL EVIDENCE AND RESULTS

Data Trend (Summary Statistics)

The overall trend of outward FDI from China, the strategic asset-seeking motive change across time and province.

Chinese OFDI breaks down into three major motives: natural resource seeking (NR), market seeking (MA), and strategic asset seeking (SA). Overall, Chinese OFDI did not take off until early 2000, with no strategic asset-seeking motive before the year 2000. Strategic asset-seeking OFDI has a steady growing trend and exceeds natural resource seeking OFDI in 2013. With this momentum, we can expect an increasing trend of strategic asset-seeking OFDI in the future years, certainly lasting till 2025.

By the end of 2014, most of the strategic asset-seeking OFDI was from the east coast, namely Beijing, Shanghai, Jiangsu, Zhejiang, and Guangdong Province.

Out of the 16,338 outward FDI projects, there are 1573 strategic asset-seeking FDI projects in the host country. Below is a collection of strategic asset-seeking outward FDI host country profile. The first 20 host countries occupy 85% of the total number of projects in strategic asset-seeking outward FDI.

The east coast, mainly referring to Shanghai, Zhejiang, and Jiangsu province, of China is still going to be the main force of strategic asset-seeking OFDI. The first runner-up region is the North including Beijing, Tianjin. The west regions still need more stimulations in order for local firms to catch up even domestically.

Seven out of the top 10 provinces, Jiangsu, Beijing, Zhejiang, Liaoning, Shandong, Shanghai, Hubei, overlap between inward FDI and outward FDI provincial profile. I then suspect a strong correlation between inward FDI and outward FDI activities. However, the correlation does not identify a causal relationship; therefore, I use NCA to predict whether inward FDI is a necessary condition for outward FDI in the case of Chinese provinces.

Results

Results for Hypothesis 1.

The analysis is conducted at the province level, wherein 1573 strategic asset-seeking outward FDI projects are grouped into 30 provinces for 15 years between 2000 and 2014. There are 450 province-year observations for the

current NCA analysis. The outcome Y is the number of strategic asset-seeking outward FDI projects in a province, while the condition X is the amount of inward FDI in knowledge-intensive industries of a province. For hypothesis 1, the model is testing whether the amount of inward FDI in knowledge-intensive industries in a region is a necessary condition for preparing local firms to engage in strategic asset-seeking outward FDI projects.

First of all, the NCA model presents the effect size. There are two effect sizes. The first one, *ce_fdh*, is based on a ceiling line that is drawn with a step function. It connects the highest values of the outcome Y for the values of the condition X. The effect size, *cr_fdh*, is based on a straight ceiling line that has been drawn through the points that are part of the step function. Based on the general rule of thumb in Dul (2016), the effect sizes 0.044 and 0.045 in the result, in Table 17.1, are small effects.

I have also tested the significance of the effect, as an effect size observed could be a random chance. The test resamples the data to create a range of samples (permutations) in which the condition X and outcome Y are unrelated. The outcome of the test is the probability that we observe the results if this is the case. The probability is represented by the p-value. Similar to regression models, the more the p-value approaches zero, the more unlikely the observed effect is caused by random chance. I choose permutation number as 10,000, the p-value therefore is 0.006 and 0.013. Both p-values are less than 0.05, suggesting that the probability that the observed effect size is due to random chance is small enough and can be neglected. In other words, emerging market firms embedded in a region with a high volume of knowledge-intensive inward FDI is a necessary condition for preparing these firms to engage in upgrading activities abroad in outward FDI projects (Table 17.2).

Table 17.1 NCA results for knowledge-intensive inward FDI

	<i>ce_fdh</i> (p)	<i>cr_fdh</i> (p)
Kfdi	0.044 (0.006)	0.045 (0.013)

Source: Author’s creation

Notes: Effect size(s): 0 < d < 0.1 small effect; 0.1 ≤ d < 0.3 medium effect; 0.3 ≤ d < 0.5 large effect; d ≥ 0.5 very large effect

Table 17.2 NCA results for provincial inward FDI

	<i>ce_fdh</i> (p)	<i>cr_fdh</i> (p)
Ifdiprovince	0.153 (0.001)	0.131 (0.036)

Source: Author’s creation

Notes: Effect size(s): 0 < d < 0.1 small effect; 0.1 ≤ d < 0.3 medium effect; 0.3 ≤ d < 0.5 large effect; d ≥ 0.5 very large effect

Robustness check by *ifdiprovince*. The effect size is bigger than *kifdi* as condition X and the significance level is the same, both less than 0.05.

For hypothesis 2, I select 14 representative cities (similar to the approach of Li and Bathelt, 2014, 2018, 2019) to conduct city analysis. The goal of the city analysis is to show that city regions with a large number of IFDIs from specific countries will be likely to also establish a larger number of OFDIs to these countries. These cities are capital cities of certain provinces, representing each region in China: Northeast, North, East, Midsouth, Southwest, and Northwest. The total number of projects from these cities is 7112 between the year 2000 and 2014. The top cities are Beijing, Shanghai, Ningbo, Shenzhen, and Qingdao.

The inward FDI policy in China has the catalogue in years 1995, 1997, 2002, 2004, 2007, and 2011 within the timeframe of this research's empirical evidence. Among these years, 1995, 2002, and 2007 see significant updates; therefore, the years selected for inward FDI country profile are 1994, 2001, 2006, and 2010.

The data points at the end of the year 1994 capture the inward FDI stock before the catalogue in place. The data points of 2001 capture the inward FDI stock before China joins WTO. The data points of 2006 capture the inward FDI stock before the start of the global financial crisis and the 2010 data points capture the inward FDI before the release of the new catalogue in 2011.

Among the 7112 outward FDI projects, there is 823 strategic asset-seeking outward FDI projects. These projects cluster to the United States, Japan, Germany, and the United Kingdom, and so on. Six out of the top 10 strategic assets-seeking outward FDI destinations are also listed at the top as the inward FDI countries.

The following NCA analysis is to test whether emerging market firms tend to seek strategic assets in the country where inward FDI dominants are in the home city. For example, whether a firm from Tianjin is more likely to invest in the United Kingdom to seek knowledge if a large number of inward FDI in Tianjin is from the United Kingdom.

Table 17.3 shows that the effect is very large (> 0.5) and also significant (0.001).

For the purpose of comparison among different motives, I construct a sample for market-seeking outward FDI. The results show that the effect size of market seeking is still very large and significant but smaller than strategic asset seeking, meaning inward FDI from developed countries matter more to

Table 17.3 NCA results on inward FDI location quotients and strategic asset-seeking outward FDI

	<i>ce_fidh</i> (<i>p</i>)	<i>cr_fidh</i> (<i>p</i>)
Location quotients_IFDI	0.634 (0.001)	0.462 (0.001)

Source: Author's creation

Notes: Effect size(s): $0 < d < 0.1$ small effect; $0.1 \leq d < 0.3$ medium effect; $0.3 \leq d < 0.5$ large effect; $d \geq 0.5$ very large effect

strategic asset-seeking outward FDI location choices than to market-seeking outward FDI location choices (Table 17.4).

I also constructed a sample for natural resource-seeking outward FDI. The results show that the effect of inward FDI location quotients on location choices of natural resource-seeking FDI is small and not significant, indicating that inward FDI, dominated from developed countries, does not have a strong impact on the natural resource seeking. Natural resource-seeking outward FDI is directed to resource-abundant countries with positive diplomatic ties with China. Knowledge transfer and spillover from developed country multinationals have a limited role to play (Table 17.5).

Overall, the impact of the Chinese Catalogue for the Guidance of Foreign Investment Industries and present OECD Guidelines for Multinational Enterprises is evident. These guidelines encourage inward FDI, especially FDI inflows to emerging markets, to contribute to the sustainable development goals of local enterprises. The two hypotheses are supported, arguing that inward FDI is a necessary condition for emerging market firms to catch up with the global leaders, by either engaging in long-term-oriented outward FDI activities (strategic asset-seeking outward FDI) or establishing a subsidiary in developed countries.

Strategic asset-seeking outward FDI is and will be experiencing an upward going trend. The concern here is the effectiveness of FDI policy support on the western regions in China. From Table 17.4, we can see that the last five provinces with minimum inward FDI are all in the western regions, Gansu, Xinjiang, Qinghai, Ningxia, and Sichuan. Although the Catalogue since the 2002 amendment started to emphasize on the economic development of the West, after more than one decade, not enough evidence has shown that the West regions are catching up even domestically. There is also not enough evidence to show that the West regions will show strong momentum by 2025. However, with the One-Belt-One-Road initiatives, in the longer term, the western regions could potentially show some progress.

Table 17.4 NCA results on inward FDI location quotients and market-seeking outward FDI

	<i>ce_fidb</i> (<i>p</i>)	<i>cr_fidb</i> (<i>p</i>)
Location quotients IFDI	0.580 (0.000)	0.456 (0.000)

Source: Author's creation

Notes: Effect size(s): $0 < d < 0.1$ small effect; $0.1 \leq d < 0.3$ medium effect; $0.3 \leq d < 0.5$ large effect; $d \geq 0.5$ very large effect

Table 17.5 NCA results on inward FDI location quotients and natural resource-seeking outward FDI

	<i>ce_fidb</i> (<i>p</i>)	<i>cr_fidb</i> (<i>p</i>)
Location quotients IFDI	0.073 (0.384)	0.046 (0.447)

Source: Author's creation

Notes: Effect size(s): $0 < d < 0.1$ small effect; $0.1 \leq d < 0.3$ medium effect; $0.3 \leq d < 0.5$ large effect; $d \geq 0.5$ very large effect

DISCUSSIONS

This research intends to study whether FDI in China can facilitate the sustainable development of Chinese multinational corporations. In particular, which type of inward FDI in China is more likely to facilitate such a sustainable development goal?

I adopt one of the most broadly accepted definitions of sustainability, the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This definition emphasizes on an ability to develop in the long term, which can be reflected in the concept of strategic asset-seeking FDI. Strategic asset-seeking FDI is to promote long-term strategic objectives, especially for sustaining or advancing global competitiveness. Therefore, Chinese multinational corporations with strategic asset-seeking activities, such as acquiring intellectual properties, recruiting talents, and codeveloping technologies with local partners, in the host country have better chances than other firms to reach sustainable development goals, both domestically and internationally.

In terms of contribution to academia, this research extends the application of FDI spillover mechanism to outward FDI activities, departing from the traditional productivity story of FDI spillover. By doing so, this research establishes the inward-outward FDI linkages, which is an understudied topic in both International Business and Economics literature. Rather than using aggregate FDI measurements, this research breaks down FDI activities into different motives. This contributes to the understanding of the role of FDI motives. The results show that motive plays an important role in determining inward-outward FDI relationships. While strategic asset-seeking and market-seeking outward FDI can be heavily influenced by inward internationalization, natural resource-seeking FDI tends to be independent of inward FDI. Empirically, prior literature tends to use host country location factor endowment to infer business motives. However, the two hypotheses show that motives and location choice are two separate research questions. This research measures business motives directly by leveraging on manager self-report subsidiary activities.

The implication for business managers and policymakers is that inward FDI plays an important role in host country economic development. Regions with abundant inward FDI, especially inward FDI from OECD countries, show long-lasting growth trend and also strong learning orientation during global expansion. A collection of the evidence above shows that technology introduced by developed country multinationals facilitates business sustainability in an emerging market and society advancement. With the ongoing effort of the Chinese Catalogue for the Guidance of Foreign Investment Industries, we should expect Chinese enterprises moving toward a more sustainable way of development, both domestically and internationally.

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Taming the Dark Side of the New Globalization

Larita J. Killian

INTRODUCTION

Advanced digital technology enables the new globalization. Together, these forces have improved opportunities and living standards for millions of people. It is natural to celebrate these outcomes, but there is also a dark side to the story. Digital technology and globalization create “losers” as well as “winners.” While some are lifted from poverty, others lose economic security. Individuals can now communicate with virtual “friends” around the globe, yet they feel less solidarity within their local communities. Governments can deploy digital platforms to streamline delivery of services, yet they may be powerless to prevent Internet-based interference with elections. As global corporations become stronger, nation-states find it more difficult to shield their citizens from the negative effects of social and economic disruption.

To reap the full, positive potential of digital technology and globalization, it is essential to address the attendant, negative impacts. To ensure a sustainable future, we need to analyze the lessons of the recent past. Consider the events of 2016, the year Donald Trump won the presidency of the United States and British citizens voted to leave the European Union (Brexit). Even those who celebrate these outcomes agree they are highly disruptive, and disruption and uncertainty are inimical to economic development (Bloom 2014). More

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disruption is in store unless we mitigate the negative effects of the digital revolution and globalization and ensure that the benefits are widely shared.

Digitalization refers to “the diffusion of digital technologies into nearly every business and workplace and pocket” (Muro et al. 2017, p. 12). Through technologies such as artificial intelligence, computer algorithms, and robotics, digitalization remakes both economic and social relationships (Acemoglu and Pascual 2017, p. 2). Globalization refers to “the cross-border flow of ideas, information, people, money, goods, and services” that results in “an interconnected world where national leaders have increasingly limited ability to protect the lives and livelihoods of citizens” (Bremmer 2018, p. 8). Global communication and trade are not new, but digital technologies have ushered in a “new globalization” featuring “a very crowded and tightly interconnected world” (Sachs 2011, p. 86). Digitalization and globalization are symbiotic: one reinforces and advances the other. It is their combined effect that holds so much promise as well as peril for human societies.

The 1999 protests against the World Trade Organization (WTO) meeting in Seattle, Washington, United States, the 2008 global financial crisis, and years of protests in Brazil were signs that the new globalization was not working for everyone (Bremmer 2018). Other signs include increased student protests in South Africa (Bremmer 2018) and the rise of formerly “fringe” political parties in Germany and France as centrist parties lose ground (Gardels and Berggruen 2019). Across Europe, “[t]he electorate is crying out for change and is therefore volatile — preferring to back new insurgents rather than the status quo parties that have been around for decades” (Mark Leonard, as cited in Erlander 2019, p. A-1). Unrest is stirring in the Mideast and Africa because governments are not “keeping up” with social and economic impacts of the new globalization (Bremmer 2018, p. 14). The disruptive events of 2016 simply capstone years of “populist backlash” (Gardels and Berggruen 2019, p. 5) and can be interpreted as an “indictment of globalism” (Bremmer 2018, p. 5).

Developing¹ countries are especially at risk. The World Bank estimates that “from a pure technological standpoint,” two-thirds of all jobs in developing countries are susceptible to automation (2016, p. 126). Due to relatively weak social safety nets, developing countries are less equipped to respond to social and economic upheaval (Bremmer 2018). In recent decades, they were the “winners” as digitalization and globalization transferred jobs and capital from

¹Scholars use descriptors such as developing, developed, advanced, or emerging to differentiate countries and economies. For instance, in its annual *World Economic Outlook* reports, the International Monetary Fund classifies countries as “advanced economies” or as “emerging market and developing economies” (IMF 2019, 133-134). Advanced economies include Canada, Estonia, Germany, Japan, Singapore, Slovenia, and the United States (39 total). The emerging or developing economies include Afghanistan, Brazil, China, India, Iran, Liberia, Mexico, Nigeria, Qatar, and Paraguay (155 total). The IMF uses GDP at purchasing power parity, total exports, population, and other factors to determine classification. It notes, however, “This classification is not based on strict criteria, economic or otherwise, and has evolved over time. The objective is to facilitate analysis by providing a reasonably meaningful method of organizing data” (IMF 2019, 134).

the West to the developing world. These gains may reverse, however, as opportunity shifts to Africa and robotics (Sachs 2011). “[T]hanks to globalism’s coming technical innovations, the problem will be far, far worse in developing countries than in the wealthy West” (Bremmer 2018, p. 37).

The digital technology that enables the new globalization also impacts social discourse, making it harder to forge a consensus on how to cope with globalization. Thus, from a practical perspective, these phenomena must be addressed together. This chapter explores the harmful effects of digitalization and the new globalization on individuals and communities as well as on nation-states. Then, it reviews proposals for mitigating the harmful effects, drawn from current literature. The chapter concludes with recommendations for leaders in business, education, and public policy.

NEGATIVE IMPACTS ON INDIVIDUALS AND COMMUNITIES

The digital revolution promotes social isolation by enabling individual “information silos.” Social media use individually tailored algorithms to “determine what news articles appear” to a given individual (Foer 2017, Prologue). Consequently, individuals are more likely to communicate with only those who already share their views, depriving them of opportunities to deepen their thinking and change their minds (Bremmer 2018; Sorkin 2019, p. B-1). Neighbors receive different sets of information and “stereotypes replace real experience with others,” fueling prejudice and demagogic politics (Gardels and Berggruen 2019, p. 24). This plays into the hands of special interest groups because a poorly informed public is more easily swayed by propaganda and less able to “resist the dark maneuvers of the special-interest groups that pull the strings” (Sachs 2011, p. 157).

Scholars debate whether “free will” actually exists. Those who believe that humans are capable of exercising free will find this capacity threatened by digital technology, due to “rewiring [of] not only our social networks but our neural networks as well” (Sachs 2011, p. 154). Foer offers this warning:

[T]he tech companies have a different way. They hope to automate choices, both large and small, that we make as we float through the day. It’s their algorithms that suggest the news we read, the goods we buy, the path we travel, the friends we invite into our circle. (Foer 2017, Prologue)

Digital technology companies harvest data on individual behavior so they can predict and influence behavior and, thus, sell advertisements targeted to the individual. Further, they design “automatic digital nudges that subtly push people toward the specific behaviors favored by the company” (Zuboff 2019, p. 295). The World Bank, in its generally positive report on *Digital Dividends*, finds that digital technology may have detrimental impacts on memory and other “cognitive capacities and socialization” (2016, p. 261).

Digital technologies disrupt labor markets, harming communities and social cohesion. Technology's champions have been reluctant to acknowledge this problem, being "steeped in the belief that technology inevitably leads to better jobs and higher pay" (Porter 2019, p. A-17). Indeed, this beneficial result accrues to many, but not to all. Lawrence Summers, a former Vice President of the World Bank, predicts that due to automation and globalization some workers may be unable to earn a living wage, which will weaken families and communities (Porter 2019, p. A-17).

The digital revolution allowed companies to offshore work to lower-wage countries such as Mexico, Ireland, and China. As a result, "previously thriving home local economies began to wither... Modern globalization had arrived and it was very much the result of connecting computers" (Arthur 2017, p. 3). The offshoring of jobs creates both "winners" and "losers" and may not be a net loss to humanity. As digital technology advances, however, more jobs will simply disappear. Low-skill, low-wage workers engaged in "rote, rule-based" tasks are the first to be displaced by robotics and artificial intelligence (AI) (Muro et al. 2017, p. 8). Less-educated workers in developing countries, who recently benefitted from offshoring, are particularly at risk (Bremmer 2018). For a time, workers who possess advanced digital skills may find themselves in higher demand with increased earnings; industrial robots have been shown to "increase productivity and wages" for some workers while reducing overall employment (Acemoglu and Pascual 2017, p. 6).

As digital technology advances up the employment ladder, however, higher-skill workers are also at risk. Bremmer predicts that "two-thirds of jobs in the finance and insurance sectors are likely to disappear once computers can understand speech as well as humans do" (2018, p. 16). Arthur finds that "even high-end skilled jobs such as radiologists are being replaced by algorithms that can often do the job better" (2017, p. 6). All countries are impacted by these developments. Fifty-seven percent of jobs in OECD countries could be automated over the next two decades (Acemoglu and Pascual 2017, p. 1), and in China, "Guangdong province recently announced a program to automate 80 percent of its factories by 2020, by substituting human labor with robots" (World Bank 2016, p. 328).

The digital revolution creates new jobs, but the question is whether sufficient new jobs will be created to replace those lost to technological advance and how many workers will be able to make the transition. "From a technological standpoint, fewer than half of today's schoolchildren in China, Croatia, or Thailand can expect to find a job in an occupation that exists today" (World Bank 2016, p. 100).

Since women and minorities often have less access to the advanced education required for technology-enhanced jobs, the digital revolution exasperates biases in wages and job opportunity (Muro et al. 2017). The same dynamic aggravates inequality within countries as communities with the highest concentration of highly skilled workers pull further ahead of others. "Digitalization may be contributing to worker pay disparities, the hollowing out of job

creation, and the divergence of metropolitan economic outcomes” (Muro et al. 2017, p. 380). The “widening bifurcation of the digital economy into high- and low-wage sectors” is increasing inequality (Gardels and Berggruen 2019, p. 23).

Economic polarization exacerbates social fragmentation. As Piketty warns, a polarizing market economy “contains powerful forces of divergence, which are potentially threatening to democratic societies and to the values of social justice on which they are based” (2014, 571). Life becomes a struggle of “us” versus “them.” “Them” status can be attached to foreigners, racial-ethnic or religious minorities, the wealthy, members of a different political party, or residents of a different region (Bremmer 2018, pp. 2–3).

By contributing to social fragmentation, the new globalization leads to a “crisis of connection” (Brooks 2018, p. A-31). Displaced members of the middle and working classes are less likely to attend church or know their neighbors and less likely to be married than at any other time in recent decades. “In short, they have fewer resources to help them ride the creative destruction that is ever-present in a market economy” (Brooks 2018, p. A-31). In the United States, loss of social cohesion is contributing to a recent, unexpected drop in life expectancy (Case and Deaton 2015; Eberstadt 2017).

Globalization threatens the basic human need for a sense of belonging (Gardels and Berggruen 2019). The “naïve people, the free-marketers and globalizers, did not know what they were doing” as they dismantled social and economic ties that afford meaning, purpose, and stability to local communities (Mishra, as cited in Gardels and Berggruen 2019, pp. 167–168). As jobs disappear, members of a community lose their sense of “internal affinity.” Displaced by digital processes, workers feel irrelevant and marginalized, with “a sense of things falling apart, and a quiet anger about immigration, inequality, and arrogant elites” (Arthur 2017, p. 25). Betrayed by the status quo, they seek to regain control of their fate by embracing disruption as evidenced in the Brexit vote, the Trump presidency, and support for France’s Le Pen (Gardels and Berggruen 2019).

NEGATIVE IMPACTS ON NATION-STATES

Nation-states are also threatened by these trends. In times of disruption and insecurity, political consensus and effective public policy become ever more elusive. Rather than providing a platform for persuasion, dialogue, and negotiation, social media “amplify the human tendency to bind with one’s own kind,” and information silos reduce dialogue on complex issues to “echo chambers of the like-minded” (Gardels and Berggruen 2019, p. 28). As the Arab Spring revealed, the social media tools that topple dictators can also tear societies apart (Gardels and Berggruen 2019).

Because of the enhanced, cross-border flow of ideas, information, money, services, goods and people, “national leaders have increasingly limited ability to protect the lives and livelihoods of citizens” (Bremmer 2018, p. 8). This

undermines confidence in government; workers know their jobs are threatened and that governments have limited capacity to stem the disruption (Bremmer 2018). With their relatively young populations, developing nations are at particular risk. Youth unrest emerges when young people “fear their country has no place for them,” their education attainments will not improve their lives, and the government is uninterested or unable to make a difference (Bremmer 2018, p. 58).

As global corporations expand their power relative to nation-states, they foster competition among nations in a “race to the bottom.” They “threaten to leave the country in search of lower labor costs” (Stiglitz 2017, paragraph 16). The Apple Corporation, whose existence was enabled by U.S. laws and institutions, “parked its intellectual property in an Irish subsidiary so it could avoid paying taxes in America and support those institutions. It saved \$9 billion in 2012 alone” (Brooks 2019, p. A-23). “Financial institutions operate across territories with little respect for borders, wreaking havoc on the ability of countries to plan for a sustainable future” (Slobodian and Kentikelenis 2019, paragraph 3).

In their “home” countries, powerful corporations may pressure politicians to reduce corporate taxes; this forces citizens to pay more of the tax burden, forces the government to reduce services, or both (Bremmer 2018, p. 28). Nations are also compelled to compete for highly mobile capital by easing regulations, tolerating pollution, or ignoring labor standards (Sachs 2011). In the United States, the share of GDP paid in federal income taxes by corporations declined from 3.8 percent to 1.8 percent in recent decades (Sachs 2011, p. 100). Ultimately, the competition leaves all nations with less capacity to regulate and moderate their economies. “The biggest loser ends up being internationally immobile labor, which is likely to face higher taxation to compensate for the loss of taxation on capital” (Sachs 2011, p. 94). The World Bank urges nations to find a balance between economic efficiency and worker protections to avoid a “race to the bottom” (2016, p. 118).

Democratic nations are threatened when advanced technology is used to reduce validity of elections. During the 2010 midterm elections in the United States, Facebook researchers conducted experiments in “nudging” voter behavior. In an experiment involving over 61 million (unwitting) Facebook users, researchers claim to have generated an additional 340,000 voters (Zuboff 2019, pp. 299–300). Behavior modification works in both directions, however; the power to “nudge” voting behavior means the ability to suppress as well as increase voting. In 2016, Cambridge Analytica, backed by several wealthy investors, purchased data on millions of Facebook users to prepare targeted political messages to influence the U.S. elections (Warzel 2019). Election interference is not limited to the United States; misinformation campaigns have “disfigured elections and social discourse in Indonesia, the Philippines, Columbia, Germany, Spain, Italy, Chad, Uganda, Finland, Sweden, Holland, Estonia, and the Ukraine” (Zuboff 2019, p. 508).

With diminished capacity to moderate their economies and safeguard elections, some nations turn to border walls as an answer. The burgeoning interest in border walls is “a classic symptom of a nation-state’s looming impotence in the face of globalization”; building walls fulfills a desire for “greater sovereign control” when the very concept of nation-state is in crisis (Abrahamian 2019, p. SR-1).

Neoliberal philosophy contributed to the new globalization and decline in government efficacy. In mixed economies, business, government, and civil institutions (nonprofits) play complementary roles. Neoliberalism discredits the role of government regulation, leading to the “relative lawlessness” of global corporate operations; it spread from North America to Europe and “continues to make inroads in every region of the world” (Zuboff 2019, p. 192). The pivot from a mixed economy to neoliberalism is evident in the inaugural speeches of U.S. presidents. In Franklin Roosevelt’s second inaugural (1937), he reminded citizens that government is “the instrument of our united purpose to solve for the individual the ever-rising problems of a complex civilization.” By 1981, as the new globalization was gaining steam, Ronald Reagan used his first inaugural to declare: “In this present crisis, government is not the solution to our problem; government is the problem” (Reagan 1981).

Neoliberal philosophy opened the door to “hyperglobalization,” a preference for “free trade rather than fair trade, unregulated global capital flows, cuts in the safety net and in public investment” (Gardels and Berggruen 2019, pp. 156–157). With insufficient revenue, governments cannot make needed investments in education and infrastructure, failures that further reduce confidence in the government. This negative spiral “quite justifiably generated a backlash” (Gardels and Berggruen 2019, pp. 156–157). Brooks (2019) agrees that the global spread of neoliberal philosophy had devastating effects, and he assigns wide-ranging responsibility:

A deadly combination of right-wing free-market fundamentalism and left-wing moral relativism led to a withering away of moral norms and shared codes of decent conduct. We ripped the market out of its moral and social context and let it operate purely by its own rules. We made the market its own priest and confessor. (Brooks 2019, p. A-23)

The populist backlash in developed countries confirms that the new globalization creates too many “losers” and weakens government capacity to mitigate the harm. Developing countries are not immune. From 2003 to 2012, several Latin American countries experienced strong economic and social development linked to the new globalization; these gains may diminish as economic activity shifts to workers in still poorer countries and to robotics (Sachs 2011; Castañeda 2019). To help shape a sustainable future, we must mitigate the negative effects of digital technology and globalization and find ways to spread the benefits more equitably.

To summarize, despite their many benefits, advanced digital technology and the new globalization damage individuals and communities in multiple ways. The harm occurs through reduction in cognitive capacities and capacity for “free will”; increased social fragmentation and reduced social “belonging”; weakened capacity to achieve policy consensus through discourse; increased divergence in wages and job opportunities; and accelerated “sorting” of regions and countries into economic “winners” and “losers” (bifurcation).

RESPONDING TO THE CHALLENGE

Several factors impede a strong response to this challenge. Digital tools ease daily activities, such as shopping and connecting with children, a profound convenience that diverts attention from negative impacts (Zuboff 2019, p. 383). Mesmerized by the stunning capabilities of digital technology, we often fail to notice how information silos and behavioral “nudges” affect our perceptions and behavior (Foer 2017).

Another impediment is the unprecedented nature of digitally enabled globalization; we lack templates for dealing with the unprecedented. The early twenty-first century may resemble the early colonial period when natives of the Western hemisphere welcomed European explorers as gods, dazzled by the superior technology (Zuboff 2019). Like those first Americans, open, democratic societies are vulnerable to unprecedented power: “[F]or centuries we have been on guard against state power... we were unprepared to defend ourselves against new global behemoths” (Zuboff 2019, p. 53). A further hindrance is fatalism, the belief that even if advanced technology and globalization are damaging communities and livelihoods, there is little we can do about it (Zuboff 2019).

When governments attempt to constrain the negative effects, their efforts sometimes fail due to outdated methods. In July 2019, the U.S. Federal Trade Commission imposed a \$5 billion fine on Facebook for mishandling user personal information (Wilson 2019). Critics noted, however, that Facebook’s *first quarter* revenue for 2019 was \$15 billion and that shortly after the penalty was announced Facebook shares traded at their highest level of the year (Kang et al. 2019, p. A-1). One critic warned that with such an “outdated framework” it may be “structurally impossible” for the government to hold major media companies accountable in a meaningful way (Warzel 2019, p. A-18).²

If economic and social disruptions continue, governments may become more autocratic in response. For instance, governments may use advanced digital technology to monitor citizens and quell civil unrest; China’s “social credit” system and India’s Aadhaar system are viewed as potential prototypes for this

²It may be too early to judge the impact of this enforcement action. When the fine was announced, FTC commissioners also urged the U.S. Congress to pass comprehensive privacy and data security legislation to strengthen the government’s position in relation to global media companies.

response (Bremmer 2018, pp. 125–128). Likewise, the World Bank warns that the Internet could become “a tool for state control and elite capture” (2016, back cover).

But the future is in our hands. Brynjolfsson (2019) calls for a stubborn, “mindful optimism,” noting, “We have immense choice in how we organize things. We can reorganize to benefit the many or the few.” The World Bank calls for “analog complements” to tame the harmful impacts of digitally enabled globalization and ensure the benefits are more widely shared (2016, p. 2). “Analog complements” include improved regulatory regimes to reduce monopoly power and ensure competition; stronger governments that are accountable to their citizens; and improved education to help workers adapt to the new economy. Other proposals include labor market reforms and provisions for guaranteed, basic incomes. Resonating throughout these proposals is a return to “mixed” economies, where governments reclaim a proper, accountable role vis-à-vis global corporations and civil institutions.

Various proposals are discussed separately, below, but they would integrate at the level of implementation. For instance, to tame monopolies or strengthen labor market protections, improved regulatory regimes and accountable governments are required.

Constrain Monopoly Power

Several scholars call for constraining (or even “breaking up”) monopolies due to their negative impact in social, political, and economic realms. Per Foer (2017), global technology companies have a “spiritual yearning” for monopoly.³ Monopolies inhibit new entrants to markets and stifle economic opportunity: “[T]he absence of a competitive business environment can result in more concentrated markets, benefiting incumbent firms” (World Bank 2016, p. 3). The economics of the Internet favor natural monopolies,” threatening to undo the benefits of digital technology (World Bank 2016, p. 3).

The combination of rapid technological change and market concentration diminishes upward mobility. This is especially detrimental for communities and countries trying to catch up to the global elites. “Digital capitalism has created new information monopolies and, along with the explosion of finance, concentrated wealth in the top 5 percent” (Gardels and Berggruen 2019, p. 56). If market concentration by a few powerful companies is not mitigated, we will see “greater divergence between and within countries, rather than convergence and catching-up” (World Bank 2016, p. 248).

Because several of the most powerful global corporations (Apple, Google, Facebook, and Amazon) are information gatekeepers, their market concentration can impede the generation and circulation of new ideas as well as entry of new businesses. Bremmer warns that as social unrest spreads in response to

³To be fair, leaders of diverse enterprises might yearn for monopoly power; this motivation is not limited to digital technology companies.

economic disruption, these gatekeepers could be pressured to impede the “transmission of information and politically resonant ideas” (2018, p. 102). Effective governments and regulatory regimes are instrumental in constraining monopolies.

Update Regulatory Regimes

Effective regulations do not stifle business; rather, they “even the playing field” and serve business as well as the public. “Rules of competition and behavior are the foundation of healthy, growing markets” (Lohr 2019, p. B-1). For instance, effective rules are needed to “make the world safe for A.I. — and let A.I. flourish” (Lohr 2019, p. B-1).

Regulations tend to lag technology and business innovation. Zuboff argues that large technology companies operate in a “lawless” environment, free from regulation, because their technical wizardry and global reach are unprecedented and because they arose when neoliberal philosophy had reduced public support for government regulation (2019, p. 192 and 495). In a “race to the bottom” to attract firms and capital, developed countries have reduced regulations that protect workers, protect the environment, and require balanced, truthful broadcasts over public airways (Sachs 2011, p. 96).

Many countries regulate network industries such as electric utilities and telecommunications. For example, regulations allow consumers to retain the same phone number when changing providers, leveling the playing field for new entrants. These models could be extended to Internet-based enterprises. The World Bank calls for new regulations for social media, digital marketplaces, digital payment systems, and the sharing economy so users can “change internet platforms with ease and at zero cost” (2016, p. 80).

There is momentum for regulatory reform. The European Union’s General Data Protection Regulation, effective 2018, limits how companies can use personal data (Zuboff 2019, pp. 481–482). The WTO already regulates some telecommunications services and is exploring ways to regulate data use and security (Bradsher and Bennhold 2019, p. B-3). Leaders of Japan, South Africa, China, and Germany have called for global oversight of the technology sector (Bradsher and Bennhold 2019, p. B-3). The Chancellor of Germany, Angela Merkel, urges social media companies to “make their algorithms transparent so users know how they are being steered” (Gardels and Berggruen 2019, p. 30) and calls for new ethical standards for AI, genetic engineering, and data ownership (Bradsher and Bennhold 2019). Recently, the U.S. Senate held hearings on Facebook’s plans for a virtual, global currency, having already held hearings on data privacy.

Some proposed regulatory reforms target financial practices. Slobodian and Kentikelenis (2019, paragraph 3) call for the “renationalizing” of finance:

There are nearly 200 sovereign countries, but globally only a few dozen banks matter ... Financial institutions operate across territories with little respect for borders, wreaking havoc on the ability of countries to plan for a sustainable future.

Other finance-related proposals include increased use of public investment banks, separation of commercial banking from investment banking, and giving employees a modest stake in the corporate dividends normally awarded to executives and stockholders (Slobodian and Kentikelenis 2019).⁴

Regulatory reform will be incomplete without campaign finance reform (Sachs 2011, pp. 61–62). In every region of the globe, businesses donate money to politicians, often donating across the political spectrum “to ensure government favours regardless of who ends up in power” (Falguera et al. 2014, p. 348). This sometimes results in “regulatory capture,” a situation where government agencies are dominated by the industries they are charged to regulate and serve the interests of the industry rather than the public. “Regulatory capture” may have contributed to two commercial plane crashes in 2018 and 2019 that claimed 346 lives (*The Economist* 2019).

Regulatory reform is a delicate task because government regulators can also go too far. “Fake news is bad, but a ministry of truth is worse” (Gardels and Berggruen 2019, p. 30). Daskal (2019) alerts readers to recent legislation in Singapore: intended to reduce “fake news,” the legislation may allow the government to access detailed records of individual Internet use. This legislation may be “a much bigger threat than any of the fake news or hate speech laws that have come before it” (Daskal 2019, paragraph 3).

More Effective, Accountable Government

Reform efforts hinge on effective and accountable governments. For example, the updated regulatory regimes needed to reign in monopolies, even the playing field, and encourage new entrants to markets will not accrue without effective and accountable governments (World Bank 2016). As “instrument[s] of our united purpose” (Roosevelt 1937), effective and accountable governments play a critical role in mitigating the negative impacts of advanced technology and globalization.

The neoliberals were wrong: strong markets cannot modulate and organize human affairs on their own. “The interaction between market and collective action is what leads to our prosperity” (Joseph Stiglitz, as cited in Cohen 2019, p. A-1). Absent the moderating influence of government, markets will become concentrated, less dynamic, and eventually will self-destruct (Piketty 2014). A mixed economy, in which commercial interests and democratic governance are appropriately balanced, “supports the market form while tethering it to society: balancing, moderating, and mitigating its destructive excesses” (Zuboff 2019,

⁴In the United States, regulations established in the 1930s (Glass-Steagall Act) prevented commercial banks from engaging in investment banking. This legislation was repealed in 1999).

p. 39). To counteract the “dead end of corporatocracy,” we must “regain a proper understanding of the complementary and balanced roles of government and the marketplace” (Sachs 2011, pp. 178–179).

Too many governments have gone “AWOL”⁵ (Sachs 2011, p. 105). Powerful corporations aided this process through “relentless lobbying and propagandizing” that sowed doubt among citizens concerning the role of government (Sachs 2011, pp. 178–179). These campaigns were successful; in several countries, the “money-politics-media trap” causes the public to lose faith in government (Sachs 2011, p. 236). Under the new globalization, governments have less capacity to protect and enhance the lives of citizens; this undermines faith in government and further reduces their capacity to act. Piketty (2014) finds these effects most visible in English-speaking countries. Governments must be restored to their proper role and held accountable: “Only markets and government operating as complementary pillars of the economy can produce the prosperity that we seek” (Sachs 2011, pp. 178–179; see also World Bank 2016).

This task will be difficult. In the United States, for example, “The revolt against a moribund political class has transmuted into a revolt against governance itself” (Gardels and Berggruen 2019, p. 2). Faith in government has declined in both developed and emerging countries (Zuboff 2019). Governments themselves must accept some responsibility for the cynicism. For instance, they sometimes fail to deploy new digital tools, such as online financial reports, to increase transparency and accountability (World Bank 2016).

Restoring faith in democratic governance, however difficult, is essential. Gardels and Berggruen warn that “the anger, alienation, and cynicism leading to the suicide of democracies” will not be resolved unless democratic practices and institutions are “reconceived for the digital age” (2019, p. 41). Further, “Remaking the relationship between citizens and government is much more likely than the construction of walls to create lasting security and prosperity for the greatest number of people” (Bremmer 2018, p. 167). Citizens, civil institutions, and enlightened business leaders must proactively help to restore government to its legitimate, accountable role (Bremmer 2018). Two leaders who accept this challenge are Warren Buffett, chair and CEO of Berkshire Hathaway, and Bill Gates Senior, co-chair of the Bill and Melinda Gates Foundation; both emphasize the necessity of government action to redress economic inequities (Clifford 2018; Wulfhorst 2010).

Finding the appropriate balance between freedom and regulation is an ongoing challenge; throughout history, the pendulum swings. Following World War II, national governments became more powerful as they coordinated the restoration of war-ravaged economies. During the 1980s, populations of several developed countries perceived (or were convinced) that government over-reached into economic affairs and that progress required

⁵AWOL—Absent Without Official Leave, an expression often used by the military to describe someone who is missing from their assigned post.

reducing the role of government in the economy. Once again, the pendulum may have swung too far; today's powerful business interests need to be counterbalanced by effective governments and civil institutions (Rajan 2019).

Education Reform

A frequent prescription for countering the dark side of digitally enabled globalization is to improve education and training. This is no surprise: improved education is a perennial, catch-all solution to social ills. The World Bank (2016) makes numerous statements about the need to educate and train workers so they are qualified for jobs in the digital economy, including those in artificial intelligence. Muro, Liu, Whiton, and Kulkarni (2017, p. 50) urge public officials to “work urgently with industry to expand their local pools of high-quality IT talent, knowing that the digitalization of everything will continue to expand the need for well-prepared technical talent.” They also recommend expanded internship and apprenticeship opportunities for workers without a college degree. Finally, they place significant responsibility on workers themselves, to “think much more seriously in the age of digitalization about what they can do that computers can’t” (Muro et al. 2017, p. 50).

Bremmer notes that even if the digital economy creates as many jobs as it destroys—which is doubtful—many displaced workers will not have the skills to “make the leap from the old world to the new” (2018, p. 48). Citing Singapore’s example, Bremmer calls for “individual learning accounts” to help workers retrain throughout their lives (2018, p. 142).

But “educationism” is a “trap” (Hanauer 2019). Certainly, education and training can help individuals and communities deal with advancing technology and the new globalization, but absent other reforms, it will not solve inequality. While many workers lack skills for the “high-wage” jobs of the future, the fastest-growing job categories are in low-wage occupations such as health-care support and food preparation (Hanauer 2019). Moreover, in advanced countries, real wages for college-educated workers have been falling. “Meanwhile, nearly all the benefits of economic growth have been captured by large corporations and their shareholders” (Hanauer 2019). Expanded opportunities for education and training (and better teachers!)⁶ are warranted but will not prove the panacea that many hope.

⁶Teachers are a frequent object of reform. In its report on the digital economy, the World Bank included these remarks on teacher training: “Rethink curricula and teaching methods. Today’s education systems need to prepare students for a career and not only a job. Modern labor markets require creativity, teamwork, problem solving, and critical thinking in ever-changing environments... teachers now must instruct students in how to find information and apply it in a new and unexpected context. This requires changes in teacher training” (World Bank 2016, 33).

Labor Market Reforms

Another proposed response is improved worker protections. In 1944, William Benton, a corporate executive, wrote in *Fortune Magazine* that peacetime prosperity depends on businesses accepting “necessary and appropriate” government regulation and labor unions (Leonhart 2018, p. A-27). In the latter twentieth century, however, the role of organized labor declined. As humans were displaced by automation and digital communications facilitated the offshoring of jobs, labor organizations lost members and bargaining power. This weakened the position of labor vis-à-vis owners of highly mobile capital. In 1994, the OECD recommended a loosening of labor laws and protections to foster more vigorous economies and allow enterprises to respond to market trends. For example, it urged members to “[r]eassess the role of statutory minimum wages” (OECD 1994, Part 3B). Such proposals stemmed from a belief that strong worker protections in European Union countries drove the relatively high unemployment rates in those countries (Freeman 2007).

Currently, scholars are reassessing the role of worker protections. In his study of the relationship between institutional arrangements (unionization, minimum-wage laws) and economic outcomes, Freeman (2007) finds no connection between institutional arrangements and levels of employment or unemployment, and specifically contrasts his results to the OECD (1994) study. He does find a relationship between institutional arrangements and income inequality: “[C]ountries that rely on institutions to set wages and working conditions have lower rates of inequality or dispersion of earnings,” and “inequalities are smaller in union settings” (Freeman 2007, p. 20). The OECD (2004) has modified its previous stance toward labor protections.

The co-founder of Microsoft, Bill Gates, has suggested a tax on robots, paid by firms that employ robots. Presumably, the tax would slow the displacement of human workers, and the funds could be used for worker retraining (Bremmer 2018, p. 143).⁷ Others propose that governments subsidize wages to encourage firms to hire lower-skill workers, especially for socially beneficial tasks such as elder care (Gardels and Berggruen 2019, p. 110).

Larry Summers, a former Vice President of the World Bank, expresses renewed interest in labor market protections. Once a champion of globalization, he now promotes the concept of “reasonable nationalism” in which international agreements are judged “by whether people as workers, consumers, and voters are empowered” (Gardels and Berggruen 2019, p. 159). A U.S. Senator has proposed legislation requiring that 40 percent of corporate board members be elected by employees, a version of Germany’s shared governance model (Leonhart 2018).

The World Bank warns that labor regulations must be carefully crafted to avoid harming workers. Actions that render human labor more expensive and

⁷Larry Summers, a former Vice President of the World Bank, responded: “What’s so special about robots?” In other words, perhaps the tax should apply to all machinery that does the work once performed by humans. (Bremmer 2018, p. 143)

“troublesome” may simply hasten automation and outsourcing, and low-wage workers are typically the first to lose their place (World Bank 2016, p. 280). Gardels and Berggruen (2019, pp. 98–99) promote a Scandinavian model:

Strengthening instead of weakening unions is key to improving equality -- but only if the unions don't resist innovation, but assist it and use their bargaining power to gain a greater share of the wealth created by productivity gains.

There is irony, however, in workers “assisting” innovation when it includes job-displacing innovations such as AI. The result may be a need for highly skilled workers, but fewer of them. This is an old problem. Einstein wrote that “[t]echnological progress frequently results in more unemployment rather than in an easing of the burden of work for all” (1956, p. 130). He felt the only solution was a “socialist economy” that would “guarantee a livelihood to every man, woman, and child” (Einstein 1956, p. 130).

Universal Basic Income

Universal basic income (UBI) involves the unconditional transfer of cash to adult (and sometimes youth) members of a jurisdiction regardless of wealth or other income. Proposals vary in detail, such as whether the recipient is defined as an individual or a family. When transfers depend on criteria such as income level or work requirements, or when the form of transfer is “in-kind” (food, utilities, medicine, etc.) rather than cash, the program is no longer a true UBI. In practice, true UBI programs are rare, but experiments continue. UBI programs have been conducted in Brazil, Peru, Canada, Netherlands, Iran, Scotland, Indonesia, and the United States with varying success (Bremmer 2018; Hanna and Olken 2018). Frequently, UBI programs involve a specific village or city rather than an entire nation (Hanna and Olken 2018). Cash transfer programs in Iran and the U.S. state of Alaska are cited as the truest examples of UBI, while programs in Indonesia and Peru are narrower in focus (Hanna and Olken 2018).

UBI proposals ebb and flow with changing circumstances (Henderson 2015; Caputo 2012; Furman and Seamans 2019). Today, support for UBI is burgeoning as advances in digital technology and the new globalization displace workers. The problem is how to organize distribution when digital capitalism is “divorcing productivity and wealth creation from employment and income” (Gardels and Berggruen 2019, p. 2). In the transportation and construction sectors alone, driverless vehicles and 3-D printing threaten millions of jobs: “It takes a better imagination than mine to come up with new blue-collar occupations that will replace more than a fraction” of these jobs (Murray 2016, paragraph 12). Moreover, where AI does not displace humans, it may not bode well for workers: “[G]oing forward it is reasonable to expect that to the degree that AI does not displace labor, part of that will be because relative wages adjust, in other words, that inequality rises” (Furman and Seamans 2019, p. 174).

There are several arguments favoring UBI. In times of slow economic growth or heavy wealth concentration, broad-based redistribution is necessary to sustain consumer demand and prevent economic contraction (Caputo 2012). While UBI programs are costly, they may cost less than the existing, overlapping social welfare programs they are meant to replace (Henderson 2015; Murray 2016).⁸ Further, UBI may stimulate innovation and entrepreneurship as individuals take more business risks, knowing their basic survival needs are met (Furman and Seamans 2019). In his bold proposal, Murray (2016) argues that UBI may even change individual conduct for the better because relative (or absolute) poverty would no longer be an excuse for irresponsible, self-destructive behavior. “The availability of a guaranteed income wouldn’t relieve individuals of responsibility for the consequences of their actions. It would instead, paradoxically, impose responsibilities that didn’t exist before” (Murray 2016, paragraph 27). For example, since family formation is related to economic circumstances, he anticipates an increase in marriage rates and fewer births to unmarried women.

Scholars debate whether UBI would cost more or less than the current social programs it is intended to replace. Murray (2016) projects a cost savings if the United States adopts his version of UBI *in every detail*, but Henderson (2015) reports that UBI may cost twice as much as the current, anti-poverty programs. Interest groups would fight to preserve their favorite programs, so UBI would become a supplement to other social programs rather than a replacement (Henderson 2015). Some arguments against UBI are based on moral or psychological concerns. Caputo (2012, p. 12) writes that in Mexico, one obstacle to UBI is “overcoming the Biblical mandate to the effect that he who does not work does not eat.” In Japan, proponents of UBI must contend with “an entrenched work ethic that distains any proposal perceived as promoting ‘free riding’” (Caputo 2012, p. 12).

In 2003, Brazil launched a means-tested cash transfer program, *Bolsa Família*. Directed at specific income levels and not a true UBI, it is considered an important step. Per an architect of *Bolsa Família*, when people realize the benefits of UBI, this acceptance will lead to “an effective expansion of income transfer programs to new countries” (Suplicy 2007, p. 12). Yet in 2016, Swiss voters rejected a nation-wide UBI; among other reasons, voters feared that UBI would simply draw new migrants to Switzerland, endlessly increasing the cost of the program (Minder 2016).

⁸Murray (2016, paragraph 7) stresses this point in arguing for UBI in the United States: “UBI is to be financed by getting rid of Social Security, Medicare, Medicaid, food stamps, Supplemental Security Income, housing subsidies, welfare for single women and every other kind of welfare and social-services program, as well as agricultural subsidies and corporate welfare. As of 2014, the annual cost of a UBI would have been about \$200 billion cheaper than the current system. By 2020, it would be nearly a trillion dollars cheaper.”

Most UBI proposals involve redistributing wealth through taxation. Gardels and Berggruen, (2019, p. 82) extend this concept and propose “pre-distribution” of wealth and reduction of inequality by giving all citizens an equity share in the robots creating future wealth. “For example, each new robot in an autonomous vehicle fleet could be fractionally owned by every member of the community in which it operates” (Gardels and Berggruen 2019, p. 108). This “universal basic capital” would supplement UBI; a dual approach is necessary, for by itself UBI is too expensive to sustain. The notion of society providing basic income “must also imply social obligations” (Gardels and Berggruen 2019, p. 110).

Will current proposals for UBI fade, as in past decades, or develop into more wide-spread adoption? Given the disruptions caused by advanced technology and the new globalization, “the case for ‘this time is different’ has a lot going for it” (Murray 2016, paragraph 11). Furman and Seamans (2019) agree that this time is different but believe the most likely, near-term response may be wage subsidies such as cash supplements to low-wage workers or tax breaks to encourage companies to hire human workers.

International Cooperation

Implementing the proposed reforms may require increased international cooperation. When countries engage in a “race to the bottom” (World Bank 2016, p. 118) to attract capital and investment, it contradicts efforts to update regulations on worker and environmental protections and financial practices. In early 2019, the market capitalization of Apple Corporation was almost one trillion dollars, larger than the GDP of all but two European Union countries (Kravitz 2019). Given the power and reach of global “corporatocracy” (Sachs 2011, p. 105), increased international cooperation among governments and civil institutions seems the only, realistic choice. Existing coalitions, such as the European Union and the Organization of American States, could lead these efforts. Sachs recommends that at minimum, countries band together to set minimum standards in worker and environmental protections (2011, 100). Lohr (2019) cautions that international agreements should be broad-based and inclusive so that policy-making is not left to superpower nations.

International cooperation is easier to prescribe than achieve. At the 2019 meeting of world leaders in Davos, Switzerland, there were calls for international cooperation on data governance, but the enthusiasm was not unanimous. A Chinese leader made this observation:

It is imperative to respect national sovereignty and refrain from seeking technological hegemony, interfering in other countries’ domestic affairs and conducting, shielding or protecting technology-enabled activities that undermine other countries’ national security. (Wang Qishan, as cited in Bradsher and Bennhold 2019, p. B-3)

While it will not be easy to tame the negative impacts of the new globalization, several scholars and public officials have proposed credible responses. These include constraints on monopoly power; updated regulatory regimes (broad regulatory reform); renewed emphasis on mixed economies including effective, accountable governments; expanded, more equitable opportunities for education and training; labor market reforms, including collective bargaining protections; universal basic income schemes; and increased international cooperation among governments and civil institutions.

CONCLUSION

This chapter illuminates the “dark side” of the new, digitally enabled globalization by summarizing its negative impacts on individuals, communities, and nation-states. These impacts lead to social and economic disruption that will worsen if not addressed (Bremmer 2018; Sachs 2011). Developing countries that benefitted from the new globalization in recent decades are especially vulnerable and could see the benefits reversed (Bremmer 2018). The new globalization contributes to growing inequality between countries and within countries, reducing social cohesion (Muro et al. 2017). By fostering “information silos,” digital communication inhibits consensus-building on how to respond to the new globalization, exasperating social fragmentation.

Drawing from recent literature, this chapter reviews several proposals for mitigating the negative impacts of the new globalization. At the level of implementation, various proposals will meld. For instance, more effective governance is required to curb monopolies, update regulations, or enact labor market reforms. Given the global reach of digital communications and the “corporatocracy” (Sachs 2011, p. 105), international cooperation may be instrumental in implementing other forms.

Leaders of business, large and small, must be proactive in mitigating the negative effects of the new globalization. Reducing disruption is necessary to a stable business environment. Moreover, the higher calling of a business leader is to promote a just and equitable society:

As creators of wealth and prosperity, businesses and their leaders must find ways to make a just distribution of this wealth to employees (following the principle of the right to a just wage), customers (just prices), owners (just returns), suppliers (just prices), and the community (just tax payments and other contributions to the community). This applies at every size and level, from the smallest local business to worldwide enterprises. (Dicastery for Promoting Integral Human Development 2018, p. 17)

Further, “stewardship of the environment, both physical and cultural” is part of the business leader’s vocation (Dicastery for Promoting Integral Human Development 2018, p. 17).

One need not be religious to recognize the higher calling of business. In 2019, nearly 200 CEOs from diverse, global industries issued a “Statement on the Purpose of a Corporation,” which expands the notion of stakeholder to include customers, suppliers, employees, communities, and the natural environment rather than just shareholders (Business Roundtable 2019). This brief statement embodies a recognition that corporate leaders should not ignore the negative impacts of the new globalization and that remedies are required to avoid social breakdown. Business leaders should help restore a proper balance between business, government, and civil institutions to ensure a stable, sustainable business environment.

Enlightened business leaders are taking steps to rebuild community and preserve social and natural environments. Takeda, a global pharmaceutical corporation, gives employees paid time off to volunteer in the local community. It also makes monetary donations to organizations where its employees volunteer 30 or more hours per year and matches employee charitable contributions up to \$5000 per year (Takeda 2019). These actions promote social integration and a balanced economy. Neste Corporation, based in Finland, provides an example of promoting environmental sustainability. Originally in the petroleum refining business, Neste has redirected over 50 percent of its investments to sustainable products such as renewable biofuels (Strauss 2019).

Education is a significant factor in determining how individuals and communities are impacted by digitally enabled globalization (World Bank 2016; Muro et al. 2017). Education institutions should be aggressive in providing increased access, including new delivery methods. They should partner with industry to promote internships and apprenticeships, and should strive to serve those who often have less access to advanced, technical education: women, minority groups, and those outside of urban centers (World Bank 2016). As noted earlier, however, education improvements must be coupled with other reforms. Otherwise, advanced education will simply help determine who “wins” by signaling which individuals have attained the highest skills and therefore should be admitted to good jobs, without lowering the overall level of inequality. In fact, some researchers believe that higher education is contributing to income inequality (Carnoy 2011; Muro et al. 2017).

Neoliberal philosophy permeated much of society in recent decades, and business faculty at universities were not immune. Business faculty should ensure their curricula and learning materials reflect diverse perspectives rather than a sole emphasis on any one philosophy; critical perspectives should be included.

Policy makers should recognize that healthy societies depend on business, government, and civil institutions all playing a significant role; they should not allow decision-making to be captured by any single sector (Rajan 2019). Above all, they should avoid a “race to the bottom” to attract business investment. To fulfill this goal, policy makers may need to coordinate with other governments and civil entities to strengthen their position vis-à-vis large, global corporations.

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PART III

Corporate Sustainability in the Digital Era



Building Skillful Resilience Amid Uncertainty

Jacqueline Jing You, Mai Chi Vu, and Christopher Williams

INTRODUCTION

A globalized and increasingly digitalized economic system has caused profound changes to the way organizations operate and are managed. Recent global events associated with technological, social-political, and environmental changes have challenged the conventional notions of globalization that were at the core of international business, economics, and politics. On top of these issues, the world has become more digitally interconnected and complex. This in itself presents both opportunities, such as those brought about through digital transformation of business activity (Andal-Ancion et al. 2003), and risks, such as the threats to organizations from cyber-attacks and data protection breaches (Von Solms and Van Niekerk 2013). Researchers have also begun to show that organizations can learn through internet-based social networks, and how this ‘cyber-learning’ can help them cope with the complexity of the external environment (Williams et al. 2020a). The digital era promises to bring new opportunities and risks in areas such as 5G, automation and artificial intelligence, and quantum computing. These trends are part of an increasingly complex digital environment that is as uncertain and unpredictable for organizations as never before.

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Notably, most organizations form purposeful relationships with external organizations—through what are commonly referred to as inter-organizational relationships (IORs)—in an attempt not only to satisfy their ancillary needs and attain their objectives but also to share risk and knowledge, as well as cope with uncertainty (e.g., Barringer and Harrison 2000; Oliver 1990). Certain aspects of IORs (e.g., a higher level of interdependence), however, can also become a source of uncertainty that creates greater vulnerabilities (e.g., Brusset and Teller 2017; Bode et al. 2011), especially in an increasingly digital ecosystem. The digital threat is real and immediate—and growing rapidly (Bughin and Van Zeebroeck 2017). Disruptions experienced by one organization in a digital value chain can quickly permeate throughout the whole chain and result in a major crisis (e.g., Craighead et al. 2007). Hence, the ability of an organization to both anticipate and react to these challenges will be a determining factor in how likely it is to sustain itself and survive. Such resilience in organizations has been increasingly acknowledged as being the crucial capability to manage adversity and to “sustain competitiveness and remain viable within uncertain environments” (Burnard and Bhamra 2011: 5581).

This chapter aims to provide a fresh look at how an organization can prepare for, respond to, and recover from disruptions in an increasingly turbulent and unpredictable digital environment. We first start by discussing disruption in organizations across a spectrum of analytical levels from creeping development (e.g., unnoticed [Perrow 1984], pluralistic ignorance [Weick 1990, 1996]) to sudden shock (e.g., earthquake [Williams and Shepherd 2016], terrorist attack [Pearson and Clair 1998]). This allows a reflection on the past, with research and academic debate on various types of disruptions, and provides an informed insight into resilience with a focus on the digital future. Following this, by incorporating an ecological view (Holling 1973), characteristics of resilience in organizations and management are discussed. Through a journey from disruption to resilience, the question of how to understand resilience in organizations is raised. We argue that cultivating resilience is a learning process that can be enhanced through attention and connectivity. Drawing on the Buddhist concept of skillful means (SM), we develop a new concept—*Skillful Resilience* (see Fig. 19.1)—which emphasizes a non-static approach to preparing for and responding to the disruptive digital era.

DISRUPTION IN ORGANIZATIONS

Organizations, viewed as social and open systems, are involved in both routine events that reinforce a stable organizational structure over time and non-routine events that can lead to change (Morgeson and Hofmann 1999). Events that require change are often seen as disruptive in nature and described as threat, crisis, adversity, accident, surprise, critical, shock, and so on. Moreover, Morgeson, Mitchell, and Liu (2015: 515) point out that “events can originate at any hierarchical level and their effects can remain within that level or travel up or down throughout the organization, changing or creating new behaviors,

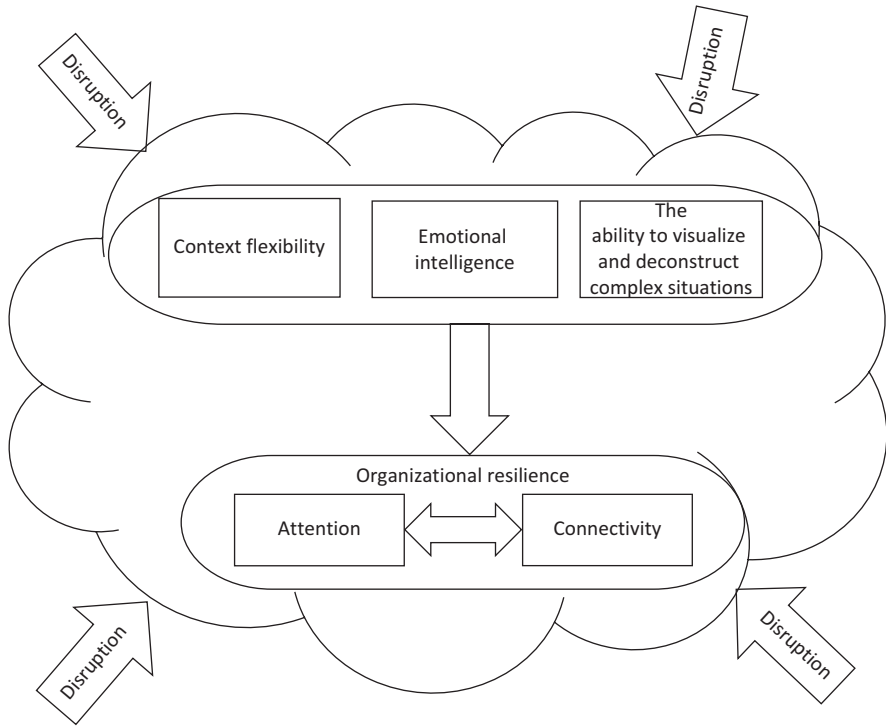


Fig. 19.1 Building skillful resilience amid uncertainty. (Source: Authors' creation)

features, and events.” Indeed, disruption emanates from the environment where organizations operate, including both objective and perceived environment (Bourgeois 1980). Thus, the term ‘uncertainty’ in the context of organizations emerges to describe a situation in which an organization is unable to predict firm performance due to, for example, a lack of sufficient information or an inability to discriminate between relevant and irrelevant data (Gifford et al. 1979).

Despite the numerous terms used to describe disruptions, two common attributes emerge: *creeping development* and *sudden shock*. The former attribute, grounded in a process-oriented perspective, categorizes disruption as “the gradual development of situations that stretch a group’s resources to the point of impairment” (Kahn et al. 2018: 512) with distinctive characteristics: complexity, emergingness, and interactivity. The latter reflects a variance-oriented perspective that views disruption as a discrete event. According to Cunha, Clegg and Kamoche (2006), suddenness refers to an unexpected issue that leads to either foreseeable or unforeseeable issues or processes with distinctive characteristics: novelty and incomprehensible situations.

RESILIENCE IN ORGANIZATIONS

Resilience is often germane to the concept of sustainable development (Holladay and Powell 2013; Xu et al. 2015) due to its influences on the three pillars of sustainability: social, economic, and environment. Resilience in organization and management has been increasingly acknowledged as a crucial capability to manage adversity and to sustain competitive advantages within an uncertain environment (Williams et al. 2020b). The term ‘resilience’ was developed by the Canadian ecologist Holling (1973), who discovered two distinctive system properties: stability and resilience. The stability property refers to the ability of a system to return to an equilibrium state after perturbation; often measured with the degree of fluctuation around specific states and the speed of returning to the equilibrium state. The resilience property is related to the ability of a system to absorb changes while maintaining the relationships in the system. A system can be very resilient while having low stability because of, for example, much fluctuation (Holling 1973). One possible explanation of this phenomenon is that there are multiple stable equilibria that enable systems to absorb unforeseen changes and disturbances while maintaining their essential functions and structures, together with the relationships between populations (Holling 1973).

The ecological perspective regarding resilience has served as the basis of resilience studies in many disciplines, each focusing on different aspects of resilience. Economic and engineering resilience, for example, tend to focus on the stability of systems (Perrings 2006; Limnios et al. 2014). Resilience in psychology, however, focuses on developing a set of combined abilities and characteristics that enable an individual to cope more effectively with stress and adversity across the life span (Conrad 1999). In social systems (e.g., communities, organizations, and groups), resilience involves not only absorbing or persisting through disturbances but also adjusting to and learning from the environment (Ortiz-de-Mandojana and Bansal 2015). Consistent with this, we define organizational resilience as a learning process to enhance the capability of an organization in continually anticipating and adjusting to adversity from various forms of disruptions.

LEARNING TOWARD ORGANIZATIONAL RESILIENCE

Rather than being a static attribute, resilience in organizations can be created, maintained, and changed over time through deliberate intent and actions. Ortiz-de-Mandojana and Bansal (2015) point out that resilience is a dynamic process in which organizations can develop by noticing and correcting maladaptive tendencies. Barton and Kahn (2019) also argue that organizational resilience emerges when an organization is able to realize its behavior and situation in a complex environment through collective sense-making and acknowledging the emotional experiences of members during adversity. Scholars have noted the importance of a softer, emotional aspect to coping with disruption in

the digital environment (Alkali and Amichai-Hamburger 2004). This enables members of organizations to become available in terms of sharing and interpreting relevant information, which creates meanings to drive effective operational responses to disruption.

Learning plays an important role in building organizational capacity for resilience. Risk faced by organizations has been referred to as “the ever-present potentiality of catastrophe” (Hallgren et al. 2018: 125). Learning enhances organizational capacity to detect problems and issues in the early stages, which enables organizations to re-organize resources in order to protect against or react to disruptions. Moreover, some devastating consequences are triggered by extreme and sudden events outside the core operations of organizations (Hallgren et al. 2018) (e.g., the Notre Dame cathedral fire). This means that the formal structures and processes organizations establish are temporarily paralyzed in response to the sudden disruption. Christianson, Farkas, Sutcliffe and Weick (2009) argue that organizational learning from disruption can be improved through an appropriate revision of response repertoires. ‘Response repertoires’ refer to the accumulation of routines, habits, and rules that have formed experiences, and the ability to recombine portions of this accumulated experience in novel and informed ways.

However, organizations face a number of challenges in terms of learning to become more resilient. First, organizational learning from disruption shows a discernible bias toward extreme events because, compared to minor accidents (Madsen 2009), extreme events tend to promote learning at various levels (individuals, teams, organizations, and industries). Second, research shows that, as the effects of serious errors and disastrous events fade over time (Haunschild et al. 2015), organizations learn little from their failures. This reflects how organizational decision-making is still driven by profit in some industries (e.g., Starbuck 2009) rather than engaging with changing societal expectations. Third, learning occurs when the members of an organization revise their beliefs in a way that, when the beliefs are acted on, the organization’s performance improves (Huber 2004).

THE SKILLFUL MEANS APPROACH

The skillful means (SM) approach, which emerges from a Buddhist concept, is a non-static approach to responding to changes, complexities, and unexpectedness. It requires context-sensitively customizing and reconstructing relevant approaches (Schroeder 2004). Skillful means in Buddhist philosophy emphasizes how something is taught rather than the context of the teaching itself (Vu et al. 2018) and this was used by Buddha himself to contextualize his version of truth to different audiences and contexts. In other words, SM is an approach that guides individuals to deconstruct complex contexts and uncertainties effectively. While it is a familiar concept and practice in Buddhist philosophy, it has only been applied in a limited number of organizational studies, such as

that by Vu and her colleagues on corporate social responsibility (Vu 2018) and organizational mindfulness (Vu et al. 2018).

We believe this approach can be applied in organizations, particularly in complex digital contexts. This is because the underlying assumption is that any form of disruption an organization experiences or faces can lead to various degrees of organizational ‘suffering’. Suffering as a consequence of disruptions can exist in forms of, for example, extreme attachment to profit maximization, and of striving for maximum competitiveness in the contemporary digital era. The consequence of this may prevent organizational sustainability because such pursuits reflect a greed, which is considered as the fundamental source of suffering in Buddhism.

Drawing on the SM approach, such ‘suffering’ can be surmounted through skillfully and context-sensitively managing different circumstances on the basis of the ‘right’ understanding of the nature of disruption: its transience and impermanency. This calls for heightened awareness and context-sensitive responses. The notion of ‘right’ does not imply moralistic judgment but ethical discernment between what is skillful and what is unskillful in differentiating between what leads to suffering and what to genuine happiness (Brito 2014). To facilitate the ‘right’ understanding of phenomena, the ‘noble eightfold path’—part of the ‘four noble truths’ in Buddhism—provides eight principles aimed at liberating ‘suffering’ through knowledge and wisdom. These are right mindfulness (training of higher moral disciplines based on moment awareness and past experience), right speech (abstaining from slanderous and harsh speech), right effort (enhancing self-efficacy through constant diligence), right concentration (intensifying the relative amount of substance needed to adjust to the situation), right livelihood (ensuring that one earns one’s living in a righteous way), right intention (goodwill in actions), right action (refraining from unwholesome deeds that occur as a natural means of expression), and right view (evaluating phenomena through sustained attention to have a comprehensive understanding) (eight Rs) (Bodhi 2011).

This approach is viewed as a distinctive practice that helps achieve higher moral discipline, higher concentration, and higher wisdom through skillfully selecting or combining the eight Rs (Bodhi 2011). Three crucial principles of SM can be identified which allow organizations to adapt to new environments: context flexibility, emotional intelligence, and the ability to deconstruct complex situations.

Context flexibility—this is the adaptability of an organization in a context-sensitive and context-relevant manner. Corruption, for example, is considered a harmful and unethical practice in the West. It is, however, commonly acceptable in the developing world due to weak legal systems and institutionalized bribery (Davis and Ruhe 2003). When dealing with ethical issues in different circumstances, it is imperative to realize that each ethical issue is contextually bounded, and this not only requires a context-sensitive way of responding but also consideration of the impact of actions on sustainable development (Vu et al. 2018). When dealing with disruptions under uncertainty, individuals in

organizations (as well as organizations themselves) are often confronted by a need to make clear decisions under ethical ambiguity (Holian 2002). In this sense, context matters. Organizations involved in strategic digital programs need to adapt their resource allocations over time in a way that is relevant to the context while reducing the possibility that knowledge is ‘lost’ as a consequence of ongoing digital disruption (Williams and Durst 2019).

Emotional intelligence—this is the ability to skillfully diagnose and identify authentic and inauthentic emotional expressions to respond to multiple cultural and contextual variations. There is no universal way of cultivating emotional intelligence in dealing with dilemmas or contextual challenges. For example, unskillful free expressions of personal emotions or critical expressions will very likely to be considered offensive in Eastern face-saving cultures compared to Western cultures. Sometimes referred to as emotional quotient (EQ), this capability is a soft skill that is essential in a range of highly disruptive digital industries, such as management consultancy (Williams and You 2018; Williams 2019), and a range of settings where relational capital between actors is important for strategy and positive outcomes (Du and Williams 2017; Williams et al. 2020b). Change has an important human component. Individuals drive change with emotive language and rhetoric. Individuals affected by change may also put up resistance, raising the prospect of a politicized organizational area which is characterized by a heightened emotional state and which can eventually lead to the demise of the organization if not handled carefully (Mintzberg 1985).

The ability to visualize and deconstruct complex situations—underpinned by a holistic and systems approach to problem-solving. In an institutionalized system, there is a need to observe from ‘within’ and from ‘outside’ since this facilitates contextual sense-making for managers by retrieving what they might have forgotten, blending detached and absorbed, as well as mindfully coping to reduce and explore the equivocality (Guiette and Vandenbempt 2016; Weick and Westley 1999) of contemporary contexts. Such observations lead to complex mental models of organizational reality for decision-makers. One source of uncertainty—such as increasing threats in cyber-space—can be enough to make managers grapple with a range of scenarios and be unable in practice to make effective decisions. But adding in more sources of uncertainty, including those that originate internally from within the organization (e.g., staff turnover, health and safety breaches, corporate crime), and the sense-making capability of decision-makers, becomes extremely challenged. Systems thinking allows for an appreciation of complexity and the acknowledgment that problems are inter-related (Jackson 2003).

The core feature of this approach is non-attachment. According to ontological addiction theory, problems often arise when there is an “over-allocation of cognitive and emotional resources towards a particular object, construct or idea, to the extent that the object is assigned an attractive quality that is unrealistic and that exceeds its intrinsic worth” (Shonin et al. 2014:124). Consequently, different forms of desires and levels of attachment are generated, which threaten flexibility, reflexivity, and effective responses to changes

and disruptions. This approach does not imply short-term problem-solving to handle difficult situations but invites managerial exploration of potential contextual and ethical contradictions, and it heightens awareness of resilience for both decision-making and management learning in the long term.

TOWARD SKILLFUL RESILIENCE IN AN AGE OF DISTURBANCE

Adopting the SM approach embraces three capabilities—context flexibility, emotional intelligence, and the ability to visualize and deconstruct complex situations—which improve resilience in organizations through exploration and exploitation of learning experiences. According to March (1991), exploration encourages organizations to discover new opportunities that may involve innovation and invention, while exploitation involves increasing efficiency and productivity by utilizing existing resources. In the following section, we focus on discussing how organizations gain the ‘right amount’ of attention and connectivity, which are two critical sources for organizational resilience, through the SM approach to cope with disruption in the digital era.

Skillful Negotiations and Means for Wise Attention

Attention in organizations is not a unitary process but a variety of interconnected mechanisms, processes, structures, and outcomes that operate at various levels of analysis (Ocasio 2011). The concept of attention in organization science has a long, rich, and diverse history, which can be traced back to the work of Simon (1949) focusing on how an organization organizes its administrative behavior by channeling, structuring, and allocating its attentions. The topic has been at the center of classical studies of organizational decision-making (Ocasio 2011). In the behavioral theory of the firm, organizations are viewed as problem-solving entities with limited attentional capacity (Cyert and March 1963). The attention-based view of the firm (ABV) argues that attention in organizations shapes organizational adaptability (Ocasio 1977). Other scholars (e.g., Daft and Weick 1984) focusing on the cognitive perspective in organizational theory have also acknowledged the centrality of attention in managerial cognition but have viewed it as mainly being used prior to encoding, conceptual thinking (Corner et al. 1994), and attentional stability (i.e., mindfulness attention; Weick and Sutcliffe 2006). Strategic management scholars (Gavetti and Levinthal 2000) have applied this view to examining how stable interpretation of the environment shapes organizational action and adaptation because any change in interpretation is viewed as a change in the focus of attention.

Given that organizations are embedded in an environment of other organizations together with a complex of societal and cultural structures, we argue that attention is a critical source for organizing resilience in an organization. This is because attention helps to develop both the proactive capability—to capture details about the emergence of risks and to encourage informed

thinking in terms of action—and the reactive capability—to quickly identify resources and capabilities that can be reconfigured in solving problems. In the neuroscience literature, the concept of attention is viewed as central in explaining the limited information processing capacity of the human brain and therefore a varied range of stimulus mechanisms are investigated (Lavie 1995; Styles 2006). There are three common attentional processes: *selective attention*, *attentional vigilance*, and *executive attention* (e.g., Posner and Rothbart 2007; Corbetta and Shulman 2002). As noted by (Ocasio, 2011), although the findings of cognitive science are at the individual level, research on attention in organizations has also demonstrated similarities to these three forms.

Selective attention refers to individuals choosing to process a specific set of sensory stimuli at a moment in time because the human brain is incapable of coping with all external stimuli simultaneously. This is a bi-directional process of attention, both top-down (i.e., schema/goal/task-driven) and bottom-up (ecological, data-driven) (Corbetta and Shulman 2002).

Attentional vigilance focuses on the length of time during which individuals can sustain concentration due to a particular stimulus. Sustained attention decreases and disappears over time because of its limited duration (Ocasio 2011). This study argues that the ‘right concentration’ on details can also help to utilize time effectively and be time-wise in approaching important projects and plans (Kanfer and Ackerman 1989). This reflects attentional sufficiency (Kudesia 2019).

Executive attention is often associated with planning, problem-solving, conflict resolution, and decision-making (Ocasio 2011). This is because this type of attention links memory and the planning components of the mind, which allows individuals to efficiently and quasi-simultaneously manage a variety of goals and tasks. Research shows that executive attention involves allocating controlled cognitive resources to assist the memory in reacting to diverse stimuli, including those not in predetermined schemata, such as non-routine activities, disruption, and dealing with interruption (Fernandez-Duque et al. 2000).

The SM approach can be activated by a combination of various means—referred to as Rs—to address a particular need. Such combinations emphasize a skillfully selected set of environmental stimuli of the ‘right amount’ that is crucial in preparing for and responding to disruption. Having the ‘right amount’ means rejecting any forms of over-emphasis on certain environmental stimuli in order to achieve a balanced attentional engagement. According to Ocasio (1977:1288), attentional engagement is “a process of intentional, sustained allocation of cognitive resources to guide problem-solving, planning, sense-making and decision-making.”

In times of disruption, it is difficult to accommodate a situation where an actor whose attentions firmly focusing on a particular stimulus flexibly switch back and forth between stimuli (Ocasio and Wohlgezogen 2010). This conflict could possibly be resolved by combining right concentration, right view, and right mindfulness in a way to promote a naturally ambidextrous attention through the reinforcement of organizational routines and the mindful

exploration of new opportunities. For example, in the face of disruptions or changes, doubt may appear because of, for example, a lack of knowledge or information which may cause danger in organizations (Nystrom and Starbuck 1984). ‘Right concentration’ helps to intentionally allocate cognitive resources to emphasize problem-solving and decision-making on pressing issues, rather than oscillating around the formation of doubt. This enhances the reactive capability for resilience. To further understand why and how disruption occurs, continual reflexivity and reflection are required. An alternative means—the ‘right view’—is needed because it enables attention to be shifted from routine ‘mindless’ behavior to more ‘mindful’ reflection on experience, especially when disruption unexpectedly occurs outside the core business. Doing this enhances the proactive capability for resilience. The ‘right view’ is facilitated by means of ‘right mindfulness,’ which provides a freedom to detach and reattach attention to different stimuli (e.g., moment awareness and past experiences; routine and non-routine activities).

Skillful Collaboration, Sustainability, and Recovery

According to the network perspective, organizations are increasingly interconnected and interdependent across a variety of spatial and temporal scales to acquire resources (Pfeffer and Salancik 2003), innovate (Du and Williams 2017), or to gain competitive advantages (Christopher and Holweg 2017). For example, supply chains, as virtual organizations of legally separated firms (e.g., Amazon and its logistic partners UPS and FedEx), coordinate to secure shared objectives through mutually derived competitive advantages. Open system theory, which emerged in 1950, views organizations as systems that acquire various inputs (e.g., raw materials, capital) from their environments. These are transformed into outputs (e.g., services or goods) and then are eventually exported to the environment (Evan 1993). New inputs, however, are discontinued when the outputs of a system no longer create value for the environment (Shrivastav et al. 2009). It is argued that managing the connectivity of the input-transformation-output (I-T-O) cycle is central to organizational resilience because it facilitates the exchange and flow of information, materials, and capital necessary for organizational survival and growth.

Resilience in ecology emphasizes connectivity, which is “the way and the degree to which resources, species or social actors disperse, migrate or interact across ecological and social landscapes” (Biggs et al. 2012: 427). The effects of connectivity on resilience are examined by looking at the exchange of material or information, the spread of disturbance, and recovery from disturbance (Nystrom and Folke 2001; Bodin and Crona 2009; Brondizio et al. 2009). Following this tradition, we discuss below how the SM approach improves three aspects of connectivity.

The exchange of material/information. The first aspect of connectivity emphasizes the exchange of material or information, and this is consistent with the argument made by Pfeffer and Salancik (2003) that organizations are not

self-sufficient in internally generating all the necessary resources to survive and so they must engage in exchanging with their environment (Scott 1987). The exchange of material or information often has a direct effect on the production or the transformation stage in the I-T-O cycle. In certain circumstances, such interdependency may lead organizations to a situation in which survival and continued success are uncertain. The ‘friend-enemy’ relationship between Apple and Samsung is a classic example of mutual dependency on critical resources and components.

As a practice of the noble eightfold path, it is argued that the ‘right effort’ facilitates the exchange of information and the flow of materials by enhancing self-efficacy. For instance, putting effort into efficiently allocating resources/information based on members’ expertise in organizations enhances the organizational capacity to detect risks and react rapidly to situations (Ocasio 1977) before they have been accumulated into a major crisis. Moreover, the ‘right effort’ nurtures relationships and trust, which stabilize the flow of energy/resources within and across organizations to strengthen connectivity against disruptions and facilitate restoration after disruption. This is because the essence of the ‘right effort’ is to facilitate diligence, exertion, and unflagging perseverance in order to reach the full perfection of development (Bodhi 2011).

The spread of disruption. Disruption has cross-level effects. For instance, events that occur in the broader societal context (e.g., pandemics, financial crises, political protests, terrorism, and civil war) can influence lower-level phenomena (e.g., organizations, teams, and individuals). The second aspect of connectivity is associated with strength (e.g., tightness and looseness, the frequency or duration of interactions). Research shows that a high level of connectivity increases information-sharing and the development of trust and reciprocity necessary for collective action (Diani 2003) and thus contributes to a firm’s value realization through repetitive and stable exchanges (Coleman 1988). On the one hand, strong ties of connectivity enhance a system’s robustness to withstand both external and internal shocks and maintain control over structures and functions. On the other hand, when disruption occurs, it can quickly permeate throughout the whole system and result in a major crisis (e.g., the nuclear accident at Three Mile Island. See Perrow 1984). Additionally, a high level of connectivity among organizations can also lead to synchronized behavior and sustainable practice (Bodin and Prell 2011).

Strengthening connectivity without harmful or excessive pursuit of long-term purposes and having the ‘right view,’ which involves understanding the interdependence and impermanent nature of the universe, provide a higher level of psychological safety, and this, in turn, guides toward taking optimal action in dealing with disruption. According to Bodhi (2011), the ‘right view’ derives from our appraisals and values, which have become conditions for our actions. For example, when events occur, we first appraise whether or not the event is relevant to our concerns. If it is irrelevant, no further actions or specific emotions are developed (Leigh and Melwani 2019). Sometimes, our view may not be clearly formulated in the first place or we may have only a hazy

conceptual grasp of our beliefs. Indeed, these ‘silent’ views have a far-reaching influence. For example, over-emphasis on short-term immediate gains over long-term sustainability is harmful not only to businesses themselves but also to the wider community in which they operate (e.g., the Deepwater Horizon oil spill disaster in 2010). Hence, being aware of the costs and benefits, as well as the exploitations, associated with short-term acts helps to moderate individual or organizational pursuits or desires for reality.

Recovery from disruption. The third aspect of connectivity is particularly important in enabling an organization to recover from disruption. In an experimental study of macrobenthic communities, Thrush, Halliday, Hewitt and Lohrer (2008) found that recovery was largely determined by the degree of connectivity across metacommunities. In organization studies, it is also found that temporary organizations are remarkably efficient at recovering from extreme events (Hallgren et al. 2018). Such temporary response groups can be seen as “collectives of individuals who use non-routine resources and activities to apply to non-routine domains and tasks, using non-routine organizational arrangements” (Majchrzak et al. 2007: 150). Powley (2009) discovered liminal suspension (new structural relationships formed in a temporal space), which is one of the social mechanisms utilized in recovering from the detrimental event of a school gunshot incident.

To recover from disruption, there are a number of ways to foster re-connectivity in the SM approach. SM based on the ‘right intention’ and the ‘right speech’ can facilitate knowledge-sharing and compile conceptual knowledge to attend to a more complex situation (Anderson 1982). The ‘right intention’ includes the intention of renunciation, of goodwill, and of harmlessness, while the ‘right speech’ consists of abstaining from false speech, slanderous speech, harsh speech, and idle chatter (Bodhi 2011). A combination of the ‘right intention’ and ‘right speech’ facilitates goodwill in creating and strengthening genuine connectivity and knowledge-sharing within and across organizations, such as restoring and mending damaged relationships. Research shows that, without continual communication through the ‘right speech,’ thoughtfulness, and empathetic connection, people will find it more difficult to adjust their responses because they may lose their ability to articulate their actions during adversity (Anderson 1982).

In some circumstances, skillful means based on the ‘right action’ and the ‘right livelihood’ can also be useful to restore and repair connectivity and eventually cultivate resilience in the long run. The ‘right livelihood’ is concerned with ensuring that one earns one’s living in a righteous way by staying away from dishonesty (Bodhi 2011), and the ‘right action’ emphasizes preventing unwholesome deeds. The implication in business contexts, for example, is that business transactions and sales should be presented truthfully without deceptive advertising, misrepresentation of quality or quantity, and dishonest maneuvers. Doing this enhances social inter-relation and reduces fragmentation that could diminish coordination and competencies (Kudesia 2019).

CONCLUSION

The digital era undoubtedly brings both opportunities and threats to the survival of organizations. Over the last few years there has been a renewed interest in the concept of ‘ecosystems’ as a way for organizations to survive and grow. Inter-organizational relationships within ecosystems provide the key for organizations to grasp opportunities and deal with threats. On the upside, increasing digitization offers opportunities for ecosystems, for example, to improve customer relationships and access to knowledge for innovation. On the downside, it increases the uncertainty and heightens the chances of maladjustment to the changing environment.

We suggest it is possible to understand how organizations cope with adversity in the digital era through the concept of skillful resilience within ecosystems. This entails three mechanisms: context flexibility, emotional intelligence, and the ability to deconstruct complex situations. Figure 19.1 shows our synthesized model. The SM approach is useful because it is a highly dynamic and contextualized practice. It does not imply short-term problem-solving to handle disruptive situations facing organizations. Rather, it allows for the requisite attention and connectivity among organizational members within ecosystems to learn over the long term. In doing so, it allows proactive and reactive capabilities to be continually developed and sharpened to bear disruptive events. We also suggest that longitudinal studies in different organizational settings should be conducted to trace the interaction and activation of the core concepts and observe the antecedents and the consequences of attention and connectivity throughout the life-cycle of a disruptive event.

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Digitalization, Institutions and the Future of Sustainable Work

Andreas Kornelakis

INTRODUCTION

The emerging fourth industrial revolution presents an immense challenge to the world of work. The digitalization of work denotes the computerization of routine tasks previously undertaken by workers and is facilitated by technological advances such as increasing computing power, big data, cloud computing, artificial intelligence (AI), the Internet of things (IoT) and online platforms (OECD 2016). It is widely considered as one of the key drivers of productivity and growth in the near future (Van Ark 2014). But digitalization through smart ‘disruptive’ technologies has rendered work flexibility more important than ever. Although digitalization will provide opportunities for prosperity, it will also raise several challenges for groups of workers with the risk of growing inequality in access to good quality, sustainable jobs and access to digital skills (OECD 2016). Even more, digitalization has already started affecting services sectors across countries, which were thought to be immune to computerization. These challenges have prompted European business and labour associations to warn against the potential negative impact of digitalization on the world of work (EU Economic & Social Committee 2015).

One strand in the academic and policy literature has largely focused on the positive effects of the fourth industrial revolution and the benefits of new ‘brilliant technologies’ (Brynjolfsson and McAfee 2016). Proponents have been enthusiastic about the benefits of digitalization and its potential to increase

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efficiency; create new markets, new products and services; and new channels of distribution. They highlight the positive effects on ‘customer expectations’; on ‘product enhancement’; and on ‘collaborative innovation’ (Schwab 2015, p. 4). Thus, digitalization is expected to enhance consumer choice and also enable highly scalable business models with close to ‘zero marginal cost of reproduction’ (Brynjolfsson and McAfee 2016, p. 61). Other scholars have been more sceptical of the positive effects of digitalization, as the latter is expected to increase inequalities, exacerbate job insecurity and threaten the availability of adequate employment opportunities (Holtgrewe 2014). Indeed, fears of mass technological unemployment have been fuelled by estimates suggesting that about half of existing jobs are likely to be computerized in the next 20 years (Frey and Osborne 2017).

Against the backdrop of these debates around digital transformation trends, this chapter sets out to contemplate on the potential effects of the digital transformation on the quality and sustainability of jobs. It reviews the discourse around the likely effects of digitalization on new ways of working based on publications of practitioner management literature. It argues that the digital transformation hype is driven by management consultancies, which seek to overplay the benefits of the new digital business models. However, it also qualifies these assessments by bringing in the academic scholarship in comparative management to suggest that the overall effect of digitalization on sustainable work will depend on national-specific institutions. Finally, the chapter sets out an agenda for future research among comparative management scholars to study more systematically the effects of digitalization on different aspects of work, organization and management.

MANAGEMENT CONSULTANTS, THE FUTURE OF WORK AND THE BRIGHT SIDE OF DIGITALIZATION

The 2011 report on digitization by PwC’s consulting arm Strategy& was one of the first among a series of practitioner reports to discuss the future of work in the context of new digital technologies (Friedrich et al. 2011). It presented one of the first indices of digitization to measure the degree of change across sectors and countries. The index of digitization of a company involves the extent to which a company enables each unit of the internal networking system to access and exchange data, to use big data analytics and machine learning; and generally digitalize its workflows. The report argued that the maturity of digitalization opens up the opportunity for companies to manage their process and innovate on their business models (Friedrich et al. 2011). A more recent report from McKinsey suggested that the one of the benefits of new digital platforms was the unprecedented ability to connect talent pools with employment opportunities in novel and innovative ways (McKinsey 2015a). Apart from the physical form of digitalization, management consultants have emphasized how the increased inter-connectedness at the company or global level

leads to innovation of products, process and systems and delivers integrated ways to manage people, data and whole organizations.

Digitalization and Skills

One important effect of digitalization that management consultants emphasized concerned the impact of digitalization on human capital and skills. According to Accenture, digitalization will affect skills and human capital at three different levels: (i) enhancing the alertness of humans on new developments, facilitating and testing alternatives skills; (ii) engaging new generations of communication and workflow to spread the new skills across time and space; and (iii) extending human capabilities and perspectives by robotization (Thomas et al. 2014, p. 13).

Robotization is broadly defined and includes several examples such as smart factories; self-driving cars; 3D printers and virtual robots, including software, production process management, control systems and artificial intelligence. These brand new digital technologies are expected to have immense implications for the kind of skills that are required under what was dubbed as the ‘intelligent digital regime’ (Thomas et al. 2014, p. 17). The recombination of digital and human resources (or ‘human + machine’ model) is likely to become the mainstream in the workplace of the future (Thomas et al. 2014, p. 26). For example, field-service technicians, who were once needed to accumulate a great deal of tacit knowledge and memorizing, will no longer need those skills. Instead, the digital technology will make information-sharing and remote collaboration available as needed, and it will be more critical for the technician to be able to absorb new knowledge quickly, to form sound judgement and develop further problem-solving skills. Likewise, managers of intelligent digital processes need to be far more comfortable asking questions of the models they have at hand, designing experiments and interpreting the data they get back, and making judgements based on a combination of data, direct observation and experience (Thomas et al. 2014). The overall perspective is that it will be essential for individuals to engage in re-skilling and be alert to continuously update their human capital along with changes in digital technologies.

Digitalization, Autonomy and Remote Working

The management consultants’ perspective emphasizes how automation will lead to increased efficiencies. In the ‘intelligent digital regime’ (Thomas et al. 2014, p. 17), work will evolve through a continuous, iterative process of experimentation and adjustment. Some of the routine work will be taken over by machines and systems; however, new skills will be needed such as operating new technology and learning new knowledge and intuition to analyse the big data. In the context of new business models, back-office work will be gradually handed over to automated software or algorithmic systems. This approach will be made possible by easy access to relatively inexpensive digital models and

workflow templates. Additionally, technology adopted by the companies will enable the automation of repetitive tasks, which can free up employees' time, increasing their work autonomy and discretion to carry out higher-level, non-routine manual and cognitive tasks.

The platform economy and especially crowdsourcing platforms such as Upwork, Amazon Mechanical Turk and TaskRabbit allow for greater connectivity and better matching between job seekers and tasks (Barty et al. 2015). Big data will also help companies to identify suitable workers and combine demand forecasting with scheduling tools, so that staff is available even at peak times. Moreover, the ability of online platforms to codify skills can improve the way tasks are allocated, which means that they could improve the signalling about the skills and, by implication, the matching of employees (McKinsey 2015a). Finally, the use of digital tools such as broadband, cloud computing, internal social networking platforms and video conferencing will enable people in any organization to work remotely and efficiently irrespective of their location. Digitalization will thus further enable and promote the diffusion of remote, exile and virtual working.

Digitalization and Job Matching

As a corollary, the way companies recruit talent online will be affected by digitalization, particularly the emergence of online talent platforms. The pool of talent that is available in sites such as LinkedIn and [Indeed.com](https://www.indeed.com) make it possible to recruit 'passive' candidates who may not be even looking for jobs (McKinsey 2015b). In addition, the methods of recruitment and selection will also become more advanced, as there are already sophisticated digital tools for applicant screening and testing, on-boarding, team formation and performance feedback (McKinsey 2015b). Task-based hiring is increasingly becoming more popular and digital marketplaces for freelancers make it easier for employers to call in outside help for some specific assignments. Platforms can dramatically lower costs for small companies that need specialized help, for instance, for accounting or marketing assistance for a product launch (McKinsey 2015b).

The common thread running through all of these changes is that skills and lifelong learning will matter more than ever before. Furthermore, work in platform markets can often be carried out flexibly, which creates opportunities for those who would otherwise not work or those who can choose the time and place of work. The flexibility, both temporal and spatial, is an important aspect of the attractiveness of work for many workers in platforms (OECD 2016). Thus, flexibility of working time will cater individuals who might not be able to, or not interested in working full-time or on a fixed schedule.

BEYOND THE MANAGEMENT CONSULTANT'S HYPE: THE DARK SIDE OF DIGITALIZATION

Digitalization and Joblessness

The dark side of digitalization entails pessimistic views about the future of work. Among them, the most prominent is the prospect of mass unemployment because technology will render many jobs obsolete. The prospect of displacement of workers is consistent with recent findings in studies of occupational change that suggest that many, especially routine middle-skill occupations, disappeared in the last 20 years due to routine-biased technological change (Goos et al. 2014). For the future, estimates suggest that 47% of the jobs are characterized by a 'high risk' to disappear in the next 10–20 years due to automation and computerization (Frey and Osborne 2017). However, these broad projections have been questioned by other quarters of the policy-making nexus. Recent analyses from the Organisation of Economic Cooperation and Development (OECD) estimated that the risk of automation is much lower. Employing a task-based approach, the jobs with a high risk of automation (i.e. those jobs with at least 70% of tasks being automated) are estimated to be 9% across the OECD (Arntz et al. 2016, p. 8).

Digitalization, Power and Work Intensification

The introduction of new digital technologies is likely to increase work intensity, for example, by altering the tempo and pace of working time, which will be structured by big data and algorithms, and result in the mode of 'working anytime, anywhere' (Eurofound & ILO 2017). For instance, employees in organizations currently may spend a significant portion of their working day checking and replying to their work emails using their computers, tablets or even smartphones (Cascio 2019). Management practices and policies regarding working time and work-life balance will be influenced by the expectation for universal availability and reachability through mobile working. The unprecedented monitoring capabilities of new digital systems, which can accurately collect data on key performance indicators and frequency of use, will lead to an increase in 'electronic' performance management (Stone et al. 2015, p. 23). Especially when employees are teleworking, the monitoring may contribute to an intensification of work and could lead to employee burnout and work-related stress. Finally, new technologies are expected to reallocate the autonomy and power between professional groups (Petraçaki and Kornelakis 2016) and this, in turn, will have implications for their work autonomy, their privacy rights and their power to resist electronic monitoring and intrusive surveillance systems.

Digitalization, Labour Rights and Precarious Work

The perils of digitalization of work for labour rights have reasonably attracted the attention of European trade unions (EU Economic & Social Committee 2015; Unite 2015). Trade unions are concerned about the risks that are transferred from employers to employees; since some of the emerging forms of work result in the blurring of the employment relationship. Platform work also raises questions about the potential casualization of work, since platform workers establish themselves as self-employed, which may well be bogus and spurious, and hide a ‘dependent employment relationship’. The broader concern is that service platforms, which transcend national boundaries, indicate a trend towards insidious deregulation, as there is a failure to respect national labour law (including employment contracts rights and dismissals protection). There is also a risk that regulated jobs will be displaced by these new forms of work, giving rise to a parallel and insecure ‘digital’ labour market that does not comply with the social, tax and other regulations that govern workers in standard employment relationships (EU Economic & Social Committee 2015).

Another main concern relates to the future of collective bargaining. The technical possibility to engage in individualized contracts at very low transaction costs poses an important challenge to collective bargaining. Collective bargaining is rather difficult in markets for digital services delivered over the Internet. Given that freelancers in platforms often do not work for any single firm, and the platform only operates as an intermediary, collective bargaining is difficult to establish. Additionally, in several countries, independent workers do not even have the right to unionize as this goes against competition law regulation. Even if they could, organization among geographically dispersed workers tends to be difficult. All in all, current legislation has not caught up with these fast-growing forms of employment and business models, and trade unions are seeking new regulation for digital platforms. Overall, the trade unions’ main concern is that the digitalization of the work is giving way to the casualization of employment rights (Eurofound & ILO 2017).

SUSTAINABLE WORK: RE-SKILLING THE WORKFORCE AND RE-REGULATING THE LABOUR MARKET

Digitalization and Re-skilling the Workforce

As technology has developed rapidly, employees require access to new digital skills and competences, to become proficient operators of new technologies. This means that curricula in Vocational Education and Training (VET) need to be reviewed and amended accordingly and related training measures have to be implemented (Eurofound 2016). The increasing digitalization of production processes also means that more STEM-related occupations will be needed in manufacturing, but also in services. Examples of digital skills include programming and coding skills, data analytics and cyber-security skills. Big data from

sensors and platforms will increase exponentially and advanced data analytical skills will be essential in the near future.

This demand for new advanced digital skills must be addressed through an enhanced focus on STEM education and training; and an enhanced cooperation between networks of firms, colleges or universities and the government. This challenge is more acute and immediate in some sectors like the information and communications technology (ICT) industry, but in all sectors, digitalization is creating the need for new skills including soft digital skills using the Internet, creating a website or developing an app. In addition to them, the demand for other soft ‘employability’ skills such as team-working skills, communication skills and problem-solving skills is also increasing (Kornelakis and Petrakaki 2020). The softer skills are quintessential for the facilitation of ‘hybrid’ jobs that follow the ‘human plus machine model’ and require close human-machine interactions (Eurofound 2016).

As the recent report from the World Economic Forum illustrates, a key issue is who will pay for the reskilling of employees (World Economic Forum 2019). For this reason, the reskilling process will require the change not only in VET systems but also in firms. It can be facilitated by human resource (HR) management practices and processes that include lifelong learning, training and HR development (Kornelakis 2014). These will be a key lever for organizations to adjust to mega trends of digitalization and the advent of the gig economy (Cascio 2019). Reskilling and upskilling for digitalization may take place through retraining programmes within traditional internal labor market arrangements and on-the-job retraining. Therefore, employers will need to increase investment in training existing employees in line with company needs to keep up with new processes. A major challenge is to increase the digital skills of current workers, and in particular older ones, which could close the widening generational digital skills gap. Overall, the trend to acquire future skills through work-based learning will continue, with a focus on ensuring that training provision meets the changing demand for digital working in the future. Work-based learning is an effective means of bringing digital skills to the workforce and also an excellent way of preparing young people in education for the labour market. However, there are clearly limits to how far reskilling by itself can remedy the problems that will be created by digitalization. For this reason, it has to be combined with a radical rethinking of what is work and how this is regulated.

Digitalization and Re-regulating the Labour Market

Regulation has a major role to play towards encouraging and supporting the economic potential and the efficient development of sustainable working. New protection mechanisms, particularly on specific regulations, should be introduced for each new work organization innovation or business model. It is vital to ensure that the existing rules are effectively enforced to meet the new challenges posed by developments in the platform economy (Kenney and Zysman

2016). These developments require an adjustment of the institutional framework as defined by law, collective agreements and works council arrangements. Moreover, existing labour laws will need to be adjusted to these new challenges, with the overall prospect of promoting sustainability and inclusiveness in employment relations. For instance, a good example is the passing of legislation in France of the ‘right to disconnect’ that allows workers to avoid checking work emails out of normal working hours (The Guardian 2016).

While digitalization has put the new forms of employment on the spotlight, the definition of ‘employee’ and the articulation of collective solutions agreed by the social partners, remains of central importance in shaping the world of work. Collective bargaining regulation has an important role to play to shape a ‘just transition’ to sustainable working by re-regulation working conditions at the company or sectoral level. The compromises between management and employees can be an important tool to navigate the new environment (Unite 2015). In an increasingly digitalized and internationalized industry, the role of collective bargaining could be strengthened, while respecting the principle of the freedom of association.

COMPARATIVE INSTITUTIONAL THEORY AND THE FUTURE OF SUSTAINABLE WORK

The comparative organizational and management literature (Kornelakis 2018a) can lend us important insights for the future of sustainable working amid a sustained period of digital disruption. On the one hand, the literature sought to provide a counterweight to the obsession of management consultants with ‘best practice’ and ‘organisational change’ (Sorge and Van Witteloostuijn 2004). The latter attached greater importance on the sterile comparison of management practices to maximize performance, and accorded less attention on the appropriateness and fit of different practices and organizational forms with their institutional and societal context.

With the advent of digitalization, we observe a similar trend. Management consultancies operate as the main ‘movers and shakers’ of new management ideas and fashions, and over-emphasize the role of digital transformation in cutting costs through automation, increasing revenues through new digital markets and digital market channels of distribution. As a response to the digital disruption, they are searching for universal solutions irrespective of country and societal context.

This universalistic approach to, and obsession with, ‘best practice’ misses the point of a large body of literature in comparative management, which suggested that there is no ‘one-size-fits-all’ approach (Kornelakis 2018b). Seminal works in the comparative institutional literature suggested that institutions do matter and that the impact of similar technologies on work organization is mediated by the societal-context in which they are embedded (Morgan and Kristensen 2014; Sorge 1991). More recent work in the broader comparative

HR management field (Festing 2012; Holman and Rafferty 2018; Kornelakis et al. 2017; Mayrhofer et al. 2011) has showcased how national institutions moderate the pressures of globalization and shape the dynamics of change in management practices. Although the comparative studies of national business systems, employment relations and corporate governance (Gospel and Pendleton 2006; Hotho 2014; Whitley 2007) have given us important insights, the interplay between technology, work organization and production regimes has fallen behind in terms of empirical exploration and conceptualization.

This gap becomes even more pertinent in light of current developments around the digitalization of work and the emergence of platform capitalism and their implications for sustainability in the work environment. We still do not know how organizations across sectors and countries will adjust to the challenges posed by the fourth industrial revolution. Digitalization is likely to form a new source of pressure for convergence, whereby organizations across countries will imitate each other to exploit the cost and productivity advantages of new technologies. These new developments deserve the careful attention of comparative management scholars and warrant the development of a new research agenda.

TOWARDS A RESEARCH AGENDA FOR THE FUTURE OF SUSTAINABLE WORK

The profound and rapid transformations brought about by the digitalization of work highlight the important gaps in our knowledge of its impact on the future of sustainable working. While the practitioner literature speculates on possible effects, the overall discourse is driven by management consultants' hype and metaphors (Sorge and Van Witteloostuijn 2004) that overplay the beneficial effects of new technologies in terms of minimizing costs and maximizing revenues, whilst downplaying the importance of local institutions in transmitting these effects.

Further research should first and foremost focus on researching contemporary cases of digitalization in different sectors of the economy and the implications for people, work practices and processes. Preliminary evidence suggests that it is not manufacturing, but it is the service sectors that are now at the forefront of digital transformation including white-collar sectors such as ICT, finance, insurance, professional services, media and telecommunications (McKinsey 2016). For instance, the financial industry is a sector that has been emblematic for many decades of secure and stable white-collar jobs. This sector is now threatened by digitalization and large-scale initiatives of digital restructuring in the coming years, as the example of Deutsche Bank suggests (The Guardian 2017). In sum, we need further in-depth and sector-specific studies that study the effects of new digital technologies on employment and (un)sustainable working patterns across different countries.

Beyond sectoral studies that chart the impact of digitalization on sustainable work, we also need an ongoing research programme of innovative solutions at different levels of analysis. We need to know more about what different organizations—sectoral associations or governments—are doing to mitigate the negative repercussions of digitalization on their workforce. These studies may well include what and how transnational and national organizations and associations negotiate agreements in order to deal with digital structural change and how transnational regulation is amended to increase the sustainability of future working arrangements. In other words, we need to know how different actors and stakeholders influence the process of digitalization by mitigating the unsustainable aspects of the digitalization of work. The comparative perspective is pertinent here as we may well observe that the societal institutions mediate the impact of new technologies differently.

In addition, further research is needed on the type of contractual arrangements for ‘self-employed’ workers in the platform economy. We need to come up with innovative ways to ensure that these micro-jobs are compliant with national employment laws and do not create a threat to domestic workers undercutting wages and working conditions. As the platform economy transcends national borders, transnational regulation may be the best medium to confer the platform workers a minimum of employment rights, such as sickness pay, leave and access to national social protection schemes. At the same time, the jobs in the gig economy should not reflect one-sided flexibility (Taylor 2017) but should serve the interests of workers and business alike.

Finally, digitalization is set to disrupt the organization of work in the manufacturing sector at a global scale. Emerging technologies, such as the IoT, 3D printing and AI, reshape manufacturing processes and shift them towards new models of redistributed and localized production with high value-added customized products. This move from mass production and diversified quality production models (Sorge and Streeck 2018) to ‘mass customization’ production models has the potential to dramatically simplify the current complexity of global value chains. But this re-organization will undoubtedly have implications for the application of international labor and environmental standards in global value chains. Hence, ‘threats to relocation’ of production may also take the form of ‘threats to digitalization’ of production. Further research should examine the potential impact of new technologies for decent work and environmental sustainability, including the potential of green jobs, in the contexts of both developed and developing countries.

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Digital Capabilities: Bridging the Gap Between Creativity and Performance

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INTRODUCTION

The need for a deeper understanding of the context of digital transformation and the corresponding need to hire more creative people is manifest both in the intense coverage dedicated to the subject by the international media and in the strategies adopted by large companies founded on knowledge, such as Google, Facebook, Amazon, and Microsoft. Recently, the McKinsey Global Institute reported that by 2030 about 375 million workers (about 14% of the global workforce) might need to change occupational categories because of digitization, automation, and advances in artificial intelligence (AI) (Illanes et al. 2018).

Development of a toolbox of digital capabilities may constitute the differentiating factor that firms need to overcome the challenges of an economy that is ever more fluid, integrated, and dynamic and in which technology is one of the drivers of development by 2025. It is in this context that creativity appears to play an important role, given that the majority of organizations are no longer subject to restricted access to technology. Although the role of organizational

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creativity in performance is consolidated on strategy literature (Bissola et al. 2014; Ericsson and Moxley 2012), we propose the mediating role of digital capabilities in environments where digital transformation is imminent as a novelty. This chapter primarily contributes to an understanding of the relationship between creativity and organizational performance, measured in terms of the development of digital capabilities. We conducted a study in Brazil of firms from several different industries. We assessed whether they perceive superior performance when they used creativity as a resource to enable them to develop their digital capabilities.

The Brazilian setting is relevant because the country has the largest economy in Latin America and is at an intermediate stage of industrialization, having started to actively compete with other economies when trade barriers were removed during the last decade of the twentieth century. We opted to conduct an empirical study, based on a survey of 102 Brazilian organizations in different industries, using a data collection instrument that has been validated in prior research. The results indicate that there is a relationship between creativity within organizations and reinforcement of their digital capabilities in the context of digital transformation and that organizations' performance is affected positively in environments with better developed digital capabilities.

This chapter has contributions to make to the literature on the development of dynamic capabilities and also contributes to understanding how firms should develop specific skills to deal with growing competition, which is no longer restricted to improving operational efficiency, but takes in the capacity to rapidly transform operations from analog to digital, synchronizing actions with the demand from customers and suppliers and for keeping ahead of competitors, spread across different parts of the globe.

In the context of abundant technological resources, access to disruptive technologies, such as AI, Internet of things (IoT), blockchain, and cloud computing, can no longer be considered as a source of competitive advantage in of itself. Organizations, therefore, need to understand that the competencies needed to articulate these resources can confer an advantage in their markets. As such, organizational creativity emerges as an essential component in this equation. First, because making organizations more creative has social effects since creative jobs tend to be substantially better paid. Second, as disruptive technologies become relevant, digital resources are needed to make them more efficient. Third, managerial trends by 2025 must combine artificial and human intelligence in a harmonious way. Given that organizational creativity has become a key element in digital transformation, the research question that permeates this chapter is: To what extent digital capabilities can mediate the relationship between organizational creativity and the performance of firms in the face of digital transformation?

This chapter is divided into sections. First, we provide an overview of the context of digital transformation. We then cover how the literature has dealt with organizational creativity and digital capabilities, proposing two hypotheses that run through the chapter. And then we explain how we conducted our

statistical analysis before presenting the results. The final part of the chapter is dedicated to a discussion of the results of the empirical component and some conclusions.

CONTEXT AND BACKGROUND

Digital transformation has wide-reaching effects on markets and industries, both from the perspective of consumers and from the perspective of suppliers, because it enables the practices of innovation, creation of new business models, and new forms of consumption and design. It has also contributed to a reformulation of aspects related to employment, creation of a new type of organization, and of a variety of new ways of capturing value through the supply of products and offering of services.

Among the benefits that can be identified with adoption of these new technologies, we can list improved relationships with customers, increased operational efficiency, the ability to penetrate new markets and to create new products and services, and the means to maintain a competitive position in a scenario in which competition has become global (Bharadwaj et al. 2013; Chen et al. 2016; Stief et al. 2016). Understanding the factors involved in digital transformation that are linked with better organizational performance is now, therefore, critical for organizations to be able to maintain their positions in their markets.

However, digital transformation is not merely the result of adopting and implementing new technologies in products and services. It involves a profound transformation of organizations' strategic perspectives, of their business processes and, especially, of aspects related to people and the organizational culture (Warner and Wäger 2019), taking in aspects such as creativity in the application of new technologies and fostering the development of digital capabilities. Microsoft is a clear example on a global organization that has managed to transform the essence of its strategy and culture over the last five years, recapturing the title of the most valuable firm on the planet after making significant changes to its culture and product strategy and adoption of new technologies in its platforms on a global scale.

Although there has been much discussion of how the adoption of new technologies leads to superior performance for an organization, the relationship is still inconclusive, meriting more considerable attention in academic studies (Nwankpa and Roumani 2016). Thus, digital transformation is not only a challenge for businesses but also for people and governments. The prevailing model of education in the twentieth and early twenty-first century is still mainly linked to older professions that were not necessarily focused on creative skills (Acar et al. 2019). The discussion for the third decade of the twenty-first century is how we will employ a mass of human beings who were not prepared to be creative. Some assumptions are already explicit: creativity is the last frontier of AI (Otake 2016). Digital capabilities are needed to deal with digital

transformation (Mu and Lee 2005). In sum, there is no discussion of whether digital transformation will change the context; it is the context (Li 2011).

Digital capabilities can be understood as a combination of skills and processes of digital business for development, mobilization, and use of organizational resources supported by digital technology platforms to respond to the environment and add value to the organization (Tams et al. 2014). In this chapter, we propose to discuss creativity as a crucial resource (de Vasconcellos et al. 2019) for reorganizing the workforce, implementing strategies, and, in particular, for conceiving digital capabilities to face digital transformation. Digital transformation is the phenomenon of adoption of new technologies, such as IoT, artificial intelligence, blockchain, Big Data, and cloud computing, that facilitate the digitalization of organizations' processes. This conjunction of events has accelerated over the last 20 years because of the exponential growth and availability of these new technologies on a global scale (Nadeem et al. 2018; Stief et al. 2016). This recent phenomenon has become a buzzword worldwide and has found its way onto the agenda in both public and private sectors, irrespective of the size, business sector, or origins of the organizations involved (Bharadwaj et al. 2013; Bouwman et al. 2018), because failure to transform an organization can result in loss of market share and may even signal the end of its ability to continue as a going concern (Nadeem et al. 2018).

There are recent examples of firms that once dominated the global scene but lost their respective positions precisely because they were not alert to the social and technological transformations that were taking place around them. The cases of Kodak, RIM (Blackberry), and Nokia are just some of the many examples of this phenomenon. Ironically, all three of these firms dealt with innovative and disruptive technologies and were among the most valuable companies in the world in their time. Undoubtedly, it was not a lack of financial resources or access to technology that prevented them from maintaining a competitive position in their markets. However, they nevertheless failed because they did not correctly read the velocity with which the transformation would take place.

In this context of accelerated digital transformation, we believe that creativity is an essential element for the development of digital capabilities in organizations. This powerful combination is associated with better performance; a hypothesis that we discuss in the sections that follow, and which we test with the results of the empirical study that we present below.

LITERATURE REVIEW

Organizational Creativity

Organizational creativity is a result of social interaction between the creativity of the individual people who make up an organization and the resources that it possesses, as long as there is an atmosphere that fosters this interaction (Isaksen and Ekvall 2010). In this context, organizational creativity can be defined as the creation of value that can be useful for the development of innovation in

products, services, ideas, and procedures that originates from individuals who work together in a complex social context (Woodman et al. 1993). The combination of these factors enables an organization to cope with changes that may be technological, market-based, or social (Woodman 2008).

The current concept of organizational creativity has come a long way. If up to the start of the twentieth century, creativity was considered an individual phenomenon, restricted to talented people with gifts that differentiated them from other people (Lubart 2001; Runco 2001), as the decades passed, it came to be associated with elements that, to a certain extent, restricted productivity and caused conflicts in activities focused on repetitive tasks, since creativity tended to break with established bureaucratic structures (Cummings 1965). However, as creativity proved to be essential both for innovation (Amabile 1988) and for the entrepreneurial practices needed to cope with environments in transformation (Chakrabarti et al. 2011; Kor et al. -2007), creativity came to be considered a social phenomenon, although one that can be interpreted as a firm resource, resulting from sharing and validation of the creativity of individuals who are part of the same entity—an organization—and, therefore a resource that is capable of contributing to make it more competitive (Bratnicka 2013; Teece 2017).

Although there are theoretical debates about whether creativity is a resource or an articulation of resources, and thus a dynamic capability (Zollo and Winter 2002), some studies show that organizational creativity acts as a crucial resource for building capabilities and that these, in turn, are an element in the construction of competencies (de Vasconcellos et al. 2019). In order to constitute a resource, organizational creativity is dependent on factors that must be harmonized in order to emerge socially through the articulation of multiple individual skills, stimulated by divergent thinking, which is then consolidated into an organizational capacity as a result of collective convergent thinking (Acar and Runco 2019). There are three critical elements in this process: organizational motivation, resources, and management capabilities (Amabile 1996; Amabile et al. 1996).

Organizational motivation is linked to individuals' perception that their ideas are being implemented for the benefit of the organization. Organizational motivation emerges when the individuals that make up an organization, collectively, feel motivated (Runco 2004). In turn, resources, whether tangible or intangible, must be valuable, rare, difficult to imitate, and employed by the organization to create competitive advantage (Barney 1991). Possession of resources that can be articulated with others is essential for organizational creativity to reveal itself. Finally, management practices create options for dealing with conditions of uncertainty, creating value, and sustainable competitive advantage (Sirmon and Hitt 2007). When articulated, these elements enable combinations of individual creativity within an organization to be transformed into a new resource, organizational creativity, the basis for the construction of ever rarer capabilities that are determinant of organizations' performance (Bratnicka 2013).

Given the complexity and subjectivity of organizational creativity, measuring it is a challenge for the academic community. For example, Ekvall (1996) proposed a model comprising 50 questions based on organizational climate as the driving element of creativity. In turn, Amabile et al. (1996) proposed a model with 78 questions that combine other elements, such as motivation, resources, and management practices, to evaluate organizational creativity as a determinant factor in a firm's capacity to innovate.

Over the last few decades, these models have provided the foundation for other studies, which partially built on prior results (e.g., de Vasconcellos et al. 2019; Moultrie and Young 2009) and refined them. Our proposal for hypothesis 1 is intended to help confirm whether firms with greater organizational creativity do, in fact, achieve better performance.

H1: There is a positive and significant relationship between organizational creativity and organizational performance.

The technological advances that challenge organizations force them to innovate and develop practices with which they are unaccustomed. Considering that organizational creativity is a determinant element in coping with the significant transformations that are in course and which demand knowledge, innovation, and the ability to transform practices rapidly and efficiently (Chakrabarti et al. 2011), we propose that digital capabilities, which are essential for digital transformation, mediate the relationship between organizational creativity and organizational performance.

Digital Capabilities

In order to understand the idea of the connection between creativity and digital capabilities, in the context of digital transformation, already highlighted at the start of this section, it is necessary to take a step back and understand certain underlying concepts such as resources, capabilities, and competencies. Javidan (1998) uses the metaphor of a pyramid to conceptualize their hierarchical levels, where the bottom level comprises resources. They, therefore, form the foundations of the structure, in other words, the blocks that support competencies by means of orchestration of these elements to enable superior performance (Sirmon et al. 2011). If, on the one hand, resources are the inputs to the organization's value chain, capabilities are the firm's ability to exploit and combine its resources and other capabilities, constituting the second level in the hierarchy. Finally, competency is at the top of the structure, as the third level. It comprises the integration and coordination of resources and capabilities, which, in the form of competency, is perceived by the market and is capable of generating organizational performance. In this study, we focus on creativity, at the first level, and digital capabilities, at the second level. Digital capabilities are part of the framework of capabilities that enables firms to generate competitive advantage.

Digital capabilities emerge with the organization's need to become agile since, in order to rapidly adapt to technological progress, it is necessary to develop new capabilities (Teece 2018). Digital capabilities are defined as a collection of capabilities that amplify an organization's ability to develop, mobilize, and effectively utilize its organizational resources and improve its processes, such as customer relationship management, product development, knowledge management, and collaboration through use of digital technologies (Tams et al. 2014). Digital technologies enable new processes for the creation of enterprises and can be malleable, editable, self-referential, and interactive, which is why they demand digital capabilities (Nambisan et al. 2017).

When firms find themselves faced with the challenge of dealing with digital transformation, their digital capabilities contribute to improving business performance concerning their competitors, delivering a quality product or service to their customers. However, the firm must be capable of managing the relationships between the multiple actors involved in its business, such as its suppliers and the firm's employees, and this demands an adequate strategy (Bharadwaj et al. 2013). In this study, we test the role of organizational creativity as a crucial resource in this process. Creativity is necessary to enable digital capabilities to be incorporated into products as operant capabilities, thereby creating new functionalities and developing new skills (Yoo et al. 2019). Digital capabilities include sensing capability, responsiveness capability, process digitization capability, and market connectivity capability (da Freitas 2017; 2018).

Sensing capability is the capacity to detect, interpret, and seek opportunities in the environment (Pavlou and El Sawy 2011). Sensing capability enables digital businesses to deal with specific challenges, such as difficulty with identifying new business opportunities, enabling them to work with an infinite range of new channels, for example, social media and IoT (Müller et al. 2015). This capability, therefore, plays an essential role in the acquisition of data from the environment to produce useful information through data mining, to make a significant difference in operational excellence and competitive market response (Grover and Rajiv 2013), given that detection is a crucial element for subjective assessment and decision-making.

Responsiveness capability refers to the capacity to rapidly and effectively respond to customers' needs and desires and, consequently, improve performance (Kohli and Grover 2018; Setia et al. 2013; Tams et al. 2014). Responsiveness capability also helps firms to understand changes in consumer behavior, increasing customer satisfaction, which yields several benefits such as good recommendations on social media and a reduced number of complaints, resulting in more customers and, consequently, more sales, translating to better business performance.

Process digitization capability refers to the transformation of analog processes into digital processes, marking the transition from traditionally conducting business to the digital (BarNir et al. 2003). Firms should develop the capacity to obtain process visibility so that they can react and respond to problems or changes as quickly as possible (Kohli and Grover 2018). Process

digitization is thus a digital capability that can be developed for digital businesses using digital technologies. Process digitization capability increases the velocity of the processes to which it is applied and is linked to responsiveness capability since once a process has been digitized, response can be instant. Therefore, the scope of the processes digitized ensures agility and the capacity to respond, in providing customers with access to information and within the firm (Setia et al. 2013).

The market connectivity capability relates to technological integration with suppliers and customers (da Freitas Jr et al. 2017). As digital technologies and their functions evolve, firms are developing new strategies to serve market dynamics, competing face-to-face in some markets and organizing into digital ecosystems (e.g., Apple and Amazon both sell hardware), while cooperating in others to ensure connectivity (Yoo et al. 2019). This connectivity capability enables firms to connect with customers and other stakeholders at any time, in any place, with any person, so that all actors are connected within the ecosystem.

The new digital infrastructures and their related capabilities can make critical contributions, complementing collaborative practices, such as collaboration with customers or within an ecosystem. The ecosystem architecture can also be constructed to meet the requirements and structure of the firm, and it is possible to combine one or more ecosystems, offering the ability to take responsibility for coordinating co-creation of value and actions within the ecosystem (Nambisan et al. 2017). This capability contributes to enabling digital resources to be configured to exploit opportunities, rapidly responding to market demands.

Working from the assumption that organizational creativity is an essential resource for the formation of digital capabilities and that digital capabilities leverage firms' organizational performance in the context of digital transformation, we propose that digital capabilities have a mediating effect on the relationship between organizational creativity and organizational performance, as stated in hypothesis 2.

H2: Digital capabilities mediate the relationship between organizational creativity and organizational performance.

Taking the two research hypotheses together, we designed and carried out an empirical study in Brazilian organizations from a variety of industries. The study is described in detail in the next section, and the relationship between the underlying hypotheses is illustrated in Fig. 21.1.

RESEARCH METHOD

For heterogeneity, we scrutinized the respondents from a list of 4758 organizations from 625 cities, located in 23 Brazilian states, ranged from micro to large firms from diverse industries. The sample adequacy for applying linear regression, we considered a 95% confidence level and a 10% margin of error, resulting in a minimum of 95 respondents (Maroco 2010). Thus, we conducted an empirical study with 102 Brazilian organizations in order to investigate the

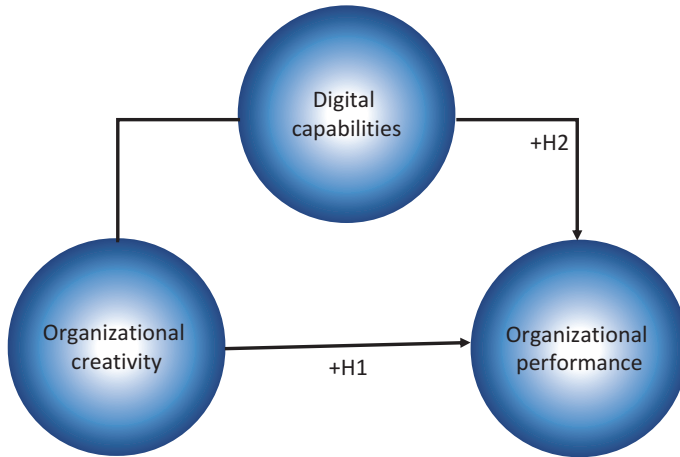


Fig. 21.1 Research model to study the relationship between organizational creativity and organizational performance. (Source: Authors' creation)

relationship between organizational creativity and organizational performance, as well as the role played by digital capabilities in this association.

We consider that Brazil offers an appropriate setting for this investigation, since it is one of the ten largest economies in the world and the largest in Latin America, and because it is at an intermediate stage of industrialization, in a scenario in which aspects related to digital transformation are widely discussed in organizations in the struggle to maintain competitiveness in an ever more globalized market. Additionally, Latin America as a whole is challenged by Asia's accelerated economic growth, innovation, and production, strongly influenced by China, and is thus in need of rapid responses to ensure that the future of this region that is important in the global scenario is not compromised.

The industries in which the firms in the sample do business are heterogeneous, which offers the opportunity to measure whether the effect of creativity on performance is associated with the level of knowledge and innovation. Additionally, 61 of the firms studied export, and 33 of them have some operation abroad. We tested the hypotheses using ordinary least squares regression of our cross-sectional data on 102 Brazilian companies: 30 manufacturing firms, 30 retail firms, and 42 service providers.

We adapted three scales to construct a questionnaire. To measure organizational creativity, we adapted a scale used by de Vasconcellos et al. (2019), which had itself been adapted from Moultrie and Young (2009), who based it on Amabile et al. (1996). To measure digital capabilities, we adopted a scale by Freitas Jr. et al. (2017) and Freitas Jr. (2018). To measure organizational performance, we adapted a scale from Zou, Taylor, and Osland (1998), which probes managers' perceptions of organizational performance. We chose to

measure organizational performance in terms of the perceptions of the managers who responded to the survey because secondary data on financial performance was unavailable since an absolute majority of the firms that participated in the study are not listed and do not publish their financial results.

Three academics and two executives validated the final version of the questionnaire to ensure reliability. We used back translation to ensure that translation of scales in English into Portuguese did not result in loss of intrinsic meanings, affecting the results. We also took the precaution of standardizing questions and scales to give interviewees a sense of integration. Finally, we standardized response items to a Likert scale ranging from 1 (disagree completely) to 7 (agree completely) to facilitate comprehension.

Data were collected via telephone during August 2019, using university employees who are data collection specialists. Before starting the calls, we held a standardization meeting with the team of interviewers to avoid response bias. We explained the study objective and the constructs covered. We also conducted a pre-test with 32 interviewees before initiating the study. Validity was confirmed, and all items were retained.

We used time since the establishment of the firm, the number of employees, and turnover as control variables. We assessed each variable after confirmatory factor analysis, considering compound reliability (CR), variance extracted (AVE), and Cronbach's alpha (CA). The scales exhibited adequate reliability. Since we only collected data from one representative of each firm, we ran Harman's single factor test to check for common method bias (Podsakoff et al. 2003). The single factor test explained less than 50% of the covariance between variables, indicating that common method variance is not a severe problem. Having demonstrated the adequacy of the data and the constructs, we proceeded to test the hypotheses.

RESULTS

We tested the hypotheses using three regression analysis models. While the first model measured the effect of the control variables on organizational performance, the second model evaluated the relationship between organizational creativity and performance. Finally, the third model assessed the mediation effect of digital capabilities on the relationship between organizational creativity and performance. Table 21.1 summarizes the data compiled, showing that all three models were significant ($p < 0.01$).

The results for Model I, shown in Table 21.1, demonstrate that when only the control variables are assessed in the model, performance can be explained by firm size, represented by the number of employees ($\beta = 0.353$, $p < 0.05$). The firms in the sample that have larger numbers of employees have a higher probability of better performance.

In contrast, when firm size is operationalized as revenue, there is no significant association. Model I also indicates that firms that have existed for longer have a significant and negative relationship with performance ($\beta = -0.247$,

Table 21.1 Research model for studying the relationship between organizational creativity and organizational performance

	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>
Dependent variable	Organizational performance	Organizational performance	Organizational performance
Independent variable		Organizational creativity	Organizational creativity
Mediating variable			Digital capabilities
Control variables	Revenue, employees, Time since establishment	Revenue, employees, Time since establishment	Revenue, employees, Time since establishment
R ²	0.081***	0.188***	0.440***
F	2.861	5.625	15.110
R ² change		0.155***	0.411***
F change		12.878	43.246
β org. Creativity		0.349***	0.119
VIF org. Creativity		1.130	1.340
β digital capabilities			0.592***
VIF digital capabilities			1.390
β revenue	-0.114	-0.165	-0.157
VIF revenue	2.040	2.064	2.064
β employees	0.353**	0.270*	0.113
VIF employees	2.312	2.376	2.473
β time	-0.247**	-0.159	-0.020
VIF time	1.247	1.318	1.394

Source: Authors' creation

Notes: (*) sig. to $p < 0.10$; (**) sig. to $p < 0.05$; (***) sig. to $p < 0.001$

$p < 0.05$). The older the firm, the worse the performance. In summary, this model explains around 8% of these firms' performance.

In the same table, Model II includes the independent variable organizational creativity. In this model, performance can be explained by organizational creativity ($\beta = 0.349$, $p < 0.01$) and by size, represented by the number of employees ($\beta = 0.270$, $p < 0.10$). In this model, with organizational creativity included, time since the establishment of the firm is no longer significant.

In Model III, we included the variable digital capabilities. In this model, performance is explained by the variable digital capabilities ($\beta = 0.592$, $p < 0.01$). None of the other variables were significant in the model, which suggests that there is total mediation by the variable digital capabilities.

We conducted Sobel's test to test whether mediation by the variable digital capabilities affects the relationship between organizational creativity and performance. The result was significant (Soper 2019), confirming the mediating power of the variable digital capabilities.

DISCUSSION

In this chapter, we attempted to understand how creativity and digital capabilities are related to organizational performance in the context of digital transformation. Therefore, we interviewed 102 managers from different firms in different industries in Brazil and with varying degrees of involvement in the international/foreign market.

Initially, we tested whether the control variables had effects on the organizational performance of this group of firms. We found that firms with more significant numbers of employees and which had been in existence for shorter periods had better performance than the others. We then moved on to assess the effect of organizational creativity.

When we tested whether creativity was associated with superior firm performance, we found that the result was positive. A 100% change in organizational creativity was linked with a 19% increase in performance, which indicates that firms that invest in developing creativity among their employees perceive superior organizational performance in relation to organizations that do not stimulate creativity through their management practices. We also found that the negative effect of time since the establishment of the firm was no longer significant, leading us to believe that organizational creativity is capable of mitigating the negative effect on the performance of time in existence and reduces the effect of organization size, measured in terms of the number of employees.

We then tested for the existence of a mediating effect of digital capabilities on this relationship. The theoretical assumption was that organizational creativity would act as an antecedent of several other capabilities, such as innovative capability and entrepreneurial capability (de Vasconcellos et al. 2019). According to the logic of the existence of resources that are the foundations for competencies that lead to superior performance (Javidan 1998), it was feasible to suggest that organizational creativity would act as a driver of digital capabilities and that firms that achieved higher levels of development of digital capabilities would have even better performance.

The results support the second hypothesis proposed. When the digital capabilities measure was added to the model, the model became more robust, leading to the observation that a 100% increase in a firm's digital capabilities, founded on its organizational creativity, was associated with a 44% increase in the interviewees' perceptions of their organizations' performance. In this model, none of the control variables had any effect on organizational performance, leading to the conclusion that more creative firms and those that develop digital capabilities can mitigate the negative effect of time in existence and the positive effect of the number of employees on the organization's performance.

These findings are revealing in both theoretical and management terms. From a theoretical perspective, they confirm the existence of the hierarchy of resources, capabilities, and competencies proposed by Javidan (1998), since the mediation effect was confirmed statistically. They also show that

organizational creativity serves as a foundation for firms that are faced with digital transformation, considering the significant association between organizational creativity and digital capabilities. Furthermore, these findings favor the interpretation that firms that understand how to articulate and orchestrate resources and capabilities (Sirmon et al. 2011) obtain superior performance. They also confirm the premise that simply possessing resources, without articulation, is insufficient to achieve organizational performance (Barney 1991). The study also contributes to the insight that digital capabilities are an integrating element between organizational creativity and perceived firm performance.

Concerning contributions to management practice, this study indicates which dimensions of creativity should be promoted in order to enable it to emanate among the people who work in the organization. Motivation, resources, and creativity-oriented management practices are elements that, when developed, can boost performance. However, the effects are superior when this creativity is articulated with the elements responsible for digital capabilities, such as a sensing capability, responsiveness capability, process digitization capability, and market connectivity capability (da Freitas Jr 2018, 2017).

In parallel, this study also reveals the mitigating effects of the disadvantage of time since the establishment of the firm on digital transformation. When the variable organizational creativity is included in the model, to the extent that it is applied to digital capabilities, the significant and negative effect of time since the establishment of the firm on performance ceases to exist. The results also support the conclusion that smaller firms can achieve better performance when they become more creative and when they develop their digital capabilities, given the total mediation, canceling out the effects of the other variables included in the regression.

CONCLUSIONS

This study attempted to understand how creativity and digital capabilities are related to organizational performance in the context of digital transformation. The results of the empirical study yielded evidence that there is a relationship between creativity and organizational performance, mediated by development of digital capabilities, highlighting that firms that are more creative and that develop digital capabilities are capable of mitigating the negative effect of time since establishment of the firm and the positive effect of size of organization, measured in terms of number of employees, on performance of the organization.

Even though the contributions are made, this study also has limitations. For example, all respondents are from firms from a single country, and it is not possible to generalize the effects of organizational creativity and digital capabilities to more advanced economies or those in earlier stages of development than Brazil. It is also impossible to determine whether the effects of these variables are linked with a particular type or sector of business since we chose to seek a

heterogeneous sample in this respect. About the method, since this is a cross-sectional study, the dependent and independent variables play an entirely instrumental role, and it is impossible to evaluate cause and effect relationships between variables.

Exploring the limitations of a study also reveals opportunities for new studies. For example, comparing the results for different industries in different countries over time, using panel data, could contribute not only to theory but also to practice. Logically, the limited access to secondary data on firms of different sizes and doing business in different institutional and economic circumstances is a barrier to achieving this objective. However, data from listed companies could indicate whether the data presented here can be generalized or not to large firms that champion digital transformation on a large scale.

Finally, this study is founded on the assumption that digital transformation is ongoing. It is, therefore, essential to investigate how firms should ensure they sense these changes, respond to them, and institute practices to ensure the feasibility of digitalization of their processes. In this study, it can be evidenced that organizations that are better prepared for digital transformation are already enjoying the benefits of applying organizational creativity in the development of digital capabilities. In this sense, the most creative organizations are performing better and generating positive social effects, as creative jobs tend to be better paid. In addition, by applying their digital capabilities, these organizations are able to achieve better performance from disruptive technologies. Thus, this research signals that organizations that take on new management trends today will be more competitive in 2025 because they are able to harmoniously combine the artificial intelligence and creativity of the individuals working in it, transforming their skills into a first-order organizational resource when socially enacted: the organizational creativity.

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Sustainability in the Banking Industry Through Technological Transformation

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INTRODUCTION

The chapter presents technological revolution in the banking sector. Digital transformation of banking is the only pathway to regain the sustainability of the incumbent players. The chapter addresses the drivers and opportunities of digitization of the banking industry during the systemic disruption (affecting the whole system). Challenges for innovation diffusion and adaptation to disruptive technologies are dramatically changing the financial market infrastructure and creating new risks in the evolving financial services open ecosystem.

As a matured industry, banking exhibits relatively low growth with a widening gap between the top banks and the rest of the sector.

The digitalization imperative followed deregulation, globalization, and consolidation phase, rewarding the global and multi-local presence with streamlined services. Highly competitive banking industry is driven by technically savvy customer, very demanding regulatory compliance, efficiency, and speed/time pressure from the booming innovative nonbank offer. The banking back office, including risk management and internal controls, needs to be enhanced with much more creativity to support customer facing digitalized operations in the conditions of increasing uncertainty.

The chapter addresses the reasons of digital investments underperformance in many banks and the merits of successful approaches to IT investments in banking. Lagging institutions, resisting digital innovation will face profit

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erosion and will follow a spiral of decline similar to other failures observed in the technologically intensive industries.

The chapter covers new technologies and trends predicted in the banking sector with recommended strategies for sustained growth of banking organizations. It indicates new opportunities for development of the financial services offering, efficiencies, and convenience through automation of core banking functions, connection, operation, and processes in the value chain creation. The competitive collaboration with the Fintech sector will result in reinventing more productive business models, a new market structure, and dynamics. The digital disruption, as the inflection point, will involve developing new roles of banking employees (and substantial displacement of human capital) with application of artificial intelligence (AI) in the bionic transformation.

The social and international perspective of cross-country comparisons (recognizing the technology gap and financial inclusion of the bottom of the customers pyramid) supplements this futuristic, but a highly probable view of the banking industry. A more efficient and resilient financial sector delivering value to customers and society is expected to emerge.

The chapter discusses new identified risks associated with the digital revolution in banking related to cybersecurity, privacy, a third party risk, and outside banking regulatory supervision. The challenges of harmonization to deploy technologies, such as the distributed ledger technology (DLT) (a database that is consensually shared and synchronized across multiple sites, institutions, or geographies), in a blockchain infrastructure in a multi-party, globalized network environment will lead to a condensed financial-intermediation system with streamlined, direct, and virtual delivery of financial services. The disintegration of trading patterns, resulting from innovation and lower trading costs through competition among matching platforms, may lead to reduced market quality while transferring more power to the largest financial providers.

The PESTLE framework is applied for the presentation of the key factors driving the digital revolution in financial serviced identified in the literature review and focused on technological, legal, political, and socio-economic factors. The tripod approach is followed for presenting the research results covering the future evolution of the banking sector organized into the following sections: resource-based view, industry analysis, and institutional analysis.

LITERATURE REVIEW

Technological Factors Bringing Inflection Point in the Financial Industry

Distributed Ledger Technology (DLT) Innovation

Distributed ledger technology (DLT) with blockchain form had the largest disruptive effect in the field of market infrastructure causing possible disintermediation of some market players in the process of market fragmentation and

creation of silos. With blockchain technology, participants in the system can transact bilaterally without a third-party intermediary. The trust is established instead by the shared distributed, decentralized ledger, and the system of validation through consensus (Bullmann and Pinna 2017; Cohen et al. 2016; Tranquillini 2016; Workie and Jain 2017).

This database technology is used to share the management of information among multiple participants in a network without reconciliation between financial institutions. The stored information is instantly and independently updated by multiple participants and protected via encrypted digital signatures. It increases the resilience of the system and its ability to recover from disruptions.

DLT as critical innovation can foster collaboration with stakeholders across markets and jurisdictions to develop sound technological, legal, governance, functional, and operational cross-border standards to make financial markets more efficient and safe. DLT platform can improve and enhance experience for consumers, allowing new affordable and accessible financial services (offered by partners) and improving functionality of general ledger accounting, by tying it to digital cryptography and redefining process and roles of various market players (Workie and Jain 2017). However, open banking platforms create network market vulnerabilities with rent appropriation threats (Gomber et al. 2018; Mager 2019; Tranquillini 2016).

The direct interaction between issuers and investors on a distributed ledger will reduce importance of regulated intermediary financial institutions. Concerns for safety and sustainability of such a market architecture put the financially dominant and innovative banks to cocreate and manage the emerging DLT-based financial ecosystem with collaboration of Fintech partners during the emergence of disruptive platforms to streamline the business (Campenon 2016; Cohen et al. 2016; Workie and Jain 2017; Panetta et al. 2017; Tranquillini 2016).

Banks recognize the efficiencies of blockchain technology to reduce counterparty risk or capital held against unsettled trades, limit human error in matching trades, limit the professionals needed for administrative and settlement functions, and expedite the settlement of trades. One-stop-shop, transaction monitoring and the combination of traditional credit and transaction data in one location could support credit scoring and fraud protection. It could pose a risk for full-set of data comprised by unauthorized breach. (Cohen et al. 2016; Gomber et al. 2018; Kiljan et al. 2017; Workie and Jain 2017). Information sharing among institutions can strengthen the maturity of the participating partners' cybersecurity programs against cyber-attacks (Korte 2017).

The most promising advantage of DLT for financial industry, driving top-line revenue growth, is the development of new products and services (delivery modes) by utilizing smart contracts to replicate (or replace) conventional legal agreements. It will result from applications to financial products, including commercial paper notes, derivative instruments, and asset backed securities (ABS).

Donald (2018) explains the evolution of securities trading shaped by law and technology. Securities trading migrated from private networks to public forums and now will be returning to private networks. The disintegration of securities trading can reduce market quality for most of the stakeholders while increasing the power of the largest institutions limiting market access.

Artificial Intelligence (AI) Application

AI-based cognitive computing utilizing vast and versatile data and information sources might become the financial industry's biggest disruptor. They can improve evidence-based decision making by continually learning about the market from each transaction (Ehrenfeld 2017).

Application of robotics and cognitive automation in banking enabling faster processing, handling higher volumes and reducing errors, are next industrial revolution. They bring negative structural challenges such as process fragmentation requiring front-to-back process streamlining, redesigning, or even re-engineering along with automation and dramatic employment shifts. Those challenges must be addressed with the right operating model, governance, opportunity qualification methods, and infrastructure. To reimagine processes for greater efficiencies and control, many issues should be resolved: quality of data, validation process with some flexibility, unstructured communication, legacy systems, and massive employee retraining for advanced skills-jobs (Hegde et al. 2017; Krishna 2016).

Mieszala (2015) considers a triple revolution via increasing penetration of digital technologies in banking. First, an industrial revolution with new opportunities for growth and cost reduction resulting from the automation of core banking functions—connections with clients and between employees, innovation, processing of operations, and decision making. Then, a market revolution initiated by specialized new entrants such as Fintech lenders, disintegrating value chains, reinventing their business models, and fundamentally transforming the market structure and dynamics. Finally, a managerial revolution, as digital disruption requiring new skills and mindsets among employees, completes the process.

A New Form of Money

A new form of digital money—programmable smart money—originated the acceleration of automated electronic payments in the cashless society. The new API technologies changed the financial services industry by their distributed and decentralizing nature. Technological evolution of the financial environment led to the creation of multiple cryptocurrencies, which started with the disruption of the post-1971 world of fiat currencies. The token-based transactions are the advent a new era of ambient accountability, where the technological architecture provides for constant verification and validation. Banks would be enticed to join this trend by embracing the digital money and digital

identity technologies for private money creation as cost-effective and desirable by all market participants. Central banks have to enable this radical change with a permitting regulatory framework and a considered seigniorage issue for money creation. The transformational expansion of cryptocurrencies will promote innovation in the wider economy while servicing complex transactions with substantial information contents transfer, reduction of concentration of liquidity and credit risk, and financial inclusion in the economy. Concerns of political control, and tracking tax evasion, money laundering, and bribery remain (Birch 2018; Gomber et al. 2018).

Legal and Political Factors Opening the Market for New Technologically Armed Competition

Market Entry Barriers Relaxed

Regulations removing competitive barriers help new entrants (Fintech firms) who propel the revolution in the industry by complementary innovations with progress enhancing effectiveness of another, promoting a new business model with the reduced need for intermediaries. In Europe, the second Payment Services Directive (PSD2) enabled new types of financial services companies: Account Information Service Providers (AISP) and Payment Initiation Service Providers (PISP). Banks were forced to allow approved third parties access customer data and payment systems (Docherty 2018; Salmony 2018).

Fintech revolution inherent in the sharing economy affects financial services due to major improvements in efficiency, customer centricity, and informedness, process disruptions, and use of social media. Fintech providers leverage technology to create stakeholder value associated with an expanding range of financial transaction payments and charitable giving, cryptocurrencies, blockchain, FX (foreign exchange) and cross-border payment, lending and deposit services, peer-to-peer (P2P) lending and crowd-funding, investments, financial markets, trading, risk management, and robo-advisory.

Providing deposit accounts, such as checking and savings accounts, and giving retail and commercial customers access to their funds (requiring asset/liability management and banks leverage) remain the most fundamental and pervasive banking functions due to legal protection, deposit insurance, and risk-incurring time transformation of money.

As open banking and interinstitutional APIs (application programming interface) enter the mainstream, the deposit services market will face substantial Fintech-driven disruption. With approaching maturity of the Fintech sector, advocated expansion into capital markets, and progressing customer intelligence as a key driver of financial firm profitability, regulators might engage in more oversight (Gomber et al. 2018).

Bigtech companies such as Apple, Google, Amazon, Facebook, and PayPal have technology, capital to invest, and customer franchises into which to market financial products (Viceira et al. 2018; Docherty 2018). Incumbent banks

have the legacy network to defend and experience the pressure to adapt to the different competitive environment. Banks need to address the technology platform-driven disruption and threat of obsolescence caused by the new competition created by adoption of modern technologies. Financial institutions and Fintech start-ups sustaining systematic innovation can be mutually supportive and complementary in collaborative strategies building customer-centric business models not competitors in the same market segment (Gomber et al. 2018).

Fintech providers as innovators can increase benefits from the diffusion of the new technology from the external adopters by pursuing collaboration with banks when the systematic characteristics of the innovation process change irreversibly. It is evidenced on the pattern of innovation diffusion because of using multi-party integration needs/solutions observed in the banking industry (Wonglimpiyarat 2017).

Regulatory and Compliance Pressure Increased Requiring Risk Management With New Technologies

Following new capital regulations from the Basel Committee and an overhaul of loan accounting standards, banks facing strategic risks need to embrace new breakthrough technologies to preserve short-term shareholder value while maintaining long-term competitiveness and viability (Docherty 2018; Griffole 2017; Folwarski 2018).

Banking and securities industry risk management regulations resulted in transformational change with impact on the underlying data and technology infrastructure. Critical technology and data management components were deployed with support of external vendors to assist with regulatory compliance, affecting data sourcing, data processing and retention, data analytics and reporting, data management, governance and control synchronized with policies, standards, procedures, and documentation dealing with complex global regulations (Krishna 2016; Becker and Buchkremer 2018).

These technologies (such as ontologies, coupled with artificial intelligence and machine learning (ML)) help process, federate, and integrate unstructured data (text, voice, video) and structured data from siloed databases in and across financial institutions (Butler and Brooks 2017).

Regtech semantic-technologies-based solutions (the management of regulatory processes within the financial industry through technology) provide support for better decision-making because they originate from heterogeneous and fragmented GRC (Governance, Risk Management, and Compliance) solutions recognizing the need for a holistic, integrative approach. Regtech providers, as vital robust partners for the experimenting financial industry, utilize a combination of a variety of technologies. Regtech industry supports overarching framework to integrate fragmented initiatives in financial institutions. Regtech, as a third party subject matter specialist, plays a significant role for all stakeholders in collaboration, governance, standards, and market practice harmonization to implement successfully new Fintech solutions in a multi-party,

globalized network environment (Ehrenfeld 2017; Gomber et al. 2018; Smith 2018; van der Westhuizen 2016; Krishna 2016).

The well-managed data benefit the business by improving customer analysis, risk management, compliance, portfolio management and marketing, reengineered processes to eliminate waste, designed better products and services, improved relationships with customers, and pursued more effective distribution channels to generate business (Smith 2018).

Socio-Economic Factors Expanding the Market for Financial Services

Financial Inclusion of Underserved Populations

The entry of Fintech providers and the use of robo-advisers by traditional financial services companies offering mass-market financial advice demonstrate a new trend described as a blend of new-market and low-end disruption with attractive low-cost value proposition. A new class of wealth management advice providers is attracted by a sizable underserved population, similarly as initially Fintech firms were offering payments and lending after the financial crisis of 2008 (Viceira et al. 2018; Kansal and Chaganti 2018; Buchak et al. 2018).

According to Jagtiani and Lemieux (2018), Fintech firms' consumer lending activities penetrated areas underserved by traditional banks, such as in highly concentrated markets, areas with fewer bank branches per capita, and where the local economy was not performing well.

Manif and Marsh (2017) and Noronha and Kumar (2019) explain how digital revolution addresses financial inclusion for low-income underbanked populations. DLT technology offered by Fintech reduces costs and increases access points, and offers instant cash, settlement, and remittance for consumers without a checking or saving accounts relying on check cashing services. DLT's real-time transfer ability improves check processing, drawing unbanked consumers to banks in the process if they operate on the shared platform. The unbanked households use their mobile devices as an access point to other Internet-based services such as mobile payment services. The smartphone dependency is higher among low-income, minority, and less-educated populations more likely to be underbanked or unbanked, but exhibiting high rates of mobile phone ownership and concerns about privacy. Customer satisfaction in using financial services via various delivery channels (e-banking includes ATM, net banking, mobile banking, and phone banking) depends on ease of use, conservation of time, convenience, privacy, accuracy, and servicing most needs (Rani and Rani 2018).

Perception of Trust and Digital Privacy

Trust is the most critical element in the decision of purchasing financial advice. Century-old banks with tarnished reputation are not considered more credible than exciting Fintech startups (Viceira et al. 2018; Docherty 2018; Gomber et al. 2018; Manif and Marsh 2017; Trieu et al. 2019). Consumers are

comfortable with online interactions and demonstrate a strong preference for digital. They favorably choose Fintech and Bigtech providers' business models with recurring transactions, as prepared meal purchases or gasoline fill-ups turned into loyalty propositions with support of apps adding value by organizing history.

Digital privacy is the foundation of consumer trust. It depends on business information security and governance controls in the digital services. Security solutions for digital privacy protection and access validation include multi-factor authentication, security tokens, biometrics, and access control lists. Data privacy concerns or a breach of security has damaging implications for customers and business. Hence, the technology, policies, and processes used to store, transmit, and control access to enterprise information are critical (Rice and Sussan 2016).

Salmony (2018) recommends the use of intelligent data-driven authentication available in new digital technologies for smart digital identification to replace the current dependence on government-issued documents, faxes/utility bills, user ID/passwords, and rigid two-factor procedures. The modern 3SPP identity solutions are secure, simple-to-use, scalable, private, and pervasive according to the expanded acronym. The model connects many current silos of organizations providing attributes across multiple participating parties employing an open four-corner model, with banks playing as trusted partner, the central role, instead of today's point-to-point interconnections. It offers better protection against massive cyber breaches and identity frauds. Users experience would be enhanced by reduction of countless passwords, registration procedures, poor online acceptance, and high fraud costs. Pseudonymity, substituting true personal identity, is convenient, saves costs, and improves privacy, but requires attribute management in the new open application programming interface (API) network economy. Providing identity services is a new future business opportunity for banks to be offered to corporates (including Fintech), governments, and online services when the IoT (the Internet of Things) devices and mobile apps needing identification will explode in volumes.

Considering the capabilities and limitations of DLT technologies and robo-advisors hoped to be a foundation for solving major problems faced by financial institutions, regulators and Fintech companies will need to continue working in collaboration to avoid fragmented innovation. The beneficial disruption in automation processing will only occur when all who participate agree to find solutions benefiting all participants (Ehrenfeld 2017).

Innovation Driving Efficiency

The customer acquisition costs remain high, because of the critical nature of the scale of the business, while customer retention became more difficult (Gomber et al. 2018). With the existing significant client base and data for data mining, banks as the incumbent players could capitalize on the opportunity for automated wealth management services in collaboration with Fintech firms offering technological solutions. Banks guard their greatest legacy assets and

fear cannibalization of their high-margin business and a brand/trust gap (Folwarski 2018).

The effectiveness of banking technology investments depends on the support for transition efforts received from transformational leaders, commitment to change successfully overcoming resistance, and diffusion of the innovation (Cingilloglu 2017; Messenböck et al. 2017; Ardizzi et al. 2019).

Banks consider various strategies in the digital revolution: build, buy, or partner, depending on the cost-efficiency and control of technology in capturing the market. Fintech providers are attracted to collaborate with banks to get access to a customer base. Banks are taking cautious bets with Fintech firms to best position themselves in the instant delivery for customer satisfaction. Full acquisition is not often considered by banks because banks are looking for strategic gaps to fill for revenue growth with mature technologies ready to apply for new products or new market segments. There are challenges in potential acquisitions such as costs/pricing with intellectual property diligence and integration challenges due to cultural differences and growth-oriented Fintech versus bottom-line performance-focused banks. There is a natural strategic fit between banks and Fintech firms, facing the competition from Bigtech companies (McCormick 2018).

Fintech providers as parent companies of smaller banks might gain an unfair advantage over their competitors, misguide their creditors, or limit their liabilities by benefitting from the federal subsidies given to the banking industry. Fintech-owned bank activities could pose a significant risk to the federal safety net. Therefore, it would be preferable to have both Fintech industry as well as maintaining a safe and sound banking system (Oney 2018).

METHODOLOGY

The study was conducted in the meta-review format for reconciliation of dominant patterns and forecasts with recognition of notable differences. It was based on reports, analyses, and data from leading research tanks and advisory, consulting firms, and industry experts, focused on financial services technology (BCG, McKinsey, PWC, KPMG, CFTE, GPS Citibank, BNY Mellon, Unisys Corporation, Celent, CBInsights, Deloitte, IDC Financial Insights, FDIC CFR).

It includes interdisciplinary and cross-industry analysis (financial sector, Fintech firms, Regtech firms, IT) with a global perspective and regional differences. It incorporates relevant functional issues related to IT, finance and economics, strategy and organizations, marketing, statistics and data science, operations management and management science, and computer science.

Resource-Based View of the Future Banking

Expected Employment Shifts and Substitution in Banking

By 2030, large banks will reduce the total employment by 30–50% of the current number while shifting the workforce to operations and technology, constituting 50% of the bank personnel. It will reduce the cost-income ratio to 30% from current average of 60% leading to significant gains in the return on equity (ROE) (Ghose et al. 2019; Deloitte 2019a; Skinner 2018; Dupas et al. 2017).

The biggest layoffs at Wall Street are expected in asset management (90K), securities service (58K), sales and trading (45K), private banking and wealth management (24K), and trading and clearing venues (15K) by deployment of artificial intelligence and blockchain (Skinner 2018), whereas only an increase of 24K is expected in technology and data hiring.

Next, there will be dramatic shifts in banks' employment by 2039, mostly reduction of back-office jobs by 20% cut from the current 38% employment in the banking sector and strong growth in the demand for software developers and computer system analysts (McKinsey 2018).

Banks hire talent from competitors and are expected to source out project-based needs to gig-based employees, up to 15–20% of labor force in next five years (Ghose et al. 2019; PWC 2019; Morel et al. 2018).

Expected Skyrocketing Spending Patterns on Technology

The rankings of the digital leaders among banks are aligned with banks spending on technological innovations. Twelve of the 15 largest banks, including JPMorgan Chase, recorded an increase in their operational budgets from 2016 to 2017, and budgeted \$9.5 billion annually for technology in 2016 and 2017, and an increase to \$10.8 billion in 2018. Bank of America set the bar higher with an annual global technology and operations budget of nearly \$16 billion with Citigroup Inc. spending roughly \$8 billion on technology and Wells Fargo \$9 billion. The sum of bank IT spending across North America, Europe, Asia-Pacific, and Latin America is expected to increase by 4.2% compounded annual growth rate from 2018 to 2021 to the total of \$296.5 billion (Garcia 2018; Shevlin 2019).

The gigantic IT spending budgets of the mega IT bank players evidence a growing gap between the largest and smallest banks, reflecting what they can afford to invest to develop new technologies. Smaller banks are falling behind because regional institutions suffer from a competitive disadvantage. Although, as a percentage of assets, IT spending at four of the largest regional banks (US Bank, PNC, BB&T, and KeyBank) is slightly higher than it is at the four mega-banks (JPMorgan Chase, Bank of America, Wells Fargo, and Citibank), 0.51% as compared with 0.44% respectively. The widening gap is even more significant for smaller players. Credit unions' spending on technology, as a percent of assets, is behind the mega- and regional banks, with the median IT spending among credit unions of 0.42%. They spent about \$6 billion in total on IT in

2018, just a little more than half of what JPMorgan Chase spent by itself that year, whereas mid-size banks (\$500 million to \$50 billion in assets) spent 0.22% of assets on IT in 2017 (Shevlin 2019; Nichols 2019; Dupas et al. 2017).

At most advanced banks, 60% of all transactions are conducted digitally via smartphone or computer, following the first imperative of digitizing for bank cost reduction and next, digitizing for customer value increase. To attract more of the lagging revenue through digital channels' adoption, banks need to pursue ecosystem approach and invest in Fintech. In 2017, banks increased their participation in the funding rounds for retail banking startups to 71%, as compared with only 20% in the 2013 funding for Fintech firms (Desmangles et al. 2018; PWC 2019).

The most active US bank investors in Fintech companies (by the number of portfolio companies) are Goldman Sachs, Citigroup, and JPMorgan Chase. They focused on technologies supporting real estate, data analytics, and payments & settlement, complementing their own digital banks development. Data analytics category consists of startups leveraging AI and ML. Citigroup engaged in four blockchain, three capital markets, and three payments & settlement startups since 2017 related to its own in-house bank's larger strategy of building open banking infrastructure. Capital market startups include augmenting or replacing securities issuance, trading, clearance, and operations (CBInsights 2019).

Fintech providers (interested in banking license and access to customers), as mutually beneficial natural fit, can support community banks with agile technology development because community banks lack the necessary personnel to invest in new digital products and are slow in innovation (Hernandez 2018; PWC 2019; Morel et al. 2018; Elder 2016).

Nearly 50% of banks around the world say that their latest digital investments are failing to generate returns greater than the costs of capital. Only a few banks generate significant returns from digitization. Those benchmark banks benefit from consistently harvesting the idle capacity resulting from ongoing digitization while digitizing the front-end customer experience. They capture productivity unlocked in their legacy operations and extend digitization to non-customer-facing operations, such as finance, HR, and other corporate functions. Although they experience efficiency gains through the full, continuous, and disciplined digitization cycle by repeatedly applying created new capabilities to scale out with the flywheel mindset, their primary focus is on improving customer experience. The real gains come from applying digitization as broadly as possible across the organization and from building an ongoing capability for capturing digital value (Baghai et al. 2018).

Successful digital investment results are driven by prioritizing innovations improving customer experience and employee experience at the same time, while increasing revenues and reducing costs (Jain 2017).

Expected Banking Revenue, Profitability Forecasts, and Financial Inclusion

Banks will address new revenue trends based on the wealth-based stratification of the consumer markets with 30–40% of population in the developed societies having no money, displaying only basic transactional banking needs. Another 30–40% of people who have very little money can be served at much lower costs with automated artificial intelligence powered across all financial services. The remaining 20% constituted by affluent high net worth individuals and ultra-high net worth could be provided personal human being-aided attention in the new cost-efficient operating model (Ghose et al. 2019).

To revitalize banking revenue streams, banks can implement analogies from other industries, such as cobranding products (e.g. credit cards) and revenue-sharing arrangements contributing between 10% and 30% of revenue attribution. New opportunities are important to substitute for the expected revenue loss in the range of 10–30% due to digital disruption. Between one-third and one-half of all consumer payment volumes, 17–34% of personal lending volumes, and credit card lending and mortgage volume up to 17%, investments volume up to 34%, and 17–34% of SME lending volume, may be taken over by digital banks, Bigtech, or Fintech firms by 2025. The negative profit impact can be devastating to banks because lending accounts for more than 50% of banks' total risk-adjusted revenues, followed by savings and investments (21%), capital markets (16%), and payments (7%). Personal/SME is the most profitable segment for banks, accounting for nearly 50% of all profits, followed by corporate (35%) and investment banking/markets (20%) (Ghose et al. 2019; Broeders and Khann 2015; Dupas et al. 2017; Baumgärtner et al. 2018).

The market appetite for passive investing and the popularity of open-ended mutual funds and exchange-traded funds (ETFs) increased to 45% of the US market share, 48% in Asia, and even 70% in Japan to support the transition to robo-advisors (McKinsey 2018).

The major revenue growth potential is expected in Asia (8% annually) with also Latin America and the Middle East and Africa experiencing above average prospects. Regional differences are not only the result of different digital transformational strategies but also a response to various macroeconomic conditions, trade flow corridors, labor flexibility, and regulatory changes (Desmangles et al. 2018; Badi et al. 2019; BNY Mellon 2014; PWC 2016; Ghose et al. 2017; Grasshoff et al. 2018b; Allen 2019; Baumgärtner et al. 2018).

*Industry Analysis: The Forecasted Strategic Changes**Widening Gap in the Banking Sector*

There is already an increasing profitability dispersion between the early market proxies for challenger platform banks in the United States (CWB Bank, CelticBank, and Live Oak Bank) and disadvantaged by the physical network large top-ten banks. ROE (return on equity) multiplier of proxies over the top-ten US banks increased from 2.3 in 2016 to 6.0 in 2017 (Allen 2019).

Further revenue loss for lagging banks and limited ROE improvement will lead to progressing polarization between market winners and losers with top banks already enjoying a big efficiency advantage. Large banks are negatively affected by higher costs, compliance, and structural complexities. Many banks do not have clear digital strategy or lack market-leading digital capabilities undermining their digital readiness (Ghose et al. 2019; Desmangles et al. 2018; Baumgärtner et al. 2018).

Top-ten US banks leaders in digitization are JPMorgan Chase, Bank of America, Citibank, Morgan Stanley, PNC Financial Services Group, Wells Fargo, Goldman Sachs, Bank of New York Mellon, TD Bank, and US Bank. These pioneers were identified in the multifaceted research, rated on working with cutting-edge technology with strong infrastructure, learning and innovating with technology, adopting blockchain and cryptocurrencies, and embracing digital transformation (Ansari 2019; Din 2017).

The top banks recognized by Global Finance Magazine global banks by innovation (in the respective regions) were Bank of America (Global and North America), BNP Paribas (Western Europe), VTB Capital (Central and Eastern Europe), CCB International (Asia-Pacific), BBVA (Latin America), GIB Capital (Middle East), and Rand Merchant Bank (Africa). These banks were 2018 inaugural winners of the Best Bank for New Financial Technology category because they are at the forefront of the financial innovation, leveraging blockchain, artificial intelligence, data analytics, and the Cloud to change the face of banking (Kranc 2018; Morel et al. 2018).

A New Business Model for Banks: Challenges of Open Banking or Connected Banking With Strategic Alliances

As per Salmony (2019), banks have a mixed record in adapting to changes. Banks will have to implement changes driven by unsatisfied customers demanding change, at high expense, under time pressure, under rules laid down by others such as regulators, new competition from Fintech, and new technologically intensive and connected network-based environment while addressing high infrastructure and compliance costs. Banks should become more active, and regain the initiative through smart approaches with instant (real-time) relentlessly client-centric service.

The open shared economy will be much larger, with the banks well positioned to take the biggest share of the benefits. They invest in the open digital infrastructure taking a key role in the collaboration-based model by successfully cherry-picking of partners (PWC 2016; Grealish 2019; Grasshoff et al. 2017; Brackert et al. 2019; Morel et al. 2018; Baumgärtner et al. 2018).

A Platform Virtual Bank

Branch-based banking began its steady decline in the late 1980s with emergence of challengers operating as a branchless Internet-only banking model. Branches were reduced but not eliminated, as part of multichannel strategies pursued by major banks, justified by the demand for deposits. Next, banks will

be hosting and monitoring DLT platforms to enhance customer experience (Gomber et al. 2018; Patel and Brown 2016).

Customer-Oriented Focus

Banks are well positioned to adopt the KYC (Know-Your-Client) approach based on the wealth of data collected for compliance with the anti-money laundering (AML) regulations. The legacy control culture and the internal fragmentation into silos with manual processes reduce operating speed, limit flexibility, increase cost, decrease efficiency, and divert attention from the customer service experience (Ghose et al. 2019; Backbase 2018; Desmangles et al. 2018; PWC 2019; Brackert et al. 2019; Saleh et al. 2017).

Risks and Global Issues

For banks, cybersecurity is not purely a ‘technology problem’ but a business challenge requiring business ownership and strategy development. From an internal bank issue, cybersecurity will shift the attention to risk to the third-party service providers and connections as banks struggle to manage the complex ecosystem of third-party service providers, and the dependencies they create under strong regulatory pressure (KPMG 2018; Grasshoff et al. 2018a).

The cybersecurity risk will be exacerbated by an increased use of third-party vendors, deployment of evolving, sophisticated and complex technologies, explosive growth of cross-border data exchanges with new markets, increased use of mobile technologies by customers, including the rapid growth of the Internet of Things, and heightened cross-border information security threats. The expected areas of concern include attack surface, perimeter security, privacy protection, and device management. Use of machine learning, big data, data mining, customer analytics, and collaboration within the joint risk-based framework, and digitized risk management can balance customer safety-convenience trade-off, increase efficiency, and reduce processing time (PWC 2016; Grasshoff et al. 2018b; Ivanov 2019).

Institutional Analysis of a New Emerging Market Landscape and Players

There are various strategic pathways dominated by consolidation via M&A and strategic alliances creating convergence. New trends will lead to a completely new arena of banking collaborating intensely with emerging leaders in the financial services (Ghose et al. 2019; BNY Mellon 2014; Alf et al. 2018).

Incumbent Banks Making Strategic Bets

With muted revenue growth of 2% annually and 8–9% average ROE in the period of 2012–2017, global banks need to reinvent themselves quickly and dramatically. Even in the asset management sector, where ROE is much higher than the average in the financial services industry, there is downward pressure on margins and profitability from ETFs and robo-advisors. Although the

capital markets revenue grew 7% from 2016 to 2017, investment banks, after five consecutive years of revenue decline, captured only 33% of total revenue in 2017, down from 48% in 2006 (McKinsey 2018; PWC 2019; Grasshoff et al. 2018b; Allen 2019; Morel et al. 2018).

The incumbent banks will transition into next-generation cloud-native technology platform to eliminate duplication and fragmentation, much beyond just mobile banking, use of big data, and cybersecurity. The internal growth model is based on principles of venture capital and lean startup methodology. It is a new way of thinking for the organization, empowering employees, to build, test, and launch innovative solutions for clients. The deployment of new platform replacement is very risky, expensive, and time-consuming. Deep strategic alliances with tech vendors and Fintech firms will be mutually beneficial, although initially ignored (Ghose et al. 2019; Deloitte 2019a; BNY Mellon 2014; Sella 2017; McKay 2017; Dab et al. 2017; Jain 2017; Kranc 2018; Morel et al. 2018).

APIs are critical for traditional banks (with PSD2). They revolutionized the system giving the lead to Fintech providers. Banks have to take over the initiative for providing controlled access to their open platforms. APIs and access to comprehensive collaborative banking platform provide what customers want—one dashboard of their complete financial life taking fuller advantage of the open network economy (Ghose et al. 2019; Backbase 2018; Morel et al. 2018).

It will be much more beneficial for banks to become a platform company providing access with API for external third parties rather than to attempt to integrate banking into other apps (Ghose et al. 2019; Deloitte 2019c; Desmangles et al. 2018; Bareisis 2019).

Traditional banks have to overcome the attachment to old architecture and some manual processes because it obstructs the deployment of new technological environment, although the old core banking system (CBS) is underlying basic day-to-day functionality. The change requires implementation with concurrent integration, training, reconciliation, and pending compliance. The launch of new stand-alone digital offshoots might be a cautious way to mitigate the risk of transition but can delay the process. Benefits can be derived from learning experience allowing replication or gradual digital migration to the new model for the revolutionary approach using a parent brand name for leverage in areas when trust is needed (Ghose et al. 2019; Deloitte 2019a; PWC 2019).

Incumbent banks have to embrace disruptive technologies driving new platform-based business models like a start-up approach creating an opportunity for deep strategic partnerships with a variety of players offering compelling unique selling propositions (USP) (Ghose et al. 2019; BNY Mellon 2014). It requires a dramatic internal cultural change and openness into strategic partnership with technological providers or leaders in the field (Ghose et al. 2019).

PSD2/Open Banking drives the competition in banking by opening the sector to a variety of players and various forms of collaboration for access to customer and customer data. Banks have a great business opportunity to use big data from their fragmented data pools to transform them into data lakes for

cognitive and personalized banking. Tracking needs exhibited by customers could support eroding loyalty (Ghose et al. 2019; Backbase 2018; Desmangles et al. 2018; BNY Mellon 2014; PWC 2016; McKay 2017; Dab et al. 2017).

Financial inclusion will widen the market enabled by a new low cost-to-serve data-centric digital banking model explained by the ATGIE concept: acquire, transact, generate data, insight, and engage (Ghose et al. 2019).

New global market expansion opportunities for digital offering of financial services are in countries with cash dependency, alternative payment options, underbanked populations, demographics with young, migrating populations, and with regulatory and institutional support for mobile money adoption (Ghose et al. 2019; Trieu et al. 2019; BNY Mellon 2014).

Reimagining of traditional banking involves three-pronged digital strategy encompassing: (1) digital bank targeting mobile-first and mobile-only generation, (2) omni-channel experience with deepening customer engagement, and (3) ecosystem partnerships forging collaborations to widen distribution reach (Ghose et al. 2019). It corresponds to the model of digital platform-based open modular and smart banking with agile processes delivering superior customer value. It requires a quantum leap in the customer-focus providing insight and building relationship in the new-housed, orchestrated ecosystem (Backbase 2018; McKinsey 2018; Deloitte 2019b; PWC 2019; Dab et al. 2017; Morel et al. 2018).

Incumbent banks are expected to expand the use of blockchain, RPA (Robotic Process Automation), business process management (BPM) and AI technologies (including image recognition, optical character recognition—OCR, natural-language processing—NLP, voice recognition), and better data management in both the front and back offices in transaction banking. Standardization of processes along with customization of the banking proposition will support significant efficiency gains and instant, frictionless, and seamless customer service (Deloitte 2019a; PWC 2016, 2019; Bareisis 2019; Brackert et al. 2019; McKay 2017; Dab et al. 2017; Jain 2017; Booth et al. 2017; Silva 2019).

Incumbent banks pursue hybrid strategies such as developing in-house expertise or by-side offspring as their own challenger banks; using M&A to acquire proprietary technology developed by outsiders; forming consortia (to make minority investments in startups and acquire rights to their intellectual property), or cooperative strategic alliances with contractual commitments to technical vendors or partners (including Regtech and Insurtech).

A new business model shapes the industry operating on the technologically driven interoperability of infrastructures across markets fostering consolidation and convergence. The sophisticated propriety decision software will give advantage to creating value-added propositions, not any more commodity like, individualized financial services from various vendors (Deloitte 2019a; BNY Mellon 2014; PWC 2016; Ghose et al. 2017; Grasshoff et al. 2018b; Sella 2017).

Incumbent banks will undergo bionic transformation by blending digital and personal interactions to create a responsive and cost-effective distribution model with a converted value proposition combining human judgment with data power. They need to adopt a customer journey mindset with end-to-end processes supported with robotics and machine learning to reduce process intensity and improve customer satisfaction (Dupas et al. 2017; Morel et al. 2018; Baumgärtner et al. 2018).

Sustainable productivity improvement is imperative for the financial services industry. It is difficult to implement without transition to platform-based business model supported by digitalized employees embracing cultural change (PWC 2019).

Challenger Banks Not Always Quite New

New digital banks entered the market in mid-2010s benefiting from reduced capital requirements in some jurisdictions (e.g. OakNorth and Starling). Some of them were launched by incumbent banks (e.g. Di-Ba by ING, Pepper by Bank Leumi, New Hong Kong Virtual Bank by Standard Chartered, Hello Bank by BNP Paribas, FINN by JPMorgan Chase, Marcus by Goldman Sachs; Bo by RBS) to overcome the transformation barriers caused by their legacy networks. New branding targeting young market segments facilitated ventures with much lower cost structures. It can lead to much smoother transition to a new operating model without the burden of underused network (Ghose et al. 2019).

Digital banks with virtual banking license can leverage their balance sheet via fractional reserve banking for lending and earning spread on deposits. Therefore, they are subject to Basel regulatory framework to monitor risk/return on risk-weighted assets (Ghose et al. 2019).

Digital banks' growth was enabled by graduate expansion of their product offering including payments, credit cards, mortgages, auto loans, checking accounts, life insurance, and health insurance. They build their competitive advantage by addressing a clear consumer need: value, transparency, customization, and simplicity. There is a significant perceived value added of personalized insights and optimized service and the advantage for banks with prospecting, business origination and customer retention (Ghose et al. 2019; Desmangles et al. 2018; Bareisis 2019; Broeders and Khann 2015; Dupas et al. 2017).

Fintech Firms as Disruptors

The success of Fintech providers was attributed to regulators opening them access to traditional banking services on Fintech mobile money platforms. The initial areas including payments, lending, and robo-advisors were supplemented by international remittance, merchant payments, e-commerce, mobile lending, savings, insurance & FX products, mobile money, and G2P transfer offer solutions. (Ghose et al. 2019; Trieu et al. 2019; McKinsey 2018; Deloitte 2019c; Desmangles et al. 2018).

Fintech firms demonstrated tremendous growth in the last five years with impressive capital sourcing capabilities and innovating via crowdsourcing (the top 50 received more than \$3.5 billion in equity). A broader access to customer base by Fintech providers can be obtained by collaboration with banks and Bigtech companies to overcome the scalability barrier, security, and data confidentiality (Ghose et al. 2017, 2019; Trieu et al. 2019).

Moreover, Fintech providers already operate on the digital platform for the worldwide community covering an impressive range of financial areas (banking and insurance) offering trusted and excellent mobile access-based customer experience (Ghose et al. 2019; Trieu et al. 2019; PWC 2016).

APIs gave Fintech firms an advantage of offering accessible and real-time faster and customized payments with value added solutions (Ghose et al. 2019; Backbase 2018; BNY Mellon 2014; Sella 2017). The most successful Fintech companies prioritize customer acquisition and retention while monetizing the opportunities offered by customer data collection (Trieu et al. 2019; Deloitte 2019b).

M&A and investment activity in 2018 continued to reflect the beginning of maturation of key Fintech areas of operation looking for increasing a critical mass via consolidation and preparation for the advent of more consistent regulatory oversight of the fragmented and with blurred boundaries financial services sector after digital systemic disruption. Internationalization of operations with its implications requires common standards and legal principles for maintaining trust in financial services after the period of regulatory divergence (He et al. 2017; Deloitte 2019a; BNY Mellon 2014).

All market players need to recognize that ensuring that customers control their ‘data lives’ will be both a commercial and regulatory imperative (Deloitte 2019c).

Bigtech Firms Pioneering Platform Companies

The keen interest in financial services of Bigtech, such as GAFA (Google, Apple, Facebook, and Amazon) or sometimes grouped as Facebook, Apple, Amazon, Netflix, and Google (FAANG), and BAT (Baidu, Alibaba, and Tencent) posed a significant challenge for all other market players. These businesses derive their value through what is called BeCoN, or behavioral, cognitive, and network capital (similar to Airbnb or Uber) based on their mutual marketplace platform driving transactions by using leading-edge algorithms to efficiently match supply and demand. Financial services have long been home to many platforms, such as stock and derivatives exchanges, clearing houses, and depositories, all created to benefit both the platform owners and their end clients, however not as open and customer facing as the new accessible and cybercommerce-related ones that recently emerged.

The way Bigtech firms conquered retail sector and their natural competitive advantage in customer acquisition based on the high user engagement model will let them focus on the most suitable financial services with cross-selling opportunities such as payments and insurance. Internet companies will

dominate the mass market and will be interested in products they can offer in collaboration with bank capital or ‘rent out’ the bank charter from smaller banks. Bigtech firms can host products from Fintech firms to collect the rent from them for the customer access (Ghose et al. 2019; Backbase 2018; McKinsey 2018; Desmangles et al. 2018; BNY Mellon 2014; PWC 2019; Broeders and Khann 2015).

The banking sector structure changes parallel other industries such as sharing platforms for online ticket booking or Airbnb for travel agencies and hotels (McKinsey 2018; PWC 2016).

Bigtech as a platform company will compete more on financial products rather than become broad-based banks. They are also more likely to be just a platform to channel banking processes with front-end offering from them or share-revenue from various providers and back-end processes rendered by traditional banks (Ghose et al. 2019; McKinsey 2018).

The proliferation of platforms for long- and short-term corporate contracts, such as Wonolo, Fiverr, or Talent Exchange, supported a gig economy transferring people’s life into platform companies, including the demand for financial services (PWC 2019).

CONCLUSIONS

Digital revolution requires a profound transformation of the banking sector to reemerge on a sustainable collaborative virtual platform by the year 2025 and beyond. It is driven by regulatory, socio-cultural, demographic, and technological change forcing accelerated, costly, and risky adaptation. A reinvented financial services landscape will in turn affect the global economy and the global population with broader inclusion and a more competitive market structure. Intense scholarly and regulatory effort will be essential to mitigate risks and address ethical concern related to protection of customer assets, interest, and data.

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Exploring Effects of Digitalization on Sustainability in the Logistics Service Industry

Orsolya Diófási-Kovács

INTRODUCTION

This chapter seeks to explore the possible effects of digitalization projects on the sustainability performance of a specific group of companies: logistics service providers (LSPs). These companies have an important role within the supply chain in terms of efficient delivery, according to recent trends boosted by digital solutions, and in terms of reducing the harm caused by logistics operations on the environment.

It is important to explore the effects of new technologies and analyze current innovations in order to gain insight into possible solutions to manage future organizations successfully, in harmony with nature and society. In the last decades sustainability issues are increasingly present in our everyday lives and within business decisions and practices as well. The concept of sustainability promises equity, prosperity, and availability of natural resources for the next generations as well. Supply networks work under ever stronger pressure from stakeholders for reducing the harmful impacts of their operations and to rationalize their resource consumption. In this sense environmental management in logistics services is indispensable for the development and operation of green supply chains. The transport and logistics sector is the second largest polluting industry within the EU (EU Transport in Figures, 2018), and due to

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globalization the need for transportation services is not likely to decline in the upcoming years.

Another important topic nowadays is digitalization, changes brought by the Fourth Industrial Revolution. The massive penetration of digital technologies (e.g. Cloud, IoT, Big Data Analysis) facilitates the vertical and horizontal integration of supply chains and fulfills customer demand by developing more transparent, more efficient, and more sustainable digital ecosystems (WEF 2016). Some estimates suggest that the use of digitalization and info communication technologies can lead to a 20% reduction in carbon emissions by 2030 (Evans 2019).

The purpose of this chapter is to examine the industry practices of logistics service providers (LSP) from the sustainability and digitalization point of view. The following are the research questions:

- RQ1: What kind of effects can digitalization projects have on the sustainability (social, environmental, economic) performance of a logistics service provider?
 RQ2: How could digitalization projects significantly contribute to the reduction of CO₂ emissions of LSPs?

The results suggest that digitalization projects have a rather positive effect in terms of economic performance (e.g. efficiency, profitability). The environmental performance is not significantly changed, but the CO₂ emissions can be reduced significantly. According to the results digitalization projects do not affect the number of full-time employees; the projects discussed in the chapter rather help companies deal with the current workload of employees and secure a more efficient and creative working environment.

This chapter begins with a literature review about sustainability and digitalization, focusing on the logistics service industry. Then the methodology of the research is described, followed by the description of the projects. After the project descriptions the effects of each are analyzed along economic, environmental, and social dimensions. The discussion and the final conclusions part close the chapter with some managerial implications, limitations, and closing remarks.

BACKGROUND AND LITERATURE REVIEW

In order to find relevant sources in the literature and be able to identify the ongoing discussions about digitalization it is necessary to make clarifications on several definitions used very often nowadays but in different meanings. In this research and chapter, the following definitions are used. Industry 4.0 refers to the current trend in manufacturing, which builds on data exchange and automation, data collection, and analyses for automatic and smart decision making. It includes the Internet of things, cloud computing, cyber-physical systems that communicate with machine and human throughout the value chain, and cognitive computing. Nagy et al. (2018) define Industry 4.0 as “a

phenomenon that, by means of technology assets and activities, maximizes the transparency of processes by exploiting the possibilities of digitalization and integrates the corporate value chain and the supply chain into a new level of customer value creation.”

At the core of this trend originating from manufacturing is digitization: “digitization is creating a digital (bits and bytes) version of analog/physical things such as paper documents... So, it’s simply converting and/or representing something non-digital into a digital format which then can be used by a computing system for numerous possible reasons” (I-Scoop 2018). However, “in business, digitalization most often refers to enabling, improving and/or transforming business operations and/or business functions and/or business models/processes and/or activities, by leveraging digital technologies and a broader use and context of digitized data, turned into actionable, knowledge, with a specific benefit in mind” (I-Scoop 2018). If we look at the meaning of digitalization beyond business, we can see that the adoption of digital technologies across all possible societal and human activities is just happening (I-Scoop 2018).

Thanks to the increasingly frequent adaptation of technologies in different industries, not just in manufacturing, the term “Logistics 4.0” appeared in connection with smart supply chain management. According to DHL’s logistics trend radar (2018) there are several technologies that can be used by logistics service providers and overlap with the digital technologies for smart manufacturing. These are 3D printing, virtual reality, big data analyses, cloud logistics, IoT, robots/cobots, automation, and autonomous vehicles (DHL 2018). Last but not least we should define info communication technologies (ICT) as well, because of the terminology of the current discussion in the literature. Most articles mention the use of ICT rather than the “new” term, digitalization. According to Weber and Kauffman’s (2011) definition ICT is understood “as technologies that support data and information processing, storage and analysis, as well as data and information transmission and communication, via the Internet and other means.” In this sense we can conclude that there is an overlap with several technologies classified as Logistics 4.0. For this reason, ICT-related papers are also included in the literature review.

Several authors have discussed the effects of ICT on sustainability performance of companies in general. According to the literature, from an environmental perspective, ICT development has controversial effects. On one hand, the spread of ICT tools and the increase of their capacity and performance enhance the need for energy, and the large amount of electronic waste pollutes the environment (Yi and Thomas 2007). On the other hand, improvement of ICT and consequently the increasing efficiency of the companies and/or production processes might save us energy, waste, pollution, or workload, resulting in better environmental performance (Benitez-Amado et al. 2015; Gimenez et al. 2014; Melville 2010; Lee and Brahmasrene 2014). We can see pro and con examples of ICT’s environmental effects in the literature. Matthews et al. (2002) compared online and offline book retailers and concluded that it

cannot be decided which is more energy efficient. Ishida (2015) and Yi and Thomas (2007) state that ICT supports economic growth, social development, and environmental protection, although computers contain parts that are toxic and to produce semiconductor wafers manufacturers use a considerable amount of water and energy.

Regarding the sustainability performance of third-party logistics service providers (3PLs) we have a very thorough literature review done by Evangelista et al. (2018). 3PL companies provide complex solutions to their clients besides transportation and logistics, for example, warehousing, value-added services, inventory management, and customer service solutions, which require high-level IT support. The operations of logistics service industry have significant effects on the environment. Transport and logistics have the second greatest emissions after energy industries (IEA 2017), and due to globalization, the demand for logistics, (e.g. the transport of goods) is continuously growing (ITF 2016). We can say that sustainability is getting greater emphasis within logistics services in everyday operations and on the strategic level as well, in order to reduce the harmful environmental impacts. In the literature environmental sustainability of 3PLs appears in three main streams: (1) focusing on green initiatives, factors for motivations and barriers (Lieb and Lieb 2010; Lin and Ho 2011; Maas et al. 2014; Evangelista 2014; Perotti et al. 2015); (2) the effects of green initiatives on business performance (Oberhofer and Dieplinger 2014; Kim and Han 2011; Tacke et al. 2014; Lun 2011); and (3) energy efficiency of road freight (Léonardi and Baumgartner 2004; Liimatainen et al. 2012). A couple of papers discuss effects of info communication technologies (ICT) (Wang et al. 2015; Kang et al. 2013) and the relationship between sustainability and digitalization (Kayikci 2017).

Wang et al. give a list of ICTs used in road freight that have the potential to reduce carbon emissions. The compilation of this list is a highlight of the paper and gives us clues to understand and possibly position these ICTs in the new Logistics 4.0 terminology. ICT tools that help the reduction of CO₂ emissions in road freight services according to the classification by Wang et al. (2015): Level 1 ICT use includes digital tachograph and telematics in order to provide information on the vehicle itself and its load. Level 2 refers to the company and the management of business processes—transport management systems (TMS) and enterprise resource planning systems (ERP). Level 3 refers to the supply chain and includes customer relationship management (CRM), supplier relationship management (SRM), and supply chain management (SCM) systems. Level 4 refers to the network of various supply chains, and open/closed electronic logistics marketplaces are listed here. Kayikci (2017) lists the digitalization characteristics of logistics and determines which logistics digitalization characteristics are connected to which sustainability dimensions based on case study research. The conclusions suggest that digitalization in logistics has not yet reached the maturity level, but in terms of economic effects there is a huge potential. Digitalization has a poor impact on the social dimension, and the

environmental dimension is mostly impacted by reducing waste, pollution, and emission of greenhouse gases (Kayikci 2017).

METHODOLOGY OF THE RESEARCH

The data used for analyses in this chapter are part of an I4.0 focused research project at Corvinus University of Budapest, where various sectors (automotive, FMCG, logistics services, retail, and shared service centers) and supply chains (the different companies under study belong to different supply chains.) were examined based on qualitative methods, namely case study analyses. Due to the yet not so wide uptake of digitalization or 4.0 technologies, convenience sampling approach was followed by the research team. Those companies were selected that according to the expectations were more mature in 4.0 initiatives. There was only one specific aspect in the sampling process based on institutional theory, namely that the selected companies should be either locally owned (or the headquarter of the company should be located in Hungary) or a multinational firm's subsidiary—since the initial expectation was that differences in ownership, size, host, and home environments can cause fundamental influences on competitive strategy (Porter 1980) and human resource management practices (Rosenzweig and Singh 1991), which would result in different approaches toward 4.0 initiatives. The project's aim is to examine the main features of digital transformation among different sectors and supply chains but at the business unit level.

The data collection process was formalized by a data collection guide (DCG), which was developed by the research team based on the qualitative research design literature (Yin 2003; Caniato et al. 2018) and previous research experiences. The 20-page long DCG provided a structure for the interviews and case descriptions. Its main highlights were industry and corporate level 4.0 strategy, motivation, planning, implementation, responsibilities toward digitalization projects, experiences, results, impacts of projects, employment structure and trends, governance of innovation processes within the company, and sustainability-related questions. The DCG defined the most relevant aspects of the inquiry, and a supplement provided questions and a protocol for semi-structured interviews.

Altogether seven in-depth interviews were conducted by two logistics service provider companies in Hungary in the autumn of 2018. In the case of each logistics service provider a senior manager was interviewed first; they chose the projects that they were willing to introduce to the researchers. Upon questioning, the senior managers answered that the projects were selected based on their success rate and timespan, because they wanted to show the researchers recent and potentially successful projects. Additional interviews were conducted with each project manager of the selected projects.

The information gained was completed by triangulation with the publicly available data of the companies (websites, news, economic data) and experience of visits. All the interviews were transcribed and case descriptions written from

the information gained according to the DCG structure. The units of the case descriptions were digitalization projects. Each case description was sent to the unit's representative to validate the content.

As mentioned in its description, the DCG contains sustainability-related questions too. In this research sustainability is measured according to the triple bottom line—economic, social, and environmental aspects. Among economic dimensions the effects of digitalization are scanned on the cost and quality of service, reliability, flexibility, speed of logistics services, and overall supply chain effectiveness. These are the determinants of value creation for customers in logistics. Among environmental sustainability dimension overall environmental performance of the logistics service provider is examined and energy consumption and energy efficiency are highlighted. The overall environmental performance refers to several green actions, for example, waste management, land use, pollution prevention, water use, strategy- or policy-related reporting activities. These were described during the interviews to the respondents. This analyses of environmental sustainability effects follows the current trend in the literature focusing highly on energy consumption and CO₂ emissions (e.g. Lee and Brahmashrene 2014; Léonardi and Baumgartner 2004; Liimatainen et al. 2012). Social sustainability dimensions focus on the effects of digitalization on work environment, employee satisfaction, working relationships between employees, supervision practices, learning and skill development issues, fluctuation, productivity, and human resource demand. Economic and social criteria are strongly represented among the dimensions, due to the public interest and concerns.

After transcribing and processing of the interviews, only four projects (CD 1–4.) were considered to contain satisfactory amount of information for the work in this chapter. These four projects are presented here along with their impacts on the overall sustainability performance of the companies.

DESCRIPTION OF THE DIGITALIZATION PROJECTS

Before the introduction of the projects and the results of the research it is important to see the environment these projects are operating in. This is done by briefly introducing the Hungarian logistics industry and the companies.

In the Hungarian modal split, road freight has 68%, rail 18%, pipelines 10%, inland water transport 3.4%, and air freight comes last (ST 2017). In general we can say that the logistics industry itself is constantly growing in Hungary, and a highly competitive market has emerged with many players, which shows the importance of the industry. Logistics in Hungary and in the EU also plays a significant role in environmental sustainability. The industry accounts for 8% of the total CO₂ emissions (ST 2017) in Hungary and 28.5% of the emissions in the EU (EC 2018).

Both companies under study are third-party logistics service providers, and their main field of operations is road freight, along with other services. For the sake of confidentiality, the companies will be referred to as LSP1 and LSP2.

Both companies are large companies according to the EU definition, but the size of their fleet reflects the difference between the scale of their operations. LSP1 operates with 3500 own vehicles (LSP1-CD1) and LSP2 with only 230 vehicles (LSP2-CD4). Both companies have similar fleet management strategy—only use maximum three years old vehicles, still with full guarantee services. LSP1 has Hungarian ownership, and LSP2 is a subsidiary of a multinational company (LSP1-CD1, LSP2-CD4).

Regarding digitalization strategies, LSP1 has a formal digital strategy and an assigned Chief Digital Officer with a supporting R&D team, whose task is to research innovative technologies and explore their possible use within the operations of LSP1. LSP2, since it is a subsidiary, has a small local R&D team, mainly working on project implementations and customization. The parent company's main R&D team with over 150 employees works at the headquarters and provides solutions for subsidiaries upon request. LSP2 does not have a formal digitalization strategy in place but has a strong focus on innovative solutions and even the term “Logistics 4.0” appears as a central element of their marketing activities (LSP1-CD1, LSP2-CD4).

We can say that sustainability is an important issue for both companies, but they make different use of it. Just like with digitalization LSP1 has been publishing formal Sustainability Reports since 2017. LSP2 also publishes sustainability-related data on its website and positions itself as a “green logistics service provider.” Its website has a real-time CO2 emission calculator and it uses CO2 emission data in its quotations for partners as well (LSP1-CD1, LSP2-CD4).

The senior management-level interview at LSP1 was done with the Chief Digital Officer and further three with project managers. In LSP2 the country-level General Manager gave the senior management-level interview and the leader of the local R&D team talked in detail about the project. Projects 1–3 are from LSP1 and Project 4 is from LSP2.

Introduction of Digitalization Projects

The following paragraphs give a brief introduction to the projects purely based on the case description written according to the methodology described in the “Methodology of the Research” section and Table 23.1 provides an overview of the projects:

Project 1 is about software robots. They are used to replace multi-system, repetitive, monotonous tasks. The aim of the project is to disencumber those currently working in an overloaded administrative area by software robotization of tasks that do not require a human decision or creative solution. Even though the costs play an important role, currently cost reduction is not the focus of the project but rather a decrease of the workloads (LSP 1-CD1).

Project 2 consists of two software applications. One of them is a decision-making software, which is used for significantly speeding up the transport planning task (which was previously paper-based) and to make the binding decision

Table 23.1 Summary of the case study projects in the logistics service industry

<i>Number of project</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Topic of the project	Software robots	Intelligent planning and routing software	Telematics	Transport management system
Technologies included in the project	Robots, ERP	Sensors, IoT, cloud, big data, ERP, predictive maintenance, energy storage system, M2M	Big data, predictive maintenance, cloud, IoT, sensors, ERP, energy optimization	Predictive maintenance, sensors, ERP, big data, IoT, M2M
Goal of the project	Reducing the workload of employees	Optimizing fleet utilization	Development of basic controlling system of vehicle and driver	The development of a system integrating internal processes and customers in an ERP system
Previous practices	None	Paper-based operation, phone communication	None	Phone-based communication, manual task solving
Further developments planned	None	Integrating weather and real-time traffic data into the system	External big data system development	None
Departments/parties involved	Digital directorate, invoicing	Digital directorate, drivers, operators, freight planners	Digital directorate, drivers	Freight planners, drivers, invoicing

Source: Author’s creation based on case descriptions, CD 1–4

for truck and task among other information available to the driver almost instantly. Demand for this solution emerged in 2010, and the project was launched in 2013. The program is not designed by region, so it does not take country borders into account and constantly decides and constantly monitors the possible change of circumstances (new tasks, position of truck, etc.). Another positive benefit is that it makes the transport planning process transparent and free from human intervention. Time management (e.g. time gates for loading and unloading) is the challenge, and the responsibility of the fleet operators is also significant as the program makes decisions based on the information they provide (location, actual vehicle utilization, etc.). Part of Project 2 is the routing engine. This engine plans the entire route, including gas stations and car parks, calculates the driver’s actual driving and rest time, and calculates when the vehicle is expected to arrive at the destination. It completes the operation of the planning software, which also calculates the arrival time, but the routing engine provides the actual, current data based on which the arrival time is modified. An important goal of this solution is to reduce delays. It makes route planning more cost-effective, helps better utilization of driving and rest time of drivers, and makes it easier for transport organizers to work, as

they regularly receive information on the location and expected arrival time of each vehicle (LSP1-CD2).

Project 3 is about telematics: the essence is that continuous communication with the driver is ensured through the system. Through a smart device (e.g. smartphone), the system continuously sends the GPS coordinates of the truck, monitoring the driver's braking, acceleration, cruise control, driving and rest time, fuel level, and so on. The driver receives not only his daily tasks through the system but also the route planning and refueling plan (LSP1-CD3).

Project 4 is about the development and implementation of a transport management system which includes each process from the recording of a freight task to invoicing to the customer. This is a system that is exclusively used now to have all the information in one place, and it has the advantage of being able to communicate not only with other LSP2 subsidiaries but can also quickly and easily connect with its partners' systems. Thus, electronic information exchange makes work faster, more accurate, more efficient. Previously communication with drivers was done on paper or by phone or text messaging. Orders also came on the phone and were recorded manually. Part of this system is a mobile app (own development of LSP2) used by the drivers, who are all equipped with smartphones. This app is not a route planning app, so the drivers only have to stop at the safe and approved rest areas. The drivers see all details of their work, which truck they have to use, which trailers to tow, and the destinations. The transport documents are also stored via this app. The customers have an interface too where they can follow their orders, track the delivery, and have access to all the transport documents (LSP2-CD4).

The following section provides the interpretation of the information gained from the interviews and the data from triangulation. The determination of the effects (positive, negative, neutral) is based on the information in the case descriptions (CD1–4) and represent the interpretation of the researcher approved by the company representative. This section also answers RQ1: What kind of effects can digitalization projects have on the sustainability (social, environmental, economic) performance of a logistics service provider? and RQ2: How could digitalization projects significantly contribute to the reduction of CO2 emissions of LSPs?

Analyses of the Effects of Digitalization Projects on Economic Sustainability

If we analyze the effects of the digitalization projects on the sustainability dimensions, we can conclude that all of the four projects have positive or neutral effects on economic sustainability (exception is P1—flexibility dimension) (Table 23.2).

In Project 1, the investment costs are minimal compared to the advantages brought about by the software robots in workload reduction of employees, who are now able to work on more value-added tasks. At the implementation phase of the software robot project the quality of the tasks done might not be

Table 23.2 Effects of digitalization projects on economic sustainability

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Costs	Positive: The investment costs are minimal compared to the advantages brought about by the software robots in workload reduction of employees, who are able to work on more value-added tasks	Positive: The project has positive effects on costs because of truck utilization and route optimization, which leads to more efficient operations	Positive: The use of telematics provides possibilities for cost saving by monitoring co-drive practices, by supporting predictive maintenance practices, and by shedding light on operational errors—e.g. timeframes of unloading and too long waiting time	Positive: The implementation and the development of the project means investment costs at the beginning, but these will be balanced later by more efficient and safe operations
Quality	Positive: At the implementation phase of the software robot project the quality of the tasks done might not be significantly better, since initial errors can occur in the program, but after the testing phase robots provide more stable quality of work done. The other aspect is the process re-evaluation prior to the development of robots; this can result in process improvement	Positive: The project has positive effects on quality because of route optimization, which eliminates delays and thus provides customer value	Positive: The telematics project has a positive effect on quality by making possible errors in the trucks visible—avoiding breakdowns and other problems causing lower service quality	Positive: The perceived quality of service is improved by a well-operating TMS
Reliability	Positive: Using software robots has a positive effect on reliability in solving monotonous tasks without errors	Positive: The project has positive effects of reliability since it makes the tracking of the trucks possible, providing real-time information to customers	Positive: The telematics project has rather positive effects on reliability by making possible errors in the trucks visible—avoiding break downs and other problems causing unreliable service	Positive: A well-operating TMS provides the necessary information for delivering reliable services

Flexibility	<p>Negative: The software robots are programmed for a specific task; they do not support flexibility</p>	<p>Positive: The constant re-planning of resources provides more flexible operations and optimized utilization</p>	<p>Neutral: The telematics project has neutral effects on flexibility</p>
Speed	<p>Positive: At the implementation phase of the software robot project the speed of work will probably decrease due to necessary checks, but after the test phase robots will deliver tasks faster</p>	<p>Positive: By providing the optimal match of truck and task, providing the fastest route suggestion, and reducing the possible navigation mistakes, the project has a positive effect on the speed of operations</p>	<p>Positive: The TMS has rather positive effects on the speed of operations, by providing all necessary data in the right place and at the right time</p>
Supply chain effectiveness	<p>Positive: The project supports supply chain effectiveness based on the aspects mentioned above and in several cases by delivering tasks that currently are not done and penalties are paid instead to customers</p>	<p>Positive: The project supports supply chain effectiveness based on the aspects mentioned above</p>	<p>Positive: The TMS has positive effects on supply chain effectiveness by connecting the stakeholders and providing the necessary information input for the running processes</p>

Source: Author's creation based on case descriptions, CD 1–4

significantly better, since initial errors can occur in the program, but after the testing phase robots provide more stable quality of work done. The other aspect is the process re-evaluation prior to the development of robots—this can result in process improvement. Using software robots has a positive effect on reliability in solving monotonous tasks without errors, but the software robots are programmed for a specific task and they do not support flexibility. At the implementation phase of the software robot project the speed of work will probably decrease due to necessary checks, but after the test phase robots will deliver tasks faster. So, we can conclude that the project supports supply chain effectiveness based on the aspects mentioned above and in several cases by delivering tasks that currently are not done and penalties are paid instead to customers.

Project 2 has positive effects on costs because of truck utilization and route optimization, which lead to more efficient operations. The project has positive effects on quality because of route optimization, which eliminates delays and thus provides customer value. In terms of reliability, Project 2 has positive effects, since it makes the tracking of the trucks possible, providing real-time information to customers. The constant re-planning of resources provides more flexible operations and optimized utilization. By providing the optimal match of truck and task, and providing suggestions for the fastest route, reducing the possible navigation mistakes, the project has a positive effect on the speed of operations as well. Altogether this project supports supply chain effectiveness based on the aspects mentioned above.

Regarding Project 3, the use of telematics provides possibilities for cost saving by monitoring ecodrive practices, by supporting predictive maintenance practices, and by shedding light on operational errors—for example, time-frames of unloading and unreasonably long waiting time. The telematics project has a positive effect on quality by making possible errors in the trucks visible, which can help avoid breakdowns and other problems causing lower service quality. Project 3 has a rather positive effect on reliability by making possible errors in the trucks visible, but it has neutral effects on flexibility. The speed of operations is positively affected by reducing the chance of unexpected delays due to the trucks. This project also contributes to the overall supply chain effectiveness by the above-mentioned aspects and provides transparency of the operations.

In the case of Project 4, the implementation and the development of the transport management system (TMS) means investment costs at the beginning, but these will be balanced later by more efficient and safe operations. The perceived quality of service is improved by a well-operating TMS, since it can provide necessary information for delivering reliable services. The TMS has neutral effects on flexibility, but rather positive effects on speed of operations, by providing all necessary data in the right place and at the right time. The TMS has a positive effect on supply chain effectiveness by connecting the stakeholders and providing the necessary information input for running the processes. These findings are in line with the literature, highlighting the positive

effects of ICT on competitiveness (Yi and Thomas 2007; Benitez-Amado et al. 2015; Matthews et al. 2002; Melville 2010; Ishida 2015).

Analyses of the Effects of Digitalization Projects on Environmental Sustainability

The digitalization projects have similarly positive and neutral effects on environmental sustainability performance of the firms. Three projects have reported completely positive effects on environmental performance and energy consumption and in these cases energy efficiency is also supported (Table 23.3).

By reducing the distances, optimizing load, and eliminating empty running of trucks, fuel consumption is reduced significantly, meaning reduced emissions of greenhouse gases, contributing to overall environmental performance. Noise pollution and traffic can also be reduced along with waste by providing more efficient planning options for the maintenance of trucks. The TMS has a positive effect due to the reduction of paper-based processes too. Here it should be noted that these projects can have significant effects on fuel consumption, which can of course be considered as a “green action,” but the companies have direct financial interest in reducing their fuel consumption. Here RQ2 can be answered: that digitalization projects can significantly contribute to the reduction of CO₂ emissions of LSPs by using technologies for route optimization, reduction of empty running of trucks, ecodriving practices, and predictive maintenance.

The more comprehensive set of indicators for environmental performance were not used. This research only contributes to the line of discussion about possible CO₂ emissions (Lee and Brahmarsene 2014; Léonardi and Baumgartner 2004; Liimatainen et al. 2012; Gimenez et al. 2014.), but there seems to be great potential for further improvement of environmental performance of both LSPs. Project 1 has completely neutral effects on environmental sustainability, since it does not use more or less energy compared to the manual solutions.

Analyses of the Effects of Digitalization Projects on Social Sustainability

The digitalization projects seem to have more diverse effects on social sustainability issues (Table 23.4). According to the results none of the projects affect the working relationship between employees, and in the case of Project 1, supervision and inspection are not affected by software robots either. The other dimensions show positive effects. The software robots bring improvement to the work environment by eliminating monotonous tasks and by reducing stress and burn-out, and the project rather improves skills and furthers learning of employees, by process analyses at the robot development phase.

Project 1 brings improvement to productivity by liberating employees from monotonous tasks and freeing up capacities for creative work. Providing the

Table 23.3 Effects of digitalization projects on environmental sustainability

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Environmental performance	Neutral: The software robot project has a neutral effect on the overall environmental performance of the company	Positive: By reducing the distances, optimizing load, and eliminating empty running of trucks, fuel consumption is reduced significantly, meaning reduced emissions of greenhouse gases, contributing to overall environmental performance. Noise pollution and traffic can also be reduced	Positive: The project contributes to the environmental performance of the company by reduction of fuel consumption and providing more efficient planning options for the maintenance of trucks	Positive: The TMS has positive effects on the environmental performance of the company, caused by load and route optimization and the reduction of paper-based processes
Energy consumption	Neutral: The software robot project has a neutral effect on the energy consumption of the company, since it does not use more or less energy compared to the manual solutions	Positive: By reducing the distances, optimizing load, and eliminating empty running of trucks, fuel consumption is reduced significantly	Positive: The project has significantly positive effects on fuel consumption, by raising awareness toward ecodrive practices	Positive: The TMS has a positive effect on energy consumption because of route optimization and the reduction of empty running
The project supports/causes challenges in terms of energy efficiency	Neutral: The software robot project has a neutral effect on the energy efficiency of the company, since it does not use more or less energy compared to the manual solutions	Supports: The project supports energy efficiency by fuel consumption reduction	Supports: The project supports energy efficiency by fuel consumption reduction	Supports: The project supports energy efficiency based on fuel consumption

Source: Author’s creation based on case descriptions, CD 1–4

Table 23.4 Effects of digitalization projects on social sustainability

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Work environment	Improvement: The software robots bring improvement to the work environment by eliminating monotonous tasks	Improvement: The project improves the work environment by providing all necessary navigational information to drivers and thus providing safer operations	The telematics project makes work environment of the drivers more controlled but their freedom of choice gets limited, which means safety for some and burden for other drivers	In the development phase of the project certain mistrust and resistance occurred against the new system, but in the future the TMS is intended to create a more comfortable and simple working environment
Employee satisfaction	Improvement: The software robots bring improvement to the work environment by eliminating monotonous tasks	Declension: At the beginning of the implementation of the project the drivers resisted the decisions made by the software and the operators were also skeptical about the optimal routes. After a certain time, all employees accepted the new way of planning and there were positive effects on the overall company performance	Declension: The project has negative effects on employee satisfaction, since the freedom of choice gets more and more limited for drivers en route	Neutral effect: In the development phase of the project certain mistrust and resistance occurred against the new system; in the future the TMS is intended to create a more comfortable and simple working environment and possibly employee satisfaction
Working relationship between employees	Neutral effect: The project does not affect the working relationship of employees	Neutral effect: The project does not affect the working relationship of employees	Neutral effect: The telematics project does not affect the relationship between employees	Neutral effect: The project has neutral effects on working relationships

(continued)

Table 23.4 (continued)

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Inspection, supervision	Neutral effect: The project does not affect inspection and supervision practices	Improvement: The project supports the inspection of drivers by having a reference task, route, and timeframe	Improvement: The project provides perfect insights into the driving style and practices of drivers, which even gives possibility for connecting performance/payment options	Improvement: The TMS brings more transparency into the operations, which improves the possible supervision tasks
Learning, skill development	Improvement: The project rather improves skills and furthers learning of employees, by process analyses at the robot development phase	Improvement: The project requires more digital skills from drivers; hence training is provided	Neutral effect: The project requires minimal digital skills from drivers; the overall effects can be considered neutral	Improvement: The TMS requires new digital skills from employees; for this reason training is provided
Fluctuation	Improvement: The software robots bring improvement to the work environment by eliminating monotonous tasks, reducing stress and burn-out	Neutral effect: The project has neutral effects on fluctuation currently; since following the suggestions of the route optimizing software is not mandatory, the drivers' pay does not depend on it	Neutral effect: The projects' effect on fluctuation is currently neutral, since the salaries of the drivers do not depend on their driving performance. This might change in the future	Neutral effect: The project has neutral effects on fluctuation
Productivity	Improvement: The software robots bring improvement to productivity by liberating employees from monotonous tasks and freeing up capacities for creative work	Improvement: The project improves productivity by less empty running of trucks and optimized routes	Improvement: The productivity is positively affected, since more optimal driving style results in less fuel consumption; good navigation results in less errors and time wasted	Improvement: After the implementation and learning phase the TMS has the potential for increasing the productivity significantly
Human resource demand	Improvement: The project brings improvement to human resource demand by providing chance for employees to do valve-added work and preventing overloading	Improvement: Because of more efficient planning and driving time utilization the current tasks can be delivered by the employees	Neutral effect: The project currently does not affect human resource demand	Improvement: After the implementation and learning phase the TMS has the potential to increase efficiency; thus the overload of employees can be reduced

Source: Author's creation based on case descriptions, CD 1-4

chance for employees to do value-added work and preventing overloading can be considered as positive effects on human resource demand.

Project 2 improves the work environment by providing all necessary navigational information to drivers, thus providing safer operations. At the beginning of the implementation of the project the drivers resisted the decisions made by the software and the operators were also skeptical about the optimal routes. After a certain time, all employees accepted the new way of planning, which had positive effects on the overall company performance. The project supports the inspection of drivers by having a reference task, route, and timeframe. It also requires more digital skills from the drivers, so necessary training is provided by the company. The implementation of intelligent planning and routing software has neutral effects on fluctuation currently; since following the suggestions of the route optimizing software is not mandatory, the drivers' benefits do not depend on it. The project improves productivity by less empty running of trucks and optimized routes, meaning that the current tasks can be delivered by the current number of employees.

Project 3, the telematics project, makes work environment of the drivers more controlled; their freedom of choice gets limited, which means safety for some and burden for other drivers. The project has negative effects on employee satisfaction, since the freedom of choice becomes limited for drivers during work. Telematics provides perfect insights into the driving style and practices of drivers, which even gives possibility for connecting performance/payment options. The project requires minimal digital skills from drivers, so the overall effects can be considered neutral on skill development. The projects' effect on fluctuation is also currently neutral, since the salaries of the drivers do not depend on their driving performance. This might change in the future, because there is a need for productivity, since more optimal driving style results in less fuel consumption and good navigation means less errors and time wasted. The project currently does not affect human resource demand.

Project 4, the TMS, is intended to create a more comfortable and simple working environment and brings more transparency into the operations, which improves the possible supervision tasks. The project has neutral effects on fluctuation. On the other hand, the implementation of a TMS has the most diverse effects in case of social sustainability; here, the human factor, the resistance toward change, can be experienced. In the implementation phase of the project certain mistrust and resistance occurred against the new system. The described phenomena of resistance is in line with Bridges' Transition Model (Bridges 1991) "Ending, Losing, Letting go." This is the first phase of transition, when employees experience resistance and emotional discomfort due to a significant change in their working environment. With time and further experience this leads into "The Neutral Zone," when they might feel skeptical and untrusting toward the new solutions (Bridges 1991). The TMS in the case of Project 4 was in this phase when the interviews were conducted. With support and guidance, the final phase, "The New Beginning," can be reached when people start to see the benefits of the new system, develop the needed skills, and build their

new commitment (Bridges 1991). Since the TMS implementation project requires new digital skills from employees necessary training is provided continuously.

We can conclude that there is a potential in the TMS for increasing productivity and efficiency significantly, and thus the overload of employees can be reduced.

DISCUSSION

Sustainability has more than one exact meaning (Harrington 2016). It can be relevant on global and local levels; it is in practice a “moving target,” and it is very difficult to determine what is right and what is wrong in terms of sustainability for different organizations. Contingency approach (Scott 1981) can be applied for sustainability solutions, since there is no general good solution for all organizations and for all aspects of sustainability. The possibilities made available by digitalization—at the current maturity phase—are very similar to the challenges of sustainability, providing an interesting field of research in this context.

On the other hand, it is clear that the theory of sustainability is seeking long-term treatment of natural resources, social systems, and people in ways that are consistent with human well-being and dynamic system stability (Harrington 2016). Systematic thinking, a comprehensive approach, is an important element of logistics and supply chain management; therefore it is reasonable to expect organizations in the transport and logistics sector to evaluate every innovation and change against sustainability values.

For summarizing the effects of digitalization projects, we can use a final sustainability performance evaluation model. This model can be used not only in the case of logistics-related projects but also for digitalization projects in any other sector (e.g. automotive, FMCG, banking, retail) and for different levels, positions in supply chains, or supply networks. In Table 23.5 the project evidence is summarized from this research.

All four projects are cross-functional; several departments are involved in the implementation and they are based on *digitization* (I-Scoop 2018)—switching from paper to digitalized solutions. According to the hierarchical categorization of ICT use in transport and logistics, which has a potential for furthering sustainability performance suggested by Wang et al. (2015), Project 3 can be categorized as Level 1 ICT use, which focuses on the vehicle and its load. Projects 2 and 4 can be considered as Level 2 actions, meaning systems are deployed to manage specific business processes. Project 1 does not fit into this categorization, since software robots as used in the current case study do not result in better sustainability performance.

Regarding the Logistics 4.0 *technologies* (DHL 2018) some of them are included in the four projects: robots, ERP, sensors, IoT, cloud, big data, predictive maintenance, energy storage system, M2M. On the other hand, the ones most frequently mentioned in connection with logistics are not present in

Table 23.5 Sustainability performance evaluation model of digitalization projects

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Topic of the project	Software robots	Intelligent planning and routing software	Telematics	Transport management system
Technologies included in the project	Robots, ERP	Sensors, IoT, cloud, big data, ERP, predictive maintenance, energy storage system, M2M	Big data, predictive maintenance, cloud, IoT, sensors, ERP	Predictive maintenance, sensors, ERP, big data, IoT, M2M
Economic sustainability	P1 has positive effects on all the economic sustainability aspects, except for flexibility, which is due to the nature of technology used	P2 has positive effects on economic sustainability, all aspects considered	P3 has positive effects on economic sustainability, but since it is a telematics project, we should mention it has neutral effects on flexibility	P4 has positive effects on economic sustainability, but as a TMS we should mention it has neutral effects on flexibility
Costs	✓	✓	✓	✓
Quality	✓	✓	✓	✓
Reliability	✓	✓	✓	✓
Flexibility	–	✓	–	–
Speed	✓	✓	✓	✓
Supply chain effectiveness	✓	✓	✓	✓
Environmental sustainability	P1 has a neutral effect on the overall environmental performance of the company	P2 has positive effects on environmental sustainability in all aspects	P3 has positive effects on environmental sustainability in all aspects	P4 has positive effects on environmental sustainability in all aspects
Environmental performance	–	✓	✓	✓
Energy consumption	–	✓	✓	✓
The project supports energy efficiency	–	✓	✓	✓

(continued)

Table 23.5 (continued)

<i>Number of projects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
Social sustainability	P1 means improvement in most of the social sustainability aspects but has neutral effects on working relationships and supervision	P2 has mainly positive effects on social sustainability, but at the implementation phase declension appeared in terms of employee satisfaction. The project has neutral effects on working relationships and fluctuation	P3 has divisive effects according to the interviews, meaning declension in terms of working environment. The project has clearly positive effects only on supervision and productivity	In the case of P4, at the beginning a certain distrust appeared toward the project, which dissolved with time. Clearly positive effects appear in the case of supervision, skill development, productivity, and human resource demand
Work environment	✓	✓	⇔	⊗
Employee satisfaction	✓	x	x	–
Working relationship between employees	–	–	–	–
Inspection, supervision	–	✓	–	–
Learning, skill development	✓	✓	–	✓
Fluctuation	✓	–	✓	–
Productivity	✓	✓	✓	✓
Human resource demand	✓	✓	–	✓

Source: Author’s creation based on case descriptions, CD 1–4

the current cases (autonomous vehicles, drones, artificial intelligence, virtual reality). The categorization and sector-specific analysis of 4.0 technologies still hold massive research potential in the field of logistics services.

From the organizational and management point of view these projects target increasing *operational efficiency of core activities* of the LSPs and of supporting tasks. These projects do not show the important element of Industry 4.0, creating new business models (I-Scoop 2018). Creating a new business model would involve proactively (without external expectations from the partner) offering increasing value for customers enabled by digital transformation.

The projects also seek to *reduce workload of current employees*. This means that the assumption that 4.0 technologies are endangering workplaces is not currently the case in the companies analyzed. The lack of qualified employees

is a real problem in the logistics service industry, and digitalization projects might offer some relief for this type of problems. At the same time Agostini and Filippini (2019) found that the success of digitalization projects depends on human resources. The more educated and skilled workforce is employed in the organization, there is more chance to implement digitalization successfully. In the interviews one of the most important success factor of the projects was change management practices—this is clearly visible from the final model, that social sustainability, which is mostly connected to human behavior and acceptance, shows the most diverse results. (e.g. P3 has divisive effects according to the interviews, since it divided the employees' views very strongly.)

The initial assumption that the size of the organization and the potential know-how and financial power have an effect on the maturity of digitalization and sustainability—for example, the subsidiary of a multinational company has better resources for digitalization and sustainability-related projects than a national company—did not prove with the cases analyzed.

This chapter seeks to join the current discussion in the literature and shows a possible research framework for the future analyses of the effects of digitalization projects on sustainability performance of companies. The cases are meant to show evidence in the form of a model which can be used for further research throughout different sectors and levels of supply networks.

CONCLUSIONS

This research contributes to the current debate about the environmental impact of digitalization and provides insights into the social and economic effects of Logistics 4.0 as well. The conclusion of the case study analyses seems to be in line with the suggestions of Kayikci (2017), that digitalization in logistics has a long way to go until maturity but it already has positive effects on the economic performance. The environmental effects of digitalization are mainly based on the reduction of emissions, and the impact on social dimensions very much depends on the type of the project in question. It can be concluded that logistics service providers need to adapt to the dynamic market environment they operate in, in order to keep and develop their competitiveness and live up to the expectations of external stakeholders regarding sustainability issues. Dealing with people in a highly dynamic environment, such as the logistics sector, with innovative technologies, in this case digitalization, and aiming for better sustainability results, which itself is changing with time, technology, and other environmental factors, is quite a challenging managerial task, where change management plays a crucial role.

There are limitations to this research, which should be admitted. One limitation is that it focuses on one specific industry and companies operating in this industry. At the same time, it can be seen that the content of the projects includes technologies such as software robots, which can also be used in other industries. For this reason, the managerial implications can be similar for other digitalization projects as well. The other limitation of this research lies in the

project selection method. These are recently finished or currently running projects, which are successful or have promising outcomes. For this reason, the effects can only be assumed, and the results are not based on objective measurement. The environmental effects are not very comprehensively measured, so this calls for further research in this field in order to obtain a clearer picture of costs and benefits of digitalization on sustainability performance.

Despite the limitations this research might help practitioners with inspiration about the possible outcome of their investments into digitalization based on project evidence and provide valuable addition to the academic research community interested in this field by offering a sustainability performance evaluation model.

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Supply Chain Innovation and Sustainability Frontiers: A Balanced Scorecard Perspective

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INTRODUCTION

Specialization is known to benefit trade as individuals or countries gain from competitive advantages. Similarly, industrial and organizational productivity has been argued since Taylor's "Principles of Scientific Management" to benefit from the specialization of tasks and the reduction of operational processes into smaller units. This organizational approach may nevertheless be suboptimal, especially when there is disruptive innovation, as radical change usually affects organizations at a system level rather than at the level of its sub-units and as its effects are often unexpected.

Furthermore, considering high-paced technological changes, firms need to enhance their cooperation and their process integration if they want to remain competitive and support their innovation efforts. Nevertheless, operating in an integrated world demands an integrated perspective too. Hence, firms need to carefully consider the potential consequences of any process modification, be it small or large, for their strategy implementation.

Supply chain (SC) is conceived as an integration of value-added processes, sequentially organized, from raw material extraction to the final products in

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stores' shelves (Chopra and Meindl 2013; Coyle et al. 2013; Render and Heizer 2014). According to Chopra and Meindl (2013) and Coyle et al. (2013), activities such as transportation, inventory management, order management, storage, and planning of resources are the most important within supply chain management (SCM). Through the combination of these activities, SCs aim to deliver products to consumers at the proper time, at the minimum possible cost (Chopra and Meindl 2013). Hence, some years ago, SCM was focused mainly on efficiency and effectiveness performance measures (Chopra and Meindl 2013). However, this perspective recently shifted toward incorporating sustainability considerations as well. After that, it seems to be a tension between being efficient and being socially responsible (Porter and Van Der Linde 2009; Coyle et al. 2013; Leonard and Gonzalez-Perez 2013). Therefore, SCs have been adapted to operate under a completely new perspective including economic, social, and environmental considerations, more conducive to sustainable development (Gonzalez-Perez and Leonard 2016). Moreover, main SC activities such as transportation have been affected by innovations that follow this sustainability trend—promoting sustainable last-mile logistics (Guo et al. 2019), incorporating electric and flight capabilities into vehicles (Kasliwal et al. 2019), enhancing safety and environmental outcomes using combined control systems for transport measuring (Wang 2019), adopting sustainable transport behaviors through gamification (Marcucci et al. 2018), and so on. In general, innovation (Goksoy et al. 2013) and technological change (Agrawal and Narain 2018) have increased the potential as well as the complexity of SCM; understanding technological innovation as a process results in several organizational benefits such as collaboration, integration, and profitability (Teece 1986).

Considering the awareness needed inside SCs' operations in order to remain sustainable and to deal with the unexpected changes derived from the digital revolution era, the focus of this chapter is to measure the disruptive impact of SC innovations on organizational strategy, under Balanced Scorecard (BSC) framework. Specifically, this chapter uses the BSC framework to measure the impact of transport-automation innovations on different organizational strategic perspectives and then to highlight the tensions between being efficient and being socially responsible. In the traditional sense, the objective of SC innovation is mainly cost saving and delivery time reduction, in order to gain efficiency and competitive advantages in international markets. Hence, companies can decide to boost their transportation processes using electric vehicles, technological devices, and big data, among others. However, some of these innovations represent important challenges for already established strategic goals such as profitability, safety of workers, quality of life, and environmental issues. In this way, the use of performance measurement systems (PMS) becomes urgent to guarantee that the intended savings are not achieved at the expense of materializing any of the aforementioned socio-environmental objectives or threatening the sustainable development goals (SDGs) defined by the United Nations (2015). The objective of this study is to answer the following research

questions: (i) How to measure the strategic impact of disruptive innovations related to transport automation inside SCs? and given this (ii) What are the potential tensions between different strategic objectives?

In a global economy where large geographic distances have to be covered, while achieving efficiency, increasing automation is a highly relevant topic for the transport sector (Porter 1998; Ghemawat 2001). According to Phys.Org. (2019), for instance, robots still move less than 1% of the global pallets in warehouses and the logistics automation market should grow from \$46 billion in 2018 to more than \$80 billion by 2023. Hence, the importance of this chapter is in providing insights about processes' operational continuity under a turbulent digital era, without missing the strategic alignment.

This chapter adopts both an academic's and a practitioner's viewpoint, points out some gaps in the current management literature, and presents SCM as a complex and integrated system, which has to deal with disruptive technological innovations through reliable and comprehensive PMS to monitor a firm's strategy implementation. We also contend that seeing SCM as such can in turn lead practitioners to take responsible decisions ahead of automation and digitization policy choices. Alongside an increase in the quality of managerial decisions, it can lead to cost reductions due to the selection of more suitable technological solutions, with less-stressed implementation processes, and in accordance with global SDGs.

The chapter is organized as follows. The next section describes the current context and background of transport automation in the SCs. It also includes the literature review about sustainable supply chain management (SSCM) and a review of the main concepts of PMS and BSC. The third section exhibits the methodology used in order to answer the two research questions proposed before. This section also presents our reflections on how four disruptive innovations in transport automation have shocked SC operations and how these changes may generate trade-offs between different organizational performance dimensions. Finally, the fourth section concludes the study, highlighting the final reflections and answering the two research questions of this chapter. New paths for further research are also presented in this final section.

CONTEXT AND BACKGROUND

What Is Currently Going on About Sustainable Transportation?

Logistics is the heart of SC operational mechanisms, providing support to physical movement demanded from organizations, customers, and many other stakeholders related to this complex network service (World Bank 2018). According to World Bank (2018) SCs' reliability is positively related to delivery certainty, more than other important variables such as speed or even cost. A reliable delivery will determine the overall logistics performance as well as how much the customer is willing to pay for that certainty. As organizations searched for growing and expanding their operations, their SCs' transportation activities

have been extended alongside the also increased global requirements for trade (OECD, 2010). Since then, containers implementation, multimodal transport methods, and standardization of global regulations for trade, among many other important changes related to transport optimization and evolution, were deployed (UNCTAD 2001).

The World Trade Organization (2019) highlighted how delivery and distribution services turn efficient due to the intervention of technology. Moreover, it declared distribution as one of the most demanded services in the current global economy. Technological revolution has changed the way firms traditionally trade among them, making tradable some goods and services that were not tradable before and drastically reducing geographic distances (World Trade Organization 2019). However, the intensive and increasing use of modern transportation mechanisms for global commerce, which has grown more than 4% per year since 2017 (World Trade Organization 2018), turned them into one of the major factors responsible for carbon emissions and increasing the risk of a dramatical increase of 60% of the emissions by 2050 (OECD 2017). In addition, OECD (2010) stated that transport activity consumes considerable amount of fossil fuels; still no big-scale alternatives have been developed nor are there alternatives with similar properties to play as substitutes. Besides contaminant emissions and fossil fuel utilization, according to Malin Andersson, Head of the Department, Development and International Affairs, Urban Transport Administration, in the city of Gothenburg, transportation generates uncomfortable noise, which produces another type of contamination against the goal of having sustainable cities (Volvo Trucks 2018). According to the World Economic Forum (2019), governments need to properly foresee the unintended outcomes from the adherence of technological revolution into economic initiatives, playing an active role, by regulating its effects on social and environmental contexts.

Besides its high demand as a supply chain's service, transportation faces bigger challenges in having to include the three axes of sustainability concept as a must into every organizational activity if the world wants to move forward to a promising future (World Economic Forum 2019). United Nations (2015), in its SDGs, declared that people must live in good health conditions (third goal), emphasized the need for affordable and clean energy in every global activity (seventh goal), explained how relevant having a decent work with healthy economic growth could be (eighth goal), described the importance of support innovation through industries (ninth goal), and asserted the necessity for taking care of our natural resources such as fossil fuels, through responsible consumption methods (twelfth goal). These five SDGs will drive transportation activities to evolve, innovating with technology but at the same time changing their main sources from fossil fuels to clean energy options and taking care of generating proper human labor conditions.

Literature Review

Sustainable Supply Chain Management and Transportation

Supply chains are historically conceived as complex systems that meld different organizational activities toward the achievement of common objectives, through sharing practices and establishing responsibilities with their stakeholders, in order to fulfill customers' requirements on time and with less operational costs (Chopra and Meindl 2013; Coyle et al. 2013). Li et al. (2006) demonstrated that SCM practices, which could possibly be affected by several factors of the business context, have a direct impact on firms' competitive advantage as well as on organizations' performance. In the same line, Frohlich and Westbrook (2001) pointed out that firms tend to decide among several integration strategies for their SCs; better-integrated firms exhibited better process performance. Furthermore, Choi et al. (2001) argued that supply networks are not a static picture of how supply flows but are complex dynamic systems that need to be adaptive over time. They explained how supply networks' dynamic forces organizations to initiate efforts on predicting and controlling their operations under higher levels of uncertainty, due to the constantly changing characteristics of the SC, even when these changes seem to be "small."

A fresher perspective suggests the need to include environmental issues regarding operations and performance measurement into the SCs (Gonzalez-Perez and Leonard 2016), especially when logistics activities, such as transportation, are strongly related to CO₂ emission levels into the environment (Liu et al. 2018). Hence, the incorporation of the three axes of sustainability (economic, environmental, and social) has become a complex challenge for organizations during the last decades (Dyllick and Hockerts 2002). Suppliers, customers, government, and society have been increasingly demanding solutions and responses from companies that cause significant environmental impacts because of their production cycle activities (Jabbour et al. 2014a, b). Although this follows a global sustainability trend, it implies important changes on the SCs' processes (Hervani et al. 2005), such as supplier selection process, including social and environmental criteria of the efforts to ensure a sustainable performance of products at the SC's end (Seuring and Müller 2008). According to Srivastava (2007), it is possible to achieve environmental goals through SCs' operations without having a negative impact on other managerial expected outcomes such as profitability, adaptability, or efficiency. As a consequence, SCM has responded with the so-called Green Supply Chain Management (GSCM), defined as the integration of environmental thinking into SCM, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and the end-of-life management of the product after its useful life. Srivastava (2007) argued that the adoption of the GSCM surpasses environmental subjects, since a good corporate image implies higher profits, cost reduction, and generation of business value. Then, GSCM practices are positively related to firms' sustainable performance (Zaid et al. 2018). In addition to this, Vachon and Klassen (2008)

argued that inter-firm collaboration within the SC would help organizations to improve their operational results as well as their environmental innovation levels. Moreover, Carter and Rogers (2008) explained how these three axes of sustainability could coexist within the SC when firms tend to look for low-cost strategies to obtain scarce resources from their relationships with suppliers or customers, considering the limited available resources in the environment. However, most research of SSCM is more focused on environmental perspectives than on social or economic ones (Seuring and Müller 2008).

Transportation is one of the main processes inside SCs, giving support to products and services design and being capable of adding value to customers at different stages (Graves and Willems 2005). Focusing on transport activities can help reduce logistics costs, making supply operations more efficient and sustainable (Islam 2018; Wulf et al. 2018), solve geographic distances in a proper way (Ghemawat 2001), boost tourism management (Prideaux 2000), and so on. The importance of transportation as a key driver for competitiveness within SCs implies its adherence to sustainability practices too. Thus, transport faces challenges related to not just how to be more efficient but also how to be cleaner. Since organizational performance is embedded in the new digital era, technological revolution plays a crucial role in assisting transport automation processes with innovations (Oke 2007); this does not mean less jobs as human labor do much more than usually is perceived (Gittleman and Monaco 2019). Therefore, these innovations also involved sustainability practices oriented toward urban transportation (Lane and Potter 2007; McCormick et al. 2013) as well as cargo transportation (Szymczak et al. 2018).

Some of these technological innovations in cargo transport are focused on Global Positioning System (GPS) devices, which could assist SCs in activities such as tracking the vehicles at any time (Suresh and Vasantha 2018), obtaining data that makes feasible reliable measurement of travel time to improve transit time, freight fluidity, transport planning (Cedillo-Campos et al. 2019), or real-time tracking on fleet and production facilities for the liquefied natural gas (LNG) industry (Wang et al. 2018). Others aim to integrate key activities such as transportation and manufacturing, both highly relevant for profitability and reliability. Therefore, lead-time and transportation demands lead to changes in chemical industry SC design such as merging operations and eliminating nodes (Patel and Swartz 2019) or the use of modular manufacturing in the construction industry (Innella et al. 2019), integrating transport and production through several ways in order to reduce time and costs. Other innovations are focused on cargo vehicles that could be responsible of major CO₂ emissions in the SCs' activities (López-Avilés et al. 2019). According to Ballinger et al. (2019), electric vehicles are the key to reduce greenhouse emissions of the transportation activity. However, materials supply needed for these electric trucks could be a constraint in the near future. Another constraint would be that charging stations for freight electric vehicles have to be optimized according to each cities' limitations (Londoño and Granada-Echeverri 2019). Furthermore, vehicles such as forklifts, which are used inside factories and

warehouses, have been fully automated too, providing several benefits regarding logistics performance and cost reduction (Park et al. 2011), and incorporating different improvements on them related to their vision system and pallet detection (Syu et al. 2017).

Finally, sustainable SCs and their key operational activities, such as transportation, need to implement PMS in order to monitor performance and mine information but also to capture how disruptive innovations, derived from digital revolution, may affect different stages or control points in unexpected manners. Furthermore, these PMS have to be aligned with firms' strategy.

Next, this chapter presents a literature review related to PMS. Specifically, we introduced the BSC framework in order to measure the comprehensive impact of transport disruptive innovations in SC and organizational strategy.

Performance Measurement Systems and Supply Chain

PMS have the purpose of providing relevant information in decision-making, planning, and evaluation (Widener 2007; Merchant and Otley 2006). Simons (1995) argued that PMS are the formal information-based mechanisms managers use to maintain or alter patterns in organizational activities. Thus, PMS have two main purposes: providing useful information to management and aligning employee behavior with organizational strategic goals.

According to Berry et al. (2009), PMS such as the BSC (Kaplan and Norton 1996), the Intangible Asset Monitor (Sveiby 1997), and the Skandia Navigator (Edvinsson and Malone 1997) have become very popular tools in aligning an organization's objectives and strategies. The importance of these PMS lies in that they help organizations to not only identify and specify their Key Success Factors (KSF) but also to monitor these factors and the respective responsible units with the aim of evaluating alignment with the firm's global goals (Ferreira and Otley 2009). The BSC is perhaps the best-known and most widely studied of all the above-mentioned PMS (Lucianetti 2010).

A SC is critical to maintain the organization in the global market by aligning the activities from the suppliers of raw materials to manufacturing processes, and then to distribution, customer service, and finally reprocessing and disposal of products. Therefore, performance measures are needed to monitor the effectiveness and efficiency of the SC. Hence, the PMS must be adapted to introduce these new variables in order to improve decision-making and to monitor strategy implementation. In a recent literature review, Reddy et al. (2019) observed that during the last couple of decades, research in PMS of SC has remarkably increased, accumulating more than 50% of the articles from 2013 onward. The authors documented that the majority of the researchers (35%) have used the BSC approach for evaluating the SC, followed by the Supply Chain Operations Reference (SCOR) model with 16% of the studies. They argue that the pervasive use of this model is explained by the simplicity in which BSC translates strategic objectives by aligning traditional financial measures representing an organization's past and adding non-financial measures (operational measures) that become the drivers of future performance.

Balance Scorecard, Supply Chain Management, and Sustainability

According to Kaplan and Norton (1996), companies can use the BSC to communicate strategy to all levels, align personal objectives and those of the departments to those of the organization, link strategic objectives to long-term goals, and plan their business in a way that allows them to allocate correct resources. The BSC translates the organization's vision into a set of performance indicators that are distributed in four perspectives: financial, customer, internal processes, and learning and growth perspective.

The BSC is also a promising framework for measuring, managing, and reporting the results of corporate sustainable strategy (Figge et al. 2002; Schaltegger and Wagner 2006). Although sustainability aspects can be integrated in the existing four standard perspectives, Kaplan and Norton (1996) also pointed out that the firm-specific formulation of a BSC may involve a renaming or adding of perspective. Consistently, prior research has also addressed sustainability-related goals by introducing a fifth perspective to the standard BSC framework (Moreo et al. 2009; Hsu and Liu 2010; Hansen and Schaltegger 2016). Sustainability measures often are quantitative (such as tons of greenhouse gas generated) but not monetary, making them difficult to integrate into traditional financial analyses in a meaningful way. Adding a new perspective then can be considered as the simplest approach for companies, which want to make more visible the role of sustainability in their strategy. As a result, the following five perspectives are likely to capture the impact of SC disruptive innovation on organizational strategy:

- The financial perspective indicates whether the company's strategy, implementation, and execution are effectively contributing to provide superior returns based on the capital invested. According to Kaplan and Norton (1996), the three core financial themes are revenue growth, cost reduction, and asset utilization. A critical appraisal of the financial perspective reveals, therefore, that the focus should be on how to increase the number of new products, minimize product/service costs, and maximize revenue flow. Consequently, financial measures traditionally used are rate of return on investment, net profit, productivity ratio, customer profitability, cost per operation hour, supplier cost savings, inventory cost, and information carrying cost.
- The sustainability perspective monitors how organizations respond to societal expectations in order to maintain their "license to operate." Consequently, this perspective usually includes measures of impact on environmental, social, or ethical issues such as organizational carbon footprint, alternatives power source, level of emissions and waste, use of environmentally friendly raw materials, packaging reduction, reuse, or recyclability, and use of "green" suppliers.
- The customer perspective is intended to capture how customers see the organization. Thus, this perspective usually monitors how customers react to the organization's value proposition. This perspective usually is

monitored by measuring customer perceived value of product/service, customer reputation, customer satisfaction, customer loyalty, and customer share.

- The internal process perspective seeks to monitor the business processes in which the organization must excel in order to satisfy its shareholders and customers. Organizations should decide what processes and competencies they must excel at and specify measures for each of them. In consequence, examples of performance metrics for evaluating internal process are total SC cycle time, accuracy of forecasting techniques, product development cycle time, on-time delivery, on-specs delivery, service and product quality, defect-free deliveries, flexibility of service systems to meet particular customer needs, and speed to market.
- The learning and growth perspective is intended to monitor the capacity of an organization to continue improving and creating value aligning intangible assets such as human capital, strategic alliances with suppliers, flexible culture, and organizational knowledge. Performance metrics for the innovation and learning perspective in a BSC includes employees' skills, supplier's ability to respond to quality problems or new needs, and accuracy of forecasting.

In SC literature, Neely et al. (2000) argued that PMS in SC should be used to improve efficiency and effectiveness of operations and classify measures as cost, time, quality, and flexibility (response to a changing environment). In the BSC framework, the five perspectives are likely to capture comprehensively the impact of SC disruptive innovation in organizational strategy by capturing efficiency measures (financial perspective) and effectiveness measures (internal process perspective), explaining how these are casually interconnected.

Kaplan and Norton (1996) stressed the importance of building in cause-and-effect relationships for such analysis. They suggest that if cause-and-effect relationships are not adequately reflected in the BSC, it will not translate and communicate the firm's vision and strategy. These cause-and-effect relationships can involve several or all the perspectives in the BSC framework. For instance, an agile culture (learning and growth perspective) together with environmentally friendly materials (sustainability perspective) is likely to promote innovation in environmentally friendly products and services (internal business operations perspective), and thus the organization will be more likely to improve customer reputation and customer share (customer perspective), resulting in an increase of customer profitability (financial perspective). Consequently, the study will use the causal relationship approach to explain the impact of disruptive innovation on organizational strategy.

REFLECTIONS ON THE IMPACT OF DISRUPTIVE INNOVATION ON ORGANIZATIONAL STRATEGY

Methodology

To answer the research questions raised in this chapter we present an exploratory study in which we develop reflections from four examples of disruptive innovation in transport that have occurred during the last five years and that are expected to have effects in SCs. As a first step, each innovation is described using secondary data obtained from different companies' official reports and websites, and both academic and practitioner articles.

Then, based on the BSC framework, we analyzed each example in terms of the expected performance effect on different perspectives of organizational strategy. This analysis is based on inductive logic and not on specific results of an organization. Hence, we have been conservative in not deducing effects that the reader logic cannot support.

Finally, we use this framework to identify and discuss potential tensions between different strategic objectives organization may face. The purpose of these reflections is to identify potential trade-offs, not providing evidence or predictions, but generating a logic of how to develop them in case of applying this methodology in a specific organization.

Four Examples in Supply Chains Disruptive Innovation

Private sector changes, which lead to the globalization of markets and enhanced competition, are forcing organizations' strategies toward flexibility, innovation, and efficiency (Frow et al. 2005). Digital and technological revolution has generated several disruptive innovations in the SCs that could drive organizations to improve their sustainability. This chapter will exhibit four different examples rooted on transport automation that have occurred during the last five years.

Example 1: Going Back to the Future to Enhance Transportation Decisions

There is no doubt about how the GPS has gained great reputation around the world due to its connectivity and cost reduction, among other capabilities. Since 2000, when US President Clinton accepted to globally extend this technology, GPS has entered into almost every industry, making them more reliable, faster, and efficient (BBC 2019a). According to a study of the UK government, lacking GPS would generate US\$ 1 billion per day losses during the first five days, after which the amount could be beyond calculation (BBC 2019a). Many technological firms have supported digital revolution using the GPS platform, in order to offer new services as well as valuable information that was inaccessible before.

Earth-I, a company based in the UK, has launched its service of satellite monitoring system, which allows the stakeholders of industries such as

construction, mining, agriculture, and defense to supervise their ground operations (Reuters 2019a). This system provides real-time data related to when facilities start or stop their processes, and it currently has 100 copper foundries under satellite supervision, which represent 90% of global production (Reuters 2019a).

Earth-I has its focus on geospatial intelligence, providing relevant real-time information in order to enhance decision-making processes in organizations (Earth-I 2019a) Delivering decisions support from outside Earth, it democratizes the information related to copper foundries' activities, which usually have local constraints as well as reliability ones (Earth-I 2019b). Considering copper is utilized in several industries across the globe and that its transportation requirements are constantly demanded, this technological innovation is transforming how information is generated inside the SC.

Planning processes in the supply chain could change due to this satellite monitoring system that delivers alerts about production performance and status of facilities (Gestión 2019), allowing a faster decision-making process and the opportunity to find operational alternatives in advance. Transport requirements could be demanded on time and even transportation contingency plans could be activated sooner, having less negative impacts as a result of a discontinuity event at some point inside the SC (Cedillo-Campos et al. 2019; Suresh and Vasantha 2018; Wang et al. 2018). Furthermore, anticipating transport decisions in the SC could generate important savings to shippers, warehouses, forwarders, and so on.

Example 2: Merging Transportation with Manufacturing

By the beginning of 2018, the Australian company Orica, world leader in production explosives and blasting systems, launched the Bulkmaster 7 Mobile Manufacturing Unit (MMU™). This innovation, which includes the latest integrated hydraulic, sensor, and control system technology, is oriented to open cut mine operations and offers better productivity levels, increased cargo loads, less costs and delivery times, ergonomic design, and improved safety levels (Orica Media and News 2018). As its project team's senior manager said:

By combining our global field expertise and MMU design experience, we've been able to test the boundaries of traditional delivery system construction. We have dramatically improved the carrying capacity, accuracy, delivery speeds and variances in material properties, with greater stability and a more ergonomic design.

The first Bulkmaster 7 initiated operations in the Pilbara region of Australia, working at the Fortescue Metals Group Solomon facilities (MiningMagazine 2018). Specifically, the improvements related to the Bulkmaster 7 released are: (i) an ad-hoc deposit for ammonium nitrate, which works with less weight, better stress distribution, and a lower gravity center, (ii) a higher overall capacity for bulk explosives retention, and (iii) reinforced power in order to improve delivery lead times and achieve more precise measurements methods for

materials (MiningMagazine 2018). In addition to this, the MMU includes a BlastIQ system that improves productivity, employs less time, and spends less in drill and blasting mining operations (MiningMagazine 2018).

Merging transportation and manufacturing, this company increased its overall production capacity, providing safety and easy operations for workers involved (Orica May 22, 2018). Alongside process efficiency, it achieved a faster delivery speed for its customers, which resulted in an improved lead time as one of its most valuable SC variables (Chopra and Meindl 2013; Coyle et al. 2013; Patel and Swartz 2019).

Example 3: Electrifying Cargo Transport

Companies such as Volvo, Daimler AB, Scania, and Tesla are setting their basis in a promising new market of electric trucks (Gestión 2018). Furthermore, demands from sustainability global agenda and subsequent government subsidies would encourage this new industry's rapid growth (Reuters 2018). Electric cargo vehicles propose lower operational costs as well as several environmental benefits by reducing CO2 emissions compared to traditional vehicles (Ballinger et al. 2019; López-Avilés et al. 2019). Moreover, electric trucks offer an improved performance, high operational uptime, longer life than traditional trucks, less frequency of mechanical services, and reduced noise (Volvo Trucks 2019). According to Logistica360 (2020), the Dutch company DAF's electric trucks are capable of loading up to 37 tons of weight and operate for 100 km under complete autonomy, which permits it to offer its services to urban distribution. On the other hand, limits of cargo are still a latent agenda of these transport innovations, due to unreached but necessary power to move bigger amounts of goods, which is one of the main principles of logistics to achieve economies of scale (Gestión 2018).

UPS Company, one of the world's biggest delivery firms, is turning its traditional cargo van fleet based on diesel into electric vehicles. It started in London, facing several problems related to vehicle conversion costs and uncertain capabilities of the local power grids to plug many trucks at the same time. However, it is approaching the point of costs and benefits balance, and the British government is supporting it with resources due to its commitment with CO2 emissions reduction (The New York Times 2018).

Singulato Motors has announced a production of 50,000 electric cargo vans per year in order to supply the new transportation requirements in China for the next years (Reuters 2018). In addition, Volvo Company announced its partnership with Samsung to develop battery cells that could be in accordance with the power requirements of the new electric trucks (Volvo 2019). Inter-firm alliances turn especially important when organizations have to deal with technological opportunities as well as process constraints. Upgrading operational attributes of electric trucks would permit them to give service to different customer demands and provide a cleaner transportation mode.

Example 4: Lift Truck Automation

By the end of 2016, Pepsico, one of the world's biggest beverages and foods companies, announced the launching of a new distribution center in Mexico, which is managed by fully automated lift trucks (Lideres Mexicanos, 2016). This innovation allows Pepsico to lower operational costs in its warehouses as well as have zero human accidents, because there is no longer the need for human presence to drive those lift trucks. Other benefits of this forklifts automation process are the reduction of energy utilization and less disturbing noises inside warehouses, such as in that of Ocado, a large British online supermarket, which eliminated those noises that usually came from people or alerts for preventing damage (BBC 2019b). According to Beverage Industry (2018), beverage companies are good candidates to incorporate automated guided vehicles (AGVs) in their warehouse logistics operations, due to regular schedules and common activities such as picking, transporting, and positioning products. Another activity positively affected by self-driving forklifts is delivery; companies such as Amazon consider warehouse automation as a strategic milestone for the firm's objectives related to cost reduction and faster deliveries (Reuters 2019b). Conversely to AGVs in the streets, automated forklifts provide efficiency as well as safety to workers, operating with high technological features that include laser detectors for obstacles, navigation technology, and internal maps (Beverage Industry 2018; Park et al. 2011; Syu et al. 2017).

Balanced Scorecard (BSC) and Supply Chain Disruptive Innovation

According to the literature review, disruptive innovations are more likely to aim at financial and sustainability perspectives, reflecting firms' efforts to be more sustainable and at the same time improve their financial measurements (Chopra and Meindl 2013; Porter and Van Der Linde 2009; Coyle et al. 2013; Leonard and Gonzalez-Perez 2013; Gonzalez-Perez and Leonard 2016; Goksoy et al. 2013; Agrawal and Narain 2018). However, each of the four examples described earlier have other relevant impacts on the customer, internal processes, and learning and growth perspectives too. While organizations would prepare themselves on how to deal with changes related to financial and sustainability issues, these additional impacts could be perceived as unintended outcomes from implementing technological innovations in SC operations. Hence, companies should be prepared for them too, in order to overcome the unexpected outputs of incorporating innovations, heading changes with an integrated sense of the organization. Consequently, organizations will need to include new variables into their PMS (Neely et al. 2000) that assist them to deal with the other three BSC perspectives (Kaplan and Norton 1996) that could be affected by innovations.

In order to capture comprehensively the expected impact of each example on organizational performance, in Table 24.1 we present predictions in terms of the impact on each of the BSC perspectives. Overall, Table 24.1 presents performance measurements that may have to be considered for each BSC

Table 24.1 Measuring the impact of supply chain disruptive innovation on organizational strategy

<i>BSC Perspective</i>	<i>Example 1</i>	<i>Example 2</i>	<i>Example 3</i>	<i>Example 4</i>
Financial	Decrease of both discontinuity events and anticipation of transportation decisions.	Decrease manufacturing costs due to optimization of operations. Increase in revenue due to increase in overall production capacity.	Decrease operational cost. Increase revenue.	Decrease costs. Increase revenue.
Sustainability	May decrease level of CO ₂ emissions due to optimization of transportation decisions.	Improve safety for employees.	Decrease level of CO ₂ emissions. Decrease noise.	Decrease energy utilization. Decrease accidents. Increase unemployment.
Customer	Increase customer satisfaction (may increase due to online tracking for anticipating decisions and better on-time delivery and quality).	Increase customer satisfaction due to lead-time and quality improvements.	Increase customer satisfaction due to environmentally friendly transportation.	Increase customer satisfaction due to environmentally friendly operation and on-time delivery.
Internal processes	Increase in reaction time; improve average on-time as well as on-specs delivery.	Improve manufacturing speed.	Decrease productivity (less cargo economies of scale).	Flexible operation. Information-based optimization.
Learning and growth	Improve information availability for improving operational flexibility.	Increase in manufacturing capacity.	Increase in manufacturing capacity due to upload time.	Increase operational capacity. Increase learning opportunity due to digitalization of navigation data.

Source: Author's creation

perspective in the SCM context. Customer perspective would have to include metrics oriented to customer satisfaction. Internal processes perspective would need to add metrics focused on operational flexibility, lead-time accomplishment, and productivity levels. Finally, learning and growth perspective would

have to include metrics oriented to information flow, information availability, and organizational knowledge capacity.

In terms of impacts, innovations described in Examples 1 and 2 are likely to have a positive impact on each of the BSC perspective. For instance, the adoption of GPS is expected to result in savings (financial), decrease in CO₂ emissions (sustainability), increase of customer satisfaction due to improvements on the services level (customer), improvement of flexibility due to anticipation (internal processes), and potential learning due to new information availability.

On the other hand, innovations described in Examples 3 and 4 are expected to have mixed impacts on the BSC perspectives. Thus, our predictions suggest possible tensions among expected and unexpected results on firms' strategy due to the adherence of disruptive innovations in SSCM, even more considering the statements of United Nations (2015) regarding global SDGs. For instance, Example 4 presents improvements in energy utilization levels as well as less human accident rates; however, this innovation is also likely to result in job losses (being against SDGs one, eight, and ten), as these devices are fully automated. Another conflict appears with Example 3, in the internal processes perspective, because electric trucks do not reach the same power attributes as conventional ones, which could generate less opportunities to take advantage of economies of scale in SC operations (against SDGs eight and nine).

In order to provide predictions for specific organizations in terms of how they deal with such trade-offs, information about that organization's strategic priorities is required. For instance, if a company just looks for maximizing profits, it is not expected to consider the sustainability perspective of the BSC. Thus, the decision of adoption of such an innovation will be driven directly by the improvements on financial performance. On the other hand, if an organization has committed to sustainability goals, then it is expected to face the trade-offs and make different decisions in terms of how to implement the innovation in order to balance its impact on the expected unemployment. Hence, an organization may use this innovation only to increase its capacity or in new operations (new factories) in order to protect actual employees.

CONCLUSIONS

In the new era of digital revolution and innovation, SCM needs to be flexible and disruptive. Many companies around the world are leading the innovation in managerial practices across the SC. Nevertheless, this chapter emphasizes the importance for firms to be aware of innovations' expected results as well as the unexpected ones. Global trade, production, and customer needs will continue to drastically increase in the following years, and consequently technological and digital innovations will do the same. Therefore, organizations will also need to evolve their PMS, in order to keep their main activities oriented to the strategy and continue accomplishing their stakeholders' requirements regarding profitability and sustainability.

Due to several changes generated by technological innovation in SCs, current performance measurement mechanisms would become outdated and firms will have to reanalyze their processes in order to choose new drivers, which fit with new business contexts, setting additional metrics. This chapter puts under discussion how improvements on SCs' predictability and the chance for taking decisions in advance (Example 1), due to information availability, open the boundaries of new metrics of customer satisfaction, delivery times, quality of delivery, discontinuity events, and operational flexibility. In addition, it reflects on how operations that merge manufacture and transport by technology (Example 2) and/or acquire electric trucks (Example 3) could also generate the necessity of new measures related to customer satisfaction, productivity, manufacturing speed, and manufacturing capacities. Moreover, this study discusses about how forklifts automation (Example 4) leads SC operations to introduce metrics for customer satisfaction, operations' flexibility, and learning opportunities.

Not addressing properly those new business environments would drive companies to have to deal with plenty of managerial problems in the future due to insufficient or inappropriate PMS, having inadequate or inaccurate performance metrics. Therefore, firms would have less chance to follow the step of technological and digital revolution, and at the same time follow the guidelines proposed by the United Nations through their 17 SDGs toward 2025. Hence firms need to identify how to manage the suggested trade-offs by these disruptive innovations and, more important, how these trade-offs could be significantly negative for SCCM. Furthermore, the appearance of tensions between firms' strategic objectives and sustainability goals, such as having less job positions (Example 4 and sustainability) and less productivity levels (Example 3 and internal processes), put under discussion how firms want to develop their operations and the trade-offs generated by innovations. Alongside this, organizations also have to decide which new metrics they need to abandon and which others they need to add into their strategy, in order to prompt sustainability and their own long-term survival and performance. This new landscape will provide practitioners valuable information to enhance their decision-making processes related to technological innovation and to think along the SC under a fully integrated processes point of view.

Some limitations of the present study suggest considering a wider range of innovation types and innovation examples in order to find a more accurate categorization and different trade-offs between expected and unexpected outcomes of disruptive innovations in SCs. Another important limitation of our chapter is that we neither collect primary data nor test hypothesis. However, we believe that the analysis developed is a contribution to understanding the impact that innovation can have on different dimensions of the organizational strategy and our reflections may shed light for the development of future research in this regard.

Specifically, there are at least three research lines that may be motivated by our chapter. First, researchers may interview business executives who had

implemented the innovation discussed in our chapter to obtain primary source data to validate our predictions. Conducting a qualitative investigation through in-depth interviews with the managers of the organizations and the leaders of the SC could fill the gap related to the limited details on how these technological innovations really work in daily operations and affect the organizational strategy. Having this primary data will also assist researchers to find additional tensions and unsolved trade-offs due to SC innovations. Second, researchers can develop and test hypotheses about how organizations manage the balance between the different BSC perspectives by introducing firm strategy as a variable in the empirical test. For example, comparing samples of companies with different strategies (e.g., strongly vs. not committed to sustainability objectives) can provide an appropriate design to demonstrate the presence or absence of trade-offs between different BSC perspectives and thus understand the different approaches to introduce SC innovations. Finally, researchers can focus their studies on organizations that have been recognized for their strong commitment to sustainability to understand what kind of initiatives they implement to balance tensions between BSC's different perspectives when implementing SC innovations.

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The Future of Sustainability: Value Co-creation Processes in the Circular Economy

Beatrice Re, Giovanna Magnani, and Antonella Zucchella

INTRODUCTION

The unsustainable levels of human activity are one of the major causes of the environmental emergency the world is facing (Furukawa et al. 2019). The rising consumption needs in advanced countries as well as in emerging and fast-growing economies is harming the whole planet (ibid). A global shift toward more sustainable production and consumption paradigms is urgently needed (Bengtsson et al. 2018).

The circular economy (CE)—defined as “an industrial economy that is restorative or regenerative by intention and design” (Ellen MacArthur Foundation 2013, p. 14)—is recognized by scholars of many scientific disciplines as a feasible path toward the implementation of sustainable production and consumption modes (Ghisellini et al. 2016; Murray et al. 2017).

This chapter positions within the emergent stream of entrepreneurship studies that looks at the entrepreneurial dynamics and processes in the circular economy (Zucchella and Urban 2019) and focuses on value co-creation processes in entrepreneurial firms with circular business models.

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Co-creation is recognized as being a milestone in achieving the so-called “circular advantage”¹ (Accenture 2014). It is the interactive creation of value between businesses and customers² jointly (Antikainen et al. 2015; Kirchherr et al. 2017). The firms-customers interaction that intervenes in co-creation can be regarded as a dialogical process (Ballantyne 2004; Ballantyne and Varey 2008), an integrated process (Grönroos 2011) made of “mutual understanding by listening and learning” (Ballantyne 2004, p. 117). The interaction between the provider and the customer requires that they are both active (Grönroos and Ravald 2011). The word “active” comes from the Latin *actus*, and it is used to describe something operative, especially with the meaning of “given to worldly activity” (Online Etymology Dictionary). Applied to the circular economy context, active firms and customers would constructively work together to make changes both in production processes and in consumption habits. On the one hand, firms develop a deeper understanding of their customers, to then build innovative circular business models (CBMs) (Bocken et al. 2016; Lewandowski 2016; Pieroni et al. 2019). On the other hand, customers contribute to “close resource loops” (Bocken et al. 2016; Konietzko et al. 2019), for instance, by returning goods to the providers or by exchanging unused products with peers. In doing so, they not only have an “active voice” in firms’ processes (Prahalad and Ramaswamy 2004a,b) but, more substantially, they become crucial components of the firms’ “circular mission” (Zucchella and Urban 2019).

In the implementation of circular practices, firms and customers are thus closely intertwined. They are deeply involved in a continuous value co-creation process, i.e. “a joint process whereby firms and customers together, in interactions, create value” (Grönroos and Voima 2013, p. 138). In this chapter, we refer to “circular co-creation processes” to indicate virtuous and dynamic interactions between firms with circular business models and responsible customers.

Although there is consensus about the potential gains stemming from co-creation (Prahalad and Ramaswamy 2003, 2004a, b)—such as fostering product/service innovation (Bitner and Brown 2008; Sawhney et al. 2005) and improving consumption/usage experiences (Gentile et al. 2007; Payne et al. 2008)—value co-creation has not been analyzed sufficiently rigorously (Grönroos and Voima 2013). So far, there has been little empirical analysis of the processes enabling co-creation (Grönroos and Ravald 2011) and of their key dynamics, especially in the business-to-business contexts (Payne et al. 2008). A more thorough understanding of the ways providers and customers interact and influence each other in these value co-creation processes is needed (Grönroos and Ravald 2011).

¹The circular advantage is the competitive advantage a firm can gain if able to rethink product and services from both the perspective of the value delivered to customers and the alignment of the business model with the circular economy.

²It should be noted that while the terms “consumers” and “customers” are used quite interchangeably in the literature, here we explicitly refer to customers, to take into account both the B2C and the B2B contexts.

This chapter illustrates how circular co-creation processes generate virtuous practices of joint sustainable consumption and production modes. We analyze four case studies of “born circular firms”, i.e. companies that “are founded with the mission to create both economic and social/environmental value, applying the principles and the business models of the circular economy” (Zucchella and Urban 2019, p. 89).

The chapter is structured as follows. The next section is devoted to illustrating the theoretical foundations. The following section is dedicated to illustrating our case firms and analyzing co-creation processes. The final section discusses our findings and advances avenues for future research.

THEORETICAL BACKGROUND

Context

Our context of analysis is the circular economy, which is gaining momentum on the agendas of policymakers (Brennan et al. 2015) and on academic researches alike (Geissdoerfer et al. 2017). There is wide consensus about considering the CE as a concrete path to reach sustainable modes of production and consumption (Bocken et al. 2016; Ghisellini et al. 2016). This context suits the present research since it is making world actors rethink about the ways of doing business (Geissdoerfer et al. 2017), and concurrently it requires customers to make concrete actions and to share with firms the responsibility toward the environment. The role of engaged customers is thus crucial in the implementation of circular practices (Camacho-Otero et al. 2018).

CE distinguishes from the traditional linear economy by virtue of the approaches it establishes with resources, which consist in narrowing, slowing and closing the resource loops (Bocken et al. 2016). To narrow resource loops means “to reduce resource use associated with the product and production process” (ibid, p. 310). For instance, 3D printers can narrow resource loops by design: they allow additive manufacturing processes³, directly from raw materials (Kellens et al. 2017), thus helping to produce the final output without any material waste (Post 2015).

To close loops means reintroducing used materials into the production system to avoid waste and allow a circular flow of materials (Bocken et al. 2016; Stahel 2010). For instance, the Italian firm Waistemade transforms used bike tires into design belts through an upcycling process.

To slow resource loops means stimulating the usage of already existing assets to avoid their underutilization (Bocken et al. 2016). This implies activities such as sharing, reuse and refurbishment of products and services (ibid; Ellen

³Additive manufacturing technologies could compete with traditional manufacturing methods, based on subtractive processes (Paris et al. 2016). The latter involve progressively cutting material away from a block and usually generate higher waste than additive manufacturing processes (Kreiger et al. 2014).

MacArthur Foundation 2013). It is the case, for instance, of peer-to-peer car sharing (see, for instance, the Dutch SnappCar).

From an entrepreneurial perspective, embracing one or all of the above-mentioned approaches to resources means to implement circular business models (Bocken et al. 2016; Lewandowski 2016; Pieroni et al. 2019).

Circular Business Models

Circular business models are praised for concretely reducing waste and preserving the resources available through leading products and materials to their “highest level of utility and value” (Wastling et al. 2018, p. 1). According to the conceptualization provided by Linder and Williander (2017, p. 183), a CBM is “a business model in which the conceptual logic of value creation is based on utilizing the economic value retained in products after use in the production of new offerings”. CBMs differ from linear business models,⁴ inasmuch as the former are conceived to withhold resources in use as much as possible and to reintroduce what is commonly considered as “waste” into the economic system.

Lacy and Rutqvist (2015) distinguish five circular business models: circular supply chain, resource recovering, product life extension, sharing platforms and product as a service (PSS). The circular supply chain business model consists of the production and usage of renewable, recyclable and/or biodegradable inputs to be introduced in the supply chain or to be outsourced to other firms. An example is Pela Case, a company producing 100% compostable phone cases: after use, the circular loop is closed with the material gently returning back to the Earth.

The recovery/recycling business model is based on taking what is commonly defined as waste and making something new out of it. This is what the Dutch firm Gumshoe does by producing sneakers with a sole obtained from the recycling of chewing gums collected in the city streets.

The product life-extension model basically consists of making products that last a long time or increasing products’ life through upgrade and refurbishment, thus contrasting the planned obsolescence of most consumer goods. Miele is a case in point since its design strategy is based on durability: the high-quality machines it produces have a predicted functional lifespan of 20 years, against an average of 10 years or less of the other machines on the market.

The sharing business model aims at enhancing the utilization rates of already existing products, decreasing the need for new manufacturing and increasing the productivity of otherwise idle goods. An example is BlaBlaCar, which allows users to offer each other car lifts in exchange for monetary compensation.

⁴A linear business model represents the *status quo* in most manufacturing industries (Linder and Williander 2017). “Its essence is generally summarized as take – make – dispose. That is, take the resources you need, make the goods to be sold and make profit and dispose of everything you do not need – including a product at the end of its lifecycle” (Sariatli 2017, p. 32).

Finally, in the product-as-a-service business model (PSS), companies keep the ownership of products, by allowing users to rent them. Product-as-a-service has been praised for favoring resource efficiency (Tukker 2015) and enabling a sort of “resource revolution” (ibid).

A certain amount of innovation and creativity is embedded in the above-mentioned business models and it is crucial to close resource loops (Stahel 2016). Firms with circular businesses can either be innovative young start-ups wishing to unleash their creativity and care for sustainability, the already mentioned “born circular firms” (Zucchella and Urban 2019), or “growing circular firms” (ibid). The latter are typically established ventures that at some point have decided to transit from a linear production model to a circular one—a process requiring substantial organizational changes and investments. The “circular mission” (ibid) characterizing born circular businesses represents the expression of their founders’ ambition to change the way of doing business to start building a better world.

The empirical analysis of the present chapter will focus on case studies of born circular firms as their entrepreneurial orientation is often the result of their founders’ straightforward, innovative and far-reaching mindset - the circular entrepreneurs - who value co-creation as the cornerstone of their business model.

Value Co-creation Processes

A value-creating process can be defined as “a set of activities starting with the design and development of what is going to be produced” (Vargo et al. 2008, p. 361). The co-creation paradigm assumes that this process cannot be performed separately by customers and firms: the locus of value creation is the interaction between them (Prahalad and Ramaswamy 2004a,b; Vargo et al. 2008).

Co-creation processes (Prahalad and Ramaswamy 2003, 2004a, b) allow reciprocal understanding and the establishment of a virtuous and collaborative relation, so that “the roles of the company and the consumer converge” (Prahalad and Ramaswamy 2004a, p. 6). On the one hand, several are the recognized benefits that firms can gain through customer engagement in value co-creation processes, for instance, an increase in brand loyalty (Jaakkola and Alexander 2014), the improvement of the offering (Bitner et al. 1997; Mills et al. 1983), better product quality (Füller et al. 2011), the attraction of new customers (Piligrimienė et al. 2015; Saarijärvi et al. 2013), the reception of inputs for innovation (Magnusson et al. 2003; Von Hippel 2001) and the reduced business risk (Maklan et al. 2008).

On the other hand, customers seem to associate their participation in firms’ processes with greater satisfaction (Nambisan and Baron 2007), perceived value (e.g. Anderson and Sullivan 1993; Kelley et al. 1990), economic gains, for instance thanks to discounts (Bitner et al. 1997), and with a feeling of control over the offering (Lengnick-Hall 1996).

The literature advances many concepts with respect to customers' participation in firm's processes, for instance, engagement (Van Doorn et al. 2010; Hollebeek et al. 2019) prosumption (Xie et al. 2008) and empowerment (Füller et al. 2009).

Customer engagement refers to the "customer provision of resources during non-transactional, joint value processes that occur in interaction with the focal firm and/or other stakeholders, thereby affecting their respective value processes and outcomes" (Jaakkola and Alexander 2014, p. 254). Prosumption regards "individual physical or mental acts or social acts by actors in an exchange relationship that help to co-produce the seller's offering and gives rise to socio-psychological experiences for the buyer(s) in cooperation with the seller" (Xie et al. 2008, p. 112). Although there has been some criticism about the exploitation of customers' intellectual capital (Cova and Dalli 2009), it overall seems that prosumers enjoy their activities (Ritzer and Jurgenson 2010). Finally, empowerment denotes the "individual experience of increased self-determination and efficacy" (Füller et al. 2009, p. 74) and it generally refers to a personal contribution—in terms of creativity and knowledge—a customer gives to a company, for instance, by providing suggestions for the development of a product (ibid). Nowadays interactions often take place online: the Internet allows the establishment of a "persistent dialogue with customers" (Sawhney et al. 2005, p. 5). Together with customers, especially in online marketplaces, firms develop "superior value propositions" (Kasouf et al. 2015; Payne et al. 2008).

The customer-company interaction is the milestone of not only the engagement construct (Hollebeek et al. 2019) but also of the service-dominant (S-D) logic (Bendapudi and Leone 2003; Vargo and Lusch 2004). The S-D logic entails that the "customer is always a co-creator of value" (Vargo and Lusch 2004) and it embraces the "value-in-use" meaning of value (Vargo and Lusch 2008). This means that value emerges in the process of usage (Grönroos 1979, 2006, 2008; Gummesson 2007), the latter being a dynamic one (Grönroos 2000; Mattsson 1991; Woodruff 1997). In light of this, suppliers need to design and align their own processes according to the customers' value-creating ones (Payne et al. 2008).

The literature identifies several co-creation forms between firms and customers (Sheth and Uslay 2007; Vargo and Lusch 2008). Frow et al. (2015) report 12 co-creation forms. *Co-conception* of ideas regards the joint sharing and developing of ideas and solutions. *Co-meaning creation* is the sharing of meaning within the communities of users. *Co-design* refers to the intervention of knowledgeable customers in the design of the new offering (Von Hippel 1988; Piller and Walcher 2006). *Co-consumption* refers especially to the sharing of consumption experiences with fellow customers, thus generating value for oneself and for the others (Agrawal and Rahman 2015).

Co-experience can be defined as "experiences with products in terms of how the meanings of individual experiences emerge and change as they become part of social interaction" (Battarbee and Koskinen 2005). A set of co-creation forms regard the traditional marketing mix of the firm. *Co-production* refers to

customers who are involved in the production process but also in the improvement of value propositions. *Co-promotion* activities take place when enthusiastic customers promote the brand, becoming advocates or, at the extreme, evangelists, typically within a community. *Co-pricing* is the process whereby customers experience the product before paying and determine the price according to the value they assign. Some examples in this sense are “pay-what-you-want” restaurants. *Co-distribution* is the involvement of customers in distribution channels. For instance, Unilever was able to reach remote areas in India through the support of local women who have been trained as sales agents.

Lastly, *co-maintenance*, *co-outsourcing* and *co-disposal* are other increasingly relevant co-creation forms, although in the literature there are still no clear cut definitions. Co-maintenance is considered, in vague terms, as the involvement of customers in the refurbishment and recovery activities. Co-outsourcing seems to imply that “customer resources are integrated in the company’s [...] outsourcing processes” (Saarijärvi 2012, p. 383). Co-disposal refers to consumers’ involvement in recycling products and materials.

Circular Co-creation Processes

Value co-creation in the context of circular economy requires firms and customers not only co-creating value but also jointly and synergistically finding efficient ways to take responsibility for environmental issues, developing what we here define “circular co-creation processes”.

The latter can be investigated from several perspectives. Our focus is on how a firm can seek to develop circular co-creation processes with its existing as well as potential customers. On the one hand, circular firms may identify value co-creation opportunities by somehow “teaching” their customers some co-creation behaviors (Payne et al. 2008). On the other, “responsible consumers” (Kirchherr et al. 2017) show interest in being engaged to circular firms’ value proposition and mission. Therefore, they can be considered “circular innovators”,⁵ because they are prone to change their habits and to co-create value with firms with the aim of taking steps toward circular practices.

METHODOLOGY

The empirical work is devoted to illustrating the processes of value co-creation in a set of entrepreneurial firms⁶ (Covin and Slevin 1991) with circular business models. We adopt a qualitative methodology and an inductive approach to let preliminary evidence empirically emerge from informants’ narratives. We opt for an illustrative case studies design (Yin 2014; De Massis and Kotlar 2014),

⁵According to the Theory of Diffusion of Innovation (Rogers 1962), the innovators are those 2.5% of individuals willing to be the first to try and adopt an innovation.

⁶Entrepreneurial firms are defined as “risk taking, innovative, and proactive” (Covin and Slevin 1991, p. 7). They are usually prone to “take on high-risk projects with chances of very high returns and are bold and aggressive in pursuing opportunities” (ibid, p. 7–8).

which is suitable to investigate a contemporary phenomenon such as CE (the “case”) in its real-world context and to convince that the phenomenon is relevant (De Massis and Kotlar 2014).

Our data collection was carried out between May and September 2019. Case firms have been purposefully selected (Patton 2015) according to the following criteria. We searched circular firms within two open access databases—*LifeGate*⁷ and *Atlante Storie di Economia Circolare*—reporting cases of Italian circular entrepreneurship. Then, we first searched and selected those cases where a co-creation process between firms and customers was evident. At this stage we collected around ten cases. Then we checked the availability of these firms’ founders/most knowledgeable informants to perform a Skype interview. Out of these firms, only five accepted to be interviewed. Our final sample is made of four circular firms. Table 25.1 provides an overview of the selected case studies, highlighting the name and role of the interviewees, the industry, the business model, the circular mission and whether the firm operates in the B2B or B2C context.

We conducted in-depth interviews with the respective founders/most knowledgeable informants adopting a semi-structured interview scheme. The main topics discussed in the interviews were (i) the firms’ foundation (business model and circular mission), (ii) the co-creation forms, according to the role customers had in value creation process and (iii) the continuous and intertwined process of value co-creation as well as the process output. Each interview lasted around 1 hour, it was recorded using a digital device and then transcribed within the following 24 hours. In parallel, to ensure reliability of interviewees’ responses, we triangulated the data with secondary sources of information (e.g. online reports, web articles) as well as within the research team (Pettigrew 1988; Yin 1984) through mutual discussions which were necessary “to balance detachment and involvement” (Pettigrew 1988, p. 278).

In accordance with the multiple case study protocol (Eisenhardt 1989; Eisenhardt and Graebner 2007), we started our data analysis by first performing a within-case analysis for each firm involved in the study. We read the transcripts several times to become “intimately familiar with each case” (Eisenhardt 1989, p. 540) and we identified the peculiar pattern of each single case. Subsequently, we proceeded as follows: (i) we selected interviewees’ most relevant sentences; (ii) we codified them according to the three key dimensions: co-creation form, co-creation mechanisms, and process output and (iii) we established relationships among the codified dimensions. In doing so, we were able to identify recurrent co-creation mechanisms as well as related outputs.

⁷LifeGate consists of a group of companies engaged in the communication of sustainable economy principles (Zucchella and Urban 2019). The founder of the holding company, Marco Roveda, is a pioneer in bio-agriculture. The holding aims to promote a sustainable world and to place sustainability at the core of every human decision. LifeGate’s mission is the creation of the world’s biggest information and communication network of people, companies, NGOs and institutions, all committed to building a sustainable future (www.lifegate.it).

Table 25.1 Case studies on value co-creation: key facts and figures

<i>Company name</i>	<i>Interviewee</i>	<i>Number of employees</i>	<i>Industry</i>	<i>Circular business model</i>	<i>Circular mission</i>	<i>B2B/B2C</i>
Apepak	Massimo Massarotto (Founder)	15	Packaging	Circular supply chain	<i>“Our mission is to offer an alternative to the plastic film: a beeswax envelope for food which is 100% natural, washable and reusable”</i>	B2C
Rifò	Niccolò Cipriani (Co-founder)	6	Textile	Recovery and recycling	<i>“Rifò makes high quality garments and accessories, using 100% upcycled textile fibers. We transform old clothes into a new yarn which we use to craft new warm and soft products”</i>	B2C
Womsh	Gianni Dalla Mora (Founder)	5	Footwear	Circular supply chain and recovery and recycling	<i>“We want to create a new purchasing philosophy that is more conscious and eco-friendlier”</i>	B2C
Up2Go	Elena Colli (Business developer)	6	Information service activity—software development	Sharing platform	<i>“Up2Go is the ideal carpooling solution to be implemented in firms and institutions in a fast and easy way. It allows to reduce costs, be sustainable and facilitate commuters’ home-work journeys”</i>	B2B

Source: Author’s creation

SINGLE CASE ANALYSES

Apepak

Apepak is a start-up founded in 2017 in Castelfranco Veneto (North East of Italy) by Massimo Massarotto. According to the founder “Apepak is a product, but also a useful and effective instrument to start doing something concrete to support the environmental cause”. The firm produces envelopes to store food in the fridge. The envelopes are made of organic cotton and beeswax and can be washed and reused several times.

Inspired by the philosophy “share as you go”, Massarotto was highly motivated to create and carry on an ethical business, and this aim shines through all the choices he has made over time. For instance, he decided to combine the firm’s pro-environmental mission with a strong social aim. To do so, he outsourced production to the social cooperative Sonda, located in the province of Treviso, who employs disadvantaged people and favors their social reintegration.

The story behind Apepak is peculiar. The young Massarotto moved from Veneto to San Francisco many years ago, to study social media. After working for many years as a freelance consultant, in 2017 he made a radical change in his life. Inspired by a packaging he saw in San Francisco, together with his wife Molly, he started creating some prototypes of sustainable envelopes made of natural beeswax and he sent them to his Italian relatives as a Christmas present. Having been congratulated by the gift receivers on creating such a great and sustainable product for everyday use, Massarotto realized the potential of the product and he made his wish come true: to start his own business.

The first step Massarotto made was opening a landing page on Wix. Right from the start he highly regarded the co-creation of value with customers as a milestone of his way of doing business (cf. Fig. 25.1).

Co-creation has been a critical aspect of Apepak venture from the very beginning. Massarotto decided to involve a group of Italian customers in the product design, by posting on his personal Facebook page the message: “we would like to test this product with 200 Italian families. If you would like to receive a sample and then to answer a questionnaire, we can send you the sample for free”. This call for action attracted a lot of attention. “Literally after 2 hours from my posting, I received more than 1000 requests!”, explains the founder. The proactive consumers who responded the call, whom he defines “trend setters”, can be considered “circular innovators”. The testing phase was

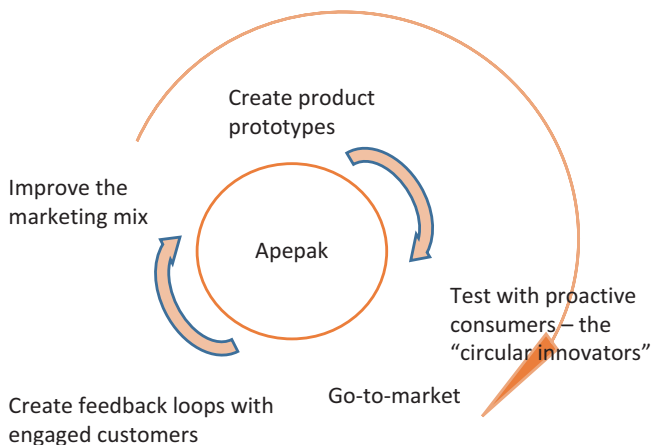


Fig. 25.1 Apepak co-creation process. (Source: Author’s creation)

successful. The testers first used Apepak for some weeks and then answered the questionnaire that included questions related to the marketing mix—product (e.g. “do you like the smell?”, “do you like the texture?”), place (“where would you like to find it?”), price (e.g. “do you find it too expensive?”, “how much would you be willing to spend to buy it?”).

The founder points out:

When you co-produce a product with 200 families, you are letting them feel part of the project. They do not feel as merely consumers, they are co-creators. They actually felt co-owners of the whole idea.

The feedback helped the company to make key go-to-market strategic decisions. For instance, the choice to opt exclusively for specialized shops as distribution channels is one of the results of the contribution provided by the testers, together with the product size(s). Then Apepak regrouped the testers on a dedicated Facebook group, which is now open to all customers wishing to engage with the firm. This page is aimed at favoring interactions between the firm and the customers, to create a system of “feedback loops”. As a reward for their support, customers get a discount of 15 Euro on their first Apepak order. The constant dialogue allows to build reciprocal trust meant to last. In Massarotto’s words:

The feeling of ‘being important’ is crucial in the relation customers establish with a firm. Taking part in the value co-creation process means building a bond, a relation which lasts.

Thanks to the “feedback loops”, the firm is able to constantly improve its marketing mix according to customers’ suggestions. The process is iterative, as shown by the orange arrow in the Fig. 25.1. Product features (size, smell, consistency) can be aligned with customers’ feedback. Price is set within a range which takes into account the customers’ expressed willingness to pay. Distribution channels’ choices are made in compliance with the opinions provided by customers; they strongly supported the “ethical” decision to avoid supermarkets and to instead opt for online channels and specialized stores. Customers from their side feel satisfied thanks to the fact that their suggestions are taken into account and implemented by the firm. The output of Apepak’s value co-creation process consists in a virtuous “success spiral”—as in Massimo’s words—for both Apepak and its customers.

Rifò

Rifò was founded in 2017. Its young founder, Niccolò Cipriani, had a previous working experience in Vietnam, that made him concerned about the critical environmental consequences of the overproduction in the textile industry.

Motivated by the willingness to make a positive impact in that industry and influenced by the textile tradition of his home city, Prato (Tuscany), Cipriani and his co-founders decided to create a circular fashion start-up. Rifò produces wool and cotton sweaters and accessories through the recycling of existing textile materials. The brand name is iconic: in Tuscan dialect it means “I am doing it again”. In November 2017, Rifò was launched on the crowdfunding platform Ulule, through a very successful campaign communicating the firm’s value proposition and its circular mission. Rifò’s business is growing: in 2018 the turnover was around 85,000 Euro, while it has reached 320,000 Euro in 2019.

Rifò’s crowdfunding was highly successful: the firm obtained 290 pre-sales out of the set goal of 200. In addition to the financial aspect, the crowdfunding campaign was very helpful in letting the firm interact with customers and test the market in advance. In doing so, Rifò was able to understand customers’ preferences through their orders and feedback and align its range of items accordingly (most popular sizes, colors, materials and product types). Therefore, this co-creation with customers started from the very beginning through customer engagement in financing and in providing feedback through the crowdfunding platform, as shown in Fig. 25.2.

The case of Rifò highlights that a key role in the co-creation process may be played by the crowdfunding platform. Ulule was not just the online platform through which the company was financed, but it also represented the place where customers could order products through pre-sales at a discounted price and leave comments afterward. This process enabled the firm to get a good amount of feedback, which, in turn, helped to make ad hoc improvements to the offer. The first 50 customers were also rewarded with gifts (such as a thermos branded Rifò).

At the same time, the firm started involving a good number of potential customers through intensive marketing and communication campaigns,

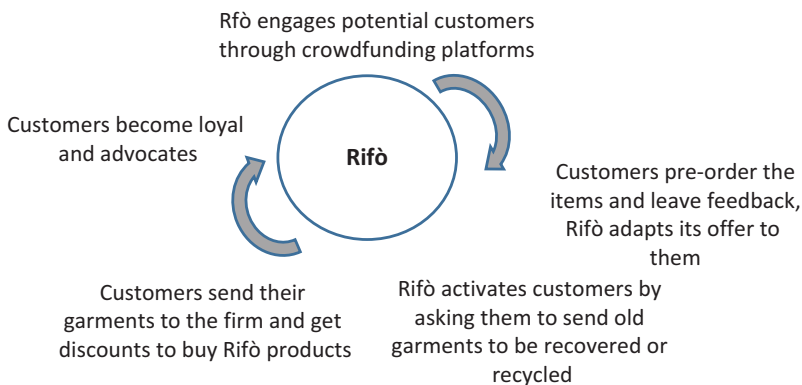


Fig. 25.2 Rifò co-creation process. (Source: Author’s creation)

especially on Instagram. This kind of promotion has been particularly effective. In the words of Cipriani:

The digital communication with our customers is the most effective one. Once we reach a broad audience, we are more likely to be contacted by interested customers, for instance via Instagram.

Customers are asked to collect and send their old cashmere clothing to Rifò headquarters. The firm proceeds with recovering or recycling the cloths to transform them into accessories (scarves and gloves). In return for these actions, customers obtain a 10% discount on their purchases.

The call-to-action not only creates economic benefits for those customers who participate (gifts and discounts) but it also generates a feeling of satisfaction for having been an “active” part of an environmental cause. This virtuous cycle generates reciprocal trust between the firm and its customers, which takes the form of brand loyalty and advocacy: customers repurchase from Rifò and tend to become advocates via social media, thus letting the firm increase the number of customers.

Womsh

Womsh was born in 2014 in Vigonza (North East of Italy), from an idea of Gianni Dalla Mora, an experienced agent in the footwear industry. At a certain stage of his life, Dalla Mora felt the personal need to engage with environmental and social sustainability and to create something that would have fulfilled himself. He therefore decided to establish a company with an iconic name, Womsh, that is, “word of mouth shoes”—which had as core business the production of zero-impact, recyclable designer sneakers. Womsh aims to create a product that is not just sustainable but also fashionable. To do so, the firm is constantly innovating. For instance, it has recently launched a vegan product line, which is based on the use of a natural material, the “Apple Skin”, a patent of the Italian firm Frumat Leather, based in Bolzano (North East of Italy). The environmental commitment of the company is expressed in several ways. First and foremost, it can be noticed from the decision to locate the production entirely in Italy, in a certified factory that is 90% powered by renewable energy and from the strong commitment the firm is making to compensate the CO₂ emissions, for instance through the participation in a renowned LifeGate project, *Impatto Zero*⁸.

The firm is performing well: its turnover in 2019 amounts to 1.2 million Euro and it is expected to double in 2020, especially thanks to the constantly

⁸The project *Impatto Zero* is aimed at calculating, reducing and compensating the CO₂ emitted by all the human activities. To do that, it buys the carbon credits generated through the intervention in favor of ecosystems of forests and the development of projects aimed at obtaining energy efficiency as well as the production of renewable energy (www.lifegate.it).

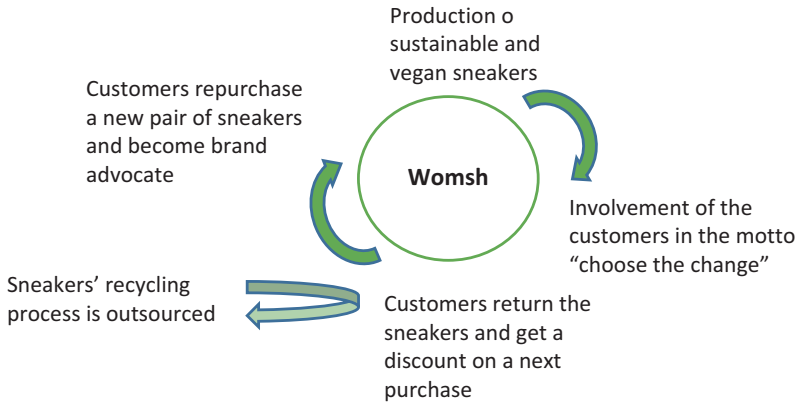


Fig. 25.3 Womsh co-creation process. (Source: Author's creation)

increasing sales in foreign markets, primarily Germany, Switzerland, Belgium, Luxemburg and the Netherlands.

The implementation of the company's circular mission requires the active involvement of customers. The co-creation process is illustrated in Fig. 25.3.

Womsh involves customers in its mission "choose the change", mainly through digital marketing campaigns on social media. Customers buying shoes are asked to bring them back to Womsh shops once worn out, so that the shoes materials can be recycled.

As Dalla Mora explains:

All I'm asking is that customers bring the sneakers back to us, because we can recycle them. It is a form of active collaboration from which customers should not back out.

Womsh outsources the recycling process to Esosport, the sport division of *ESO Società Benefit*,⁹ a firm founded in 1999 and whose mission is to recycle materials from different backgrounds (for instance, bicycle and textile industries). *ESO Società Benefit* collects and donates wasted and used materials to support the ongoing projects of the not-for-profit association *GOGREEN*. Through the projects "Il Giardino di Betty" (Betty's garden) and "La Pista di Pietro" (Pietro's track), these materials are recycled to promote the redevelopment of children's playgrounds area pavements and a running track.

⁹ESO Società Benefit was founded in 1999 to offer a service of waste management and consultancy to Italian firms. ESO is certified EN ISO 9001:2015, EN ISO 14001:2015, BS OHSAS 18001:2007.

In the founder's words:

Our customers are also actors of our project. When the sneakers are worn out, they are invited to bring them back to our shops, not solely to get a discount on a new pair of shoes, but to actively take part in our circular mission.

This co-disposal process does not require much effort from customers, who are only asked to return the items after use. This apparently simple action is actually valuable: it enables the closing of the resource loop and, with it, the implementation of *Womsh's* circular business model (resource recovery). The co-creation process thus triggers a virtuous circular loop, which benefits both the firm and its customers. On the one hand, the firm gains in terms of brand loyalty and advocacy from enthusiastic customers. On the other hand, responsible and active clients are rewarded for their action—they get a 10-Euro discount on the next purchase, which favors the repurchase of a new pair of shoes. Finally, such co-creation process with the firm generates a feeling of satisfaction, which often turns into brand loyalty. Indeed, the whole process is able to ignite in the actors involved a feeling of pride for being “active” in contributing to the environmental cause.

Up2Go

Up2Go is a start-up born in 2013 in the Emilia-Romagna region from an idea of five young women, motivated to make a step toward a more sustainable mobility. Up2Go is a carpooling platform aimed at reducing traffic and pollution levels. The firm's turnover was around 17 million Euro in 2018, more than double of the 2017 figure. The service is provided through packages that include the license of the App plus dedicated support by Up2Go, mainly consisting in a variety of communication and engagement activities aimed at final users. These packages are sold to targeted customers, for instance, companies or universities, which pay for the service and then bestow it to the relative community of users. Up2Go has been very proactive in developing partnerships. The two most important ones are with *Autostrade Per l'Italia* (the Italian highway), which promotes discounts on the road tolls, valid for those vehicles shared by a minimum of four people on board, and with *GreenApes*,¹⁰ which allows users to get rewards from earned credits.

The co-creation process between the firm and its customers is represented in Fig. 25.4.

Co-creation starts with Up2Go presenting its project to a large audience of targeted customers. This typically takes place via e-mails, in trade fairs—such as the “*Fiera delle Startups*” (start-ups fair) organized by *Sole24Ore* in

¹⁰ *GreenApes* is a certified B-corporation. It is a social network rewarding sustainable actions and ideas (www.greenapes.com).

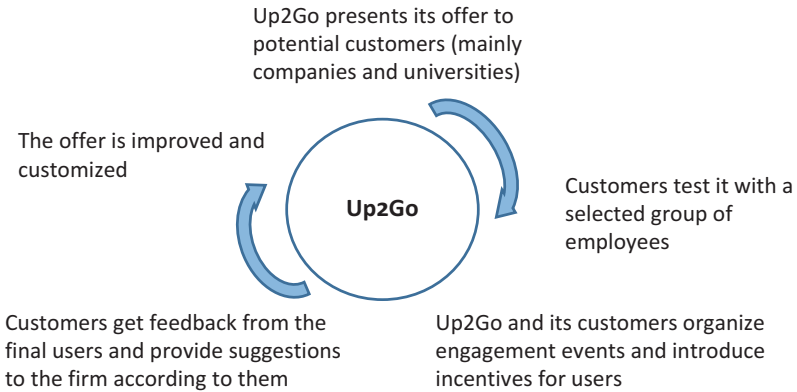


Fig. 25.4 Up2Go co-creation process. (Source: Author’s creation)

2013—and during conferences focused on the topics of sustainability, mobility and digital innovation, excellent places to interact with stakeholders.

The identified high-potential customers are firms and universities located in Italy, with a large number of employees/students. As explained by our interviewee, Elena Colli:

We began with a specific strategy: we targeted a number of selected firms and universities having a potential broad population of users, and we contacted them. Then, the first customers generated word-of-mouth, as a result of which we have been contacted by further ones.

Some customers—such as Barilla (the famous Italian pasta producer)—got involved in the project and they proceeded with a testing phase with a small group of employees (30–50) and then asked them suggestions and feedback to improve the service.

The business developer thinks that testing is a great idea:

The first impression is fundamental, if you launch something targeting a larger audience and then it does not work, then it is difficult to change users’ mind.

Engagement is key to the firm’s success. Up2Go and its customers periodically organize engagement activities to involve the final users, which usually include the illustration of the App, explanation of the carpooling service and assistance in creating the profile and offering/asking the first lift. Customers also develop incentives to attract and reward the final users, for instance, dedicated free parking spaces and different kinds of rewards (such as discounts, cooking classes and leisure activities).

Getting suggestions and feedback from customers as well as the final users is highly valued by the firm, which considers it as the best way to improve and

customize the offer according to the expressed needs (for instance, improvement in the App features, more external partnerships, different incentives).

As Colli explains:

We are mediators between our corporate customers and the final users. They both provide us with comments and feedback, which are fundamental for our development: we continuously adapt our offer according to them.

The outcome of Up2Go co-creation process is beneficial for all the actors involved. The start-up improves its offer in terms of quality and effectiveness of the service, and it becomes attractive for further customers. The latter, especially companies, gain in terms of reputation (since they adopt a sustainable practice and promote tailored welfare for their employees), while the final users save money on their journeys and they also get rewards (incentives) for their engagement.

CROSS-CASE COMPARISON

Table 25.2 cross-compares our case studies' pieces of evidence, which are systematized using three key dimensions: co-creation forms (as described in the theoretical background), co-creation mechanisms and process output for both firms and customers.

The four analyzed firms, although with different CBMs, exhibit some common co-creation mechanisms. Apepak, Rifò, Womsh and Up2Go seem to follow a similar co-creation pattern characterized by the following steps: (i) engagement and/or testing activities on online platforms; (ii) activation through customers' response to stimuli provided by the firm and (iii) reward to customers in the form of discounts or incentives.

Engagement, which is often mentioned in the literature as the antecedent to co-creation, in these firms is declined in terms of customers' involvement on online platforms, where they are asked to test the product (Apepak), to pre-order it (Rifò) or to directly provide feedback (Womsh). In Up2Go, the modes of customers engagement involve approaching potential customers mostly during trade fairs or via e-mails, and then, together with the customers, organizing users' engagement activities.

Customer activation refers to the customers' response to the stimuli provided by the firms. Firms launch explicit "call to actions", asking their customers to somehow intervene in the value creation, for instance, by answering a questionnaire (Apepak) or by sending their items to the firm (Womsh and Rifò). In doing so, customers feel empowered, since they feel being part of the "circular mission" and they develop a bond with the firm.

The reward mechanism allows the intensification of the established relationship through the recognition and monetization of customers' commitment. The three B2C firms (Apepak, Rifò and Womsh) opt for discounts on the purchase of their products, while in the Up2Go case, incentives are provided to

Table 25.2 Cross-case comparison of co-creation mechanisms

	<i>Co-creation form(s)</i>	<i>Co-creation mechanisms</i>	<i>Process output</i>
Apepak	Co-production Co-promotion	The firm involves 200 families (innovators) in the product testing phase via Facebook. Customers test the product and answer to an online questionnaire, providing suggestions and feedback ACTIVATION/TESTING/ENGAGEMENT via ONLINE PLATFORM FEEDBACK Customers get a discount on an Apepak order REWARD	Firm: Improvement of the offer in terms of product features and quality (e.g. smell, size, consistency), distribution strategy (specialized shops and online) and price Increased brand loyalty and advocacy Customers: Greater perceived value Perception of control over the offerings Economic value (discounts)
Rifò	Co-maintenance Co-disposal Co-promotion	Engagement of customers through pre-sales and reward-based crowdfunding platforms. Customers provide their feedback on the products ENGAGEMENT via ONLINE PLATFORMS/FEEDBACK Customers send their old/broken cashmere garments back to the firm to be regenerated or recycled ACTIVATION Customers get a discount on the purchase of Rifò products REWARD	Firm: Improvement of the offer in terms of product features New production inputs Increase in brand loyalty and advocacy by existing customers Attraction of new customers Customers: Economic value (discounts) Satisfaction for being “active” in the environmental cause
Womsh	Co-disposal	Engagement of customers in the mission ‘choose the change’ through marketing campaigns in social media as well as through marketplaces and physical stores (resellers). Customers leave feedback on social pages ENGAGEMENT via ONLINE PLATFORMS and FEEDBACK Customers bring the shoes back to the shops after use to allow the recycling by Womsh partners ACTIVATION Reward through a discount on the next purchase REWARD	Firm: Increase in brand loyalty and advocacy by existing customers Attraction of new customers Customers: Gain in term of economic value (discounts) Satisfaction for being “active” in the environmental cause

(continued)

Table 25.2 (continued)

<i>Co-creation form(s)</i>	<i>Co-creation mechanisms</i>	<i>Process output</i>
Up2Go Co-experience	<p>Engagement of customers during trade fairs or via e-mail.</p> <p>Customers get involved and test the service with a selected group of users</p> <p>ENGAGEMENT and TESTING</p> <p>Firm and customers organize engagement events and a plan of incentives to attract the final users</p> <p>REWARD</p> <p>Customers provide suggestions according the final users' feedback</p> <p>FEEDBACK</p>	<p>Firm:</p> <p>Improvement of the product offer in terms of quality of the service</p> <p>Brand loyalty and advocacy</p> <p>Attraction of new customers</p> <p>Customers:</p> <p>Greater value perceived</p> <p>Gain in reputation</p>

Source: Authors' creation

final users by means of the customers (e.g. firms offer free parking spaces to their employees using Up2Go services).

Our empirical analysis allows to confirm the fruitful association of customers' participation to firms' processes with greater satisfaction (Nambisan and Baron 2007) and perceived value (e.g. Anderson and Sullivan 1993) as well as the perception of control over the offering (Lengnick-Hall 1996) and of higher economic value (Bitner et al. 1997) thanks to discounts. For firms, the improvement of the offering (ibid; Mills et al. 1983) and the building of loyalty emerge as key outputs. Loyalty development is particularly critical for small, young circular firms because it is hard for them to communicate their value proposition, especially when price ranges are higher than non-circular competing firms in the business. For instance, this issue is encountered by Womsh, whose prices are relatively high, but—as the entrepreneur explained—the firm's positioning is very often misunderstood by those customers who do not fully understand its circular mission and its vision. Co-creating value together is a valuable way to involve customers in the firms' mission. In the B2B context, we observe that mechanisms are employed both with customers and with final users, thus suggesting a sort of interweaving co-creation process.

CONCLUSIONS

Our case studies are informative for both theory and practice. We contribute to the entrepreneurship literature on the mechanisms through which entrepreneurial firms co-create value with their customers. We could identify a recurrent co-creation pattern characterized by three key mechanisms: engagement via online platforms, activation through actions required by precise stimuli and rewards in the form of discounts (or incentives in the B2B context).

As the analyzed case studies have shown, the output of the co-creation process is beneficial for both firms and customers. On the one hand, firms are able to improve their offer according to customers' suggestions and feedback loops; in addition, they gain loyalty from highly engaged customers and they acquire new customers. On the other hand, customers not only feel empowered and obtain economic benefits as a result of their participation but they also feel satisfied about having been "active" in the environmental cause.

Our illustrative case study research is not without limitations, some of them suggesting intriguing opportunities for further research. The number of case studies is limited, and they are all cases of Italian circular entrepreneurship. Future studies will have to collect more in-depth and diversified case studies to provide a greater amount of empirical evidence of co-creation processes. Case studies should also be informative of all co-creation forms that have been reported in the literature. A systematic longitudinal study of co-creation mechanisms and outputs may enable the identification of successful co-creation patterns, as well as a more thorough understanding of the collective gains stemming from co-creation processes.

We hope our investigation may be inspirational for further entrepreneurs wishing to pursue circular missions, who may find in co-creation the key to the success of their business.

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Digital Technologies and Consumption: How to Shape the Unknown?

Muhammad Shujaat Mubarak and Navaz Naghavi

INTRODUCTION AND BACKGROUND

Digital technologies are transmuting the consumption landscape. With consumers' spending driving approximately 60% of the global GDP, embracing the power of technology to create value is paramount to ensuring progress throughout developed and emerging economies (World Economic Forum 2019). According to Statista (2019), the number of digital buyers in 2021 would be 2.14 billion. It shows that digitalization is appearing as the most powerful driver of innovation. It is acting as the trigger of the current wave of innovation and is transforming both consumption and production patterns (Seele and Lock 2017). As a result, today's value chains and business models are under increasing pressure (Parente et al. 2017). Digitalization is having a highly disruptive impact on markets, the world of work, and our social structures (Bouwman et al. 2018). It is remarkably changing the consumers' buying patterns, behaviors, and expectations (Arya et al. 2019). Hence, equipped with disruptive technologies like big data, artificial intelligence (AI), and machine learning, firms have started hyper-speed customers targeting. This marks the beginning of a new era of digitalization, making it very clear that the influence that digitalization would place on human lives by transforming the means of

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consumption, production, and communication would be massive and incomparable.

After capitalizing on and gaining momentum in the last decade, the pace of the process of digitalization is now exponentially increasing, leaving a stealthy yet revolutionary impact on the world. Since digitalization is evolving at a faster pace, two essential questions need to be addressed on an urgent basis. First, what is the role of digital technologies in shaping future consumption patterns and what digital technology developments can be instrumental in shaping the consumption and production patterns of the future? Second, what can be the impacts of digitalization on environmental sustainability and consumers' wellbeing and trust? (Beier et al. 2017; Keller et al. 2017; Mirra et al. 2018). This study undertakes this task. In doing so, it provides a basic understanding of the association of digital technologies, environmental sustainability, and consumers' wellbeing. Further, the study sheds light on the digital developments having the potential to shape future consumption patterns. It also provides policy implications for the government and corporate sectors to direct the technological revolution toward environmental, sustainability, consumer wellbeing, and trust.

In doing so, we, first of all, discuss the trends in consumers' buying patterns by comparing past, present, and future trends. Building on this, the following section elaborates on the role that digitalization plays in shaping future consumption patterns. The subsequent section discusses the association of digitalization with the environment and consumers' wellbeing and trust. The final section concludes the chapter and discusses the policy implications.

CONSUMER BUYING PATTERNS: PAST, PRESENT, AND FUTURE

To know how profoundly present consumption patterns are different than the past and what is their future direction, we review the production patterns of the last 19 years (2000–2019). For example, back in 2005, despite extensive use of the internet, most buying decisions were taken in the marketplace. The buying in that era primarily relied upon the “first moment of truth” (FMOT) (Kreutzer and Land 2015). For example, in 2005, when a person goes to a departmental store to buy a product, (s)he can see down the line numerous brands of that product. While buying the product, the customer compares and contrasts various aspects like the design, price, and other details given on the product itself and instantly decides which one to buy. This process is called the “first moment of truth.” This model was considered as the vital marketing framework to decipher customers' decision-making process. In the light of this model consumer behavior is explained as a three-step sequential process. It is buying, experiencing, and becoming loyal/disloyal.

It is apparent in this buying example that the use of the internet or any other digital technology is absent in the process of buying. However, this FMOT model started changing and the second stage of consumer buying behavior emerged with the focus on “zero moment of truth” (ZMOT) (Lecinski 2011).

To illustrate this assume the same person is now buying the product in 2011. The person, as a customer, can access the internet, smartphones, and other gadgets to precisely compare and contrast the various brands of the product without physically going to the store. This is the “zero moment of truth.” The term got famous after a book of that name was launched by Google, explaining how the influx of digital technologies and social media channels were changing consumers’ decision-making process. It was considered as the first marketing framework to comprehensively consider the digital technologies for understanding consumers’ buying behavior. ZMOT, along with the McKinsey Model, has been used by numerous businesses around the globe. Quarterly (2009) presented an illustrative model to explain the customers’ decision-making journey in the era of technologies. Traditionally, it is presented that customers think and behave in a funnel way and take several steps before buying a product. They interact with many brands and types of a specific product, get acquainted with few, consider fewer, and purchase one to whom they become loyal or disloyal.

However, due to the influx of technologies, smartphones, and the internet, customers do not act in this linear way (Edelman and Singer 2015). Instead, the technology has changed customers’ journeys to a loop as presented by Quarterly (2009). The new loop model explains why customers are not required to behave in a funnel way by introducing the concept of consideration set—“*a combination of products that customers plan to buy.*” It tells companies to provide adequate information to customers to help make their buying decisions instead of putting them in the funnel.

Despite being popular, ZMOT and the McKinsey Model were incapacitated to keep pace with rapid technological changes (Greenough 2019). Today, customers receive innumerable amounts of information through the internet and other sources. They have lesser time to evaluate a particular piece of information. It implies that failing to convince the customer to buy now means (s)he will never come again. In this context, McKinsey revised his customer decision model. The new model focuses on the sharing of the right information to the customer and at the right time with the right intensity. Nevertheless, one key aspect which this model needs to incorporate is “time to the customer,” the time a product takes to reach the customer. Traditionally, customers were required to physically visit the market place for buying the products despite having all the necessary information about the product obtained through social media. Now, companies like Alibaba and Amazon have revolutionized the buying behavior and customers find everything at their doorstep without physically moving a single step. This incorporation of online retail stores has drastically reshaped the consumers’ buying patterns. In this context, we argue that without incorporating the role of digital technologies and big data, it is onerous to predict future consumption patterns. Further without understanding the consumption patterns, it would be difficult to achieve the goal of sustainable consumption. Hence, the following section is devoted to reviewing the role of digital technologies and big data in shaping future consumption patterns.

FUTURE OF CONSUMPTION: ROLE OF DIGITAL TECHNOLOGIES

Today's innovation is profoundly driven by data, services, and the internet of things (IoT). The combination of these three things has allowed the fusion of virtual and real worlds. It is important to note that this convergence cannot be attributed to any single groundbreaking innovation. As a matter of fact, since the invention of the first electronic computers in the 1940s, these technologies are continually being developed. In the early phase, this process was evolutionary and gradual; however, it has gathered pace in the last few decades, and now the technological capabilities are increasing at a highly accelerated pace. At one end the computing capabilities of machines like memory size, processing power, and networking capacities are increasing at an exponential rate. At the other end, the cost associated with these capacities is decreasing at an equal rate. Long before, Moore (2012) mentioned that the power of computing machines would be getting double in every one and a half to two years, also known as Moore's law. This prophecy of Moore is being fulfilled even before time (Lambrechts et al. 2018).

Along with the increasing computing powers of the machines, cyber-physical systems are taking place. These systems can collect a massive amount of data, their digital processes, and the real environment in a very short period. Until recently, the majority of the data were recorded manually or through hodge-podge systems, and then with all inherent errors, they were transferred and processed. Now enormous amounts of data can be collected, processed, and analyzed simultaneously with the help of digital and sensor technologies. Further, cloud computing makes it easy to affordably store the exponentially rising volumes of data (Cochoy et al. 2017). This enormous amount of data deposited in the clouds—known as big data—is a goldmine for producing new knowledge about but not limited to the society, consumers, and producers. Hence, cloud computing offers the foundations for the creation of innovative products and services. Likewise, digital consumer interaction is also becoming easier and reliable through the latest service infrastructure comprising of a wide variety of devices for every walk of consumers' lives. The trio of data, IoT, and services allows any technological gadget to exchange information with any other person or device anywhere in the world. Looking forward, three types of digitalization would be forming the basis of future innovation, communication, production, and consumption processes (Ryyänen and Hyyryläinen 2018). The first, originating from cloud computing and data storage, is *data-driven digitalization* (DDD). This will be acting as the basis because of the continuously expanding data sets, which are being cultivated with the help of digital technologies for retrieving useful and practical information. The prime source of such information is consumers as they generate data by, for example, internet surfing, web browsing, and using smart devices.

Since the consumers generate the data, a big question arises on the ownership of the data. If the data are owned by the consumer then the question arises as to their monetization. Presently, consumers provide personal data once they

agree to the terms and conditions (T&Cs) of usage of any digital product or service (Cochoy et al. 2017). The data generated by consumers provide valuable information and knowledge about various aspects. If the knowledge has an economic value in today's knowledge-based economy, then what about the economic value or the price of the knowledge generated by the consumer? Would the consumer be paid for the data generated in the future for selling the knowledge about his/her behavior? Or will the digital gadgets instrumental in generating data be delivered free to the consumers in exchange for the information they would be providing? These questions appear very superficial. However, with the increasing level of awareness among consumers, addressing these questions would be an essential task for keeping the pace of data-driven economies intact.

Discussing the future of consumption in the era of digitalization requires elaborating on the role of *platform-based digitalization* (PBD), which is rapidly appearing as a vital digital development of future (Cochoy et al. 2017). This is providing the basis of shared and circular economies, where digital platforms managed freely are replacing the physical marketplace. It is giving birth to the "*born digital*" companies. The famous transportation, accommodation, and carpool platforms are a few examples of it (Ernst and Young 2012; Eva Geisberger 2012). Here the point to ponder upon is the future development of such platforms and their role in data expansion.

Lastly, *groundbreaking digitalization*—the digital innovation that can radically transform the existing structures of consumer-producer interactions—can play an essential role in determining the future consumption and production patterns. The rise of Airbnb and Uber are two significant examples of it. Since the groundbreaking digitalization can be sudden and subtle, forecasting their occurrences is very difficult. The most vital factor in this regard is consumers engagement—*consumers being the center of the innovation adoption process*. The degree to which a consumer accepts an innovation is an indication of its success or failure (Jenkins and Denegri-Knott 2017).

Putting together, *data-driven digitalization*, *platform-based digitalization*, and *groundbreaking digitalization* can transmute consumption and production patterns. Nevertheless, it is pertinent to see how adopting these disruptive digital technologies that are ready to transmute the global value chains, and dealing with subsequent societal issues like human capital development to support new business models and degradation of the environment owing to over-consumption in the time of big data, can tackle, shape, and fulfill consumers' wellbeing, security, trust, and transparency (Silva et al. 2019). Every technological development that is taking place in the business world must have congruence with the environment (Beier et al. 2017). More specifically the success of these digital technological developments depends upon their relationship with environmental sustainability as well as consumer wellbeing and trust (Keller et al. 2017). In this context, studying how digitalization affects the environment and consumer wellbeing is of paramount importance. Further, environmental sustainability is closely connected with consumers' wellbeing;

increasing the former may improve the latter. Against this backdrop, the following sections briefly delineate the influences digital technologies can have on consumers' wellbeing and trust and on environmental sustainability.

ROLE OF DIGITAL TECHNOLOGIES IN CONSUMERS' WELLBEING AND TRUST

Although the capability of digitalization to facilitate consumers cannot be undermined, it is, however, too early to paint only the rosy side of the picture. This is because the increasing role of digitalization, especially the digital media in consumers' lives, can create a sense of ensnarement (Schlegel et al. 2018). While the consumers could feel free from the physical interactions and socio-economical impediments, contemporary burdens for authentication may require them to share their private information. While fulfilling the requirement for authentication in digital media, the consumer may lose control over separating personal and private lives (Markos et al. 2018). This raises a serious question about the pressure that information authentication/validation exerts on consumers to share their private information.

Further, the interaction of consumers on digital and social media leaves their information digital footprints and social networking information. This private information can then be used for public events, either putting the individual under limelight or exposing them to cyberbullying. Researchers (e.g. Hayes et al. 2015; Przybylski and Weinstein 2017; Ho and Ito 2019) have highlighted the devastating effects of digital participation on consumers' wellbeing. They have even illustrated sheer depression, psychological illness, and other pressures arising due to the digital media participation (Przybylski and Weinstein 2017). Nevertheless, it requires extensive research to understand the adverse effects of digital interaction on consumers' wellbeing and devise strategies to combat such adverse consequences. Another ethical issue that can affect the wellbeing of consumers is the conduct of marketers in this regard. Marketers use digital media platforms to identify and contact the opinion-makers and more socially connected consumers.

Knowing the influence of such consumers, marketers, and other firms involved in buzz marketing, marketers offer them product samples and other goodies in order to get a favorable endorsement about the product experiences (Naghavi and Mubarik 2019; Brynjolfsson et al. 2019). In one way, it is a kind of bribe offered to the opinion-makers or influencers to gain personal benefits. These opinions may be misleading and may compromise the consumer's wellbeing. Hence it involves severe ethical considerations. Another issue that has not yet come under the limelight is digital disparity. It refers to the fact that despite the exponential increase in the number of consumers interacting through digital media, there exists a vast digital divide. Such inequalities to access and use of digital technologies exist across socio-economic status, education, and gender. It also indicates that some users are better off than others in

using digital technologies to attain better wellbeing. For example, 33% of the persons between the ages of 55 and 65 years do not have a minimum level of ICT and computer skills compared to the 5% only in the age group of 16–24 years (OECD 2019). Further, 70% of adults do not possess adequate skills to use digital technologies for problem-solving (OECD 2019). These statistics imply the need for some necessary skills to enable consumers to effectively capitalize on the benefits of digital technologies and navigate the virtual online world safely.

Governments around the globe are using digital technologies to increase the efficiency and effectiveness of public services and to give users ease of access (Dutot et al. 2016). However, access to these digital technologies comes with certain digital safety and security risks. Further, the two major evils of social media, namely, *fake news* and *disinformation*, limit the exposure of the people, thus contributing to the polarization of social and political views. There is sufficient anecdotal evidence available to establish the association between people's exposure to perceived disinformation and lower trust in the government (Reuber and Fischer 2009). Due to the rise in the incidence of digital security breaches, people remain reluctant to share their personal information with social and professional online networks. In particular, digital consumers encounter the challenges associated with information disclosure, unfair and malicious commercial practices, incorrect payments, wrong information, frauds, theft of identity, and dispute resolution. Another concern in this regard is convoluted and vague terms and conditions associated with digital transactions, which often fail to share the essential information with consumers (Kucuk 2016; Zoovu 2017). The general perception of people is that companies write too many additional terms and conditions in order to hide those terms and conditions that consumers may contest (Jahdi and Acikdilli 2009). It highlights the need to immediately cater to the issue of digital security as failing to do so may create a big hurdle in the growth of digital technologies.

ROLE OF DIGITAL TECHNOLOGIES IN ENVIRONMENTAL SUSTAINABILITY

Where an enormous amount of literature is studying the benefits of digitalization, little focus is being given on its role to cope with the most significant challenge humanity is facing—environment (MeJeur 2019). Careful analysis of the effects of digitalization on the environment exposes the other side of the story. Despite the fact that digitalization can be instrumental in saving the material and energy costs, its adverse effects on environments cannot be ignored. Since the emerging digitalization is complex and interdependent, it behaves in an unpredictable and unanticipated way in terms of its good and bad environmental effects. Some of the researchers consider society's relationship with digital technologies as a “blind date” (Milne 2019). To turn it into romance requires taking into account the adverse environmental effects of

digitalization. Precisely, the impacts of digitalization on the environment need to be taken up at the highest forums like the UN. Presently, none of the SDGs directly consider the environmental impacts of digitalization. It is a fact that digitalization is at one end giving birth to the sharing economy and at another end it is increasing consumerism by increasing the ease and access of buying a variety of products at one click. Likewise, digital waste is also appearing as a serious threat to the environment. Digitalization is reducing the life cycle of technologies and goods, and every other day a new model with enhanced features can be seen in the market place, making the old models irrelevant (Kagermann 2015).

CONCLUSION

Digitalization is exerting a groundbreaking effect on markets, work, and societies worldwide. It is radically transforming consumers' buying patterns and behaviors. This change in the consumers' buying patterns has been enormous in the last few years. First moment of truth, the most celebrated model of the last decade used for understanding consumers' buying process, has become irrelevant and replaced with the zero moment of truth (ZMOT), which itself is becoming irrelevant now. Big data, services, and the internet of things (IoT) are driving today's innovation, which is augmented by the exponentially increasing computing capabilities of machines with a sharp decrease in their costs. Mainly, three types of digitalization will be providing the basis for future innovation. The first, originating from cloud computing and data storage, is *data-driven digitalization*. The prime source of data is consumers who generate the data by, for example, internet surfing, web browsing, and using smart devices. In this regard, the main challenge is the rapidly increasing volume of big data. The success of digital technologies depends upon their ability to mine such big data to extract useful information. This information can be used for the development of innovative digital products. In this regard, it is vital to address the question, would the consumer be paid for the data generated in the future for selling the knowledge about his/her behavior? The second, *platform-based digitalization*, is proving to be functional. It is giving birth to the "born digital" companies. The famous transportation, accommodation, and carpool platforms are a few examples of it. The third, *groundbreaking digitalization*, the digital innovation that can radically transform the existing structures of consumer-producer interactions, can play an essential role in determining the future consumption and production patterns. Groundbreaking digitalization is associated with the generation of new products and services and/or completely new ways of doing business. It can also generate entirely novel business opportunities that may not have existed before. Since such disruption may be subtle and unpredictable, it may be challenging to forecast future patterns of consumption and its effects on the markets.

For directing the development of digital technologies toward sustainable future consumption, three dimensions (consumers' wellbeing, environmental

sustainability, and consumers trust and transparency) are to be taken into account. First is the consumers' wellbeing. Although digital technologies facilitate consumers, their adverse effects cannot be disregarded. It is widely agreed that increasing the role of digitalization in consumers' lives can create a sense of being ensnared by them. Some of the researchers have even shown sheer depression and other psychological pressures stemming from digital media participation. It demands serious scholastic work to explore the harmful effects of digital interaction on consumers' wellbeing and devise strategies to combat such adverse consequences. Another ethical issue that can affect the wellbeing of consumers is the conduct of marketers who use digital media platforms to identify the opinion-makers. Knowing the influence of such opinion-makers, marketers offer them goodies to get a favorable endorsement for their product or service. This is a kind of bribery as the opinions obtained through such actions may be misleading and may compromise consumer's wellbeing. Hence it requires serious policy efforts to control it. Likewise, another issue in this regard is digital disparity, which refers to the vast digital divide among digital technology users. Such inequalities to access and use of digital technologies exist across socio-economic status, education, and gender. Imparting digital literacy among people can help them to better align their real and digital lives and to save from mental and psychological issues stemming from the abuse of digital technologies.

The second dimension is environmental sustainability, as a careful analysis of the effects of digitalization on the environment exposes the other side of the story. Despite the fact that digitalization can be instrumental in saving the material and energy costs, its adverse effects on environments cannot be ignored. For accruing the benefits of digital technologies, the appropriate regulatory framework needs to be developed and executed. Presently, the environment predominantly focuses on the manufacturing sector with a lesser emphasis on regulating the dynamics of digital technologies. In this regard, governments worldwide should adopt a middle of the road approach to softly push the digital revolution toward a sustainable structure, which can emerge organically. The third dimension is consumers' trust and transparency. Access to digital technologies poses some digital security risks. The rising number of digital security breaches is discouraging people from sharing their personal information with social and professional online networks. Further, digital consumers are also facing the challenges of information disclosure, unfair and malicious commercial practices, frauds, and theft of identity. Management and mitigation of digital security risk is the responsibility of everyone in society and requires immediate strategic measures for improving the transparency of digital transactions. It is also necessary to enhance the consumers' control over their data. In this regard, carefully designed technologically driven solutions can be instrumental in increasing the level of trust among consumers.

Putting together, digital technologies are revolutionizing the societies; however, to reap the fruits it is essential to ensure environmental sustainability and consumers' wellbeing, transparency, and trust. Now the question is, how

to ensure these dimensions? The next section entails brief implications of the study to address this question.

POLICY IMPLICATIONS

We provide three major policy implications for making the growth of digital technologies conducive to the environment, consumers, and society. First, regarding the effects of digital technologies on environment appropriate regulatory framework needs to be developed and executed. Presently, the primary focus of environment-related policies has been the manufacturing sector with a lesser focus on regulating the dynamics of digital information and knowledge (Pritchard and Wilson 2018). In this regard, governments worldwide should adopt a middle of the road approach to softly push the digital revolution toward sustainable structure, which can emerge organically. As per our understanding, this can be the most feasible policy measure for the digitalization and environment. Unfortunately, the majority of businesses using digital technologies have little or no interest in investigating their impacts on the environment. Exploring and implementing the practices which can influence the environment-related performance of firms with digital technologies can also be an essential step. On the consumers' front, some measures can also be taken to promote sustainable consumption (Llamas and Belk 2013). For example, digital media can help consumers to find products that are environment-friendly, long-lasting, and energy-efficient. Digital media can also be used for disseminating information related to the international standard on the environment, like the ISO. Another practical action which some of the companies are doing is the introduction of eco-friendly bots. These bots help consumers to find the products which are not only economical but also environment-friendly like clothing knitted with organic cotton, eco-tourisms, and recycled products. To summarize, to direct the digital technologies revolution toward a sustainable middle, the triad of consumers, producers, and the government has to work together. Where the governments would develop and execute the related environmental policies to regulate the digital technologies revolution the consumers and producers would adopt the practices that are sustainable (Mubarik and Naghavi 2019). This policy framework also should be dynamic as present methods of gauging the impact of digital technologies are incapable to do so.

Second, in regard to consumers' wellbeing, "digital literacy" can play a crucial role. Imparting digital literacy among people can help them to better align their real and digital lives and to save them from mental and psychological issues stemming from the abuse of digital technologies. For example, excessive use of the internet can cause depression, bi-polar disorders, attention deficit, and addiction. This tendency can be high among children and teenagers. In a nutshell, digital literacy can play an important role in ensuring consumers' wellbeing in digital technologies. It can also help to promote responsible consumption patterns in the digital era.

It should be a strategic priority for the triad of government, companies, and individuals. Hence, management and mitigation of digital security risk is the responsibility of everyone in society.

Third, immediate strategic measures are essential for improving the transparency of digital transactions, on the objective and use of the personal data collected from the consumers. Likewise, it is also vital to increase the control and access of consumers over their data. Carefully designed technologically driven solutions can assist in improving the trust in the digital media. National privacy policies (NPP) need to be taken up to the highest levels of government by taking a societal perspective. Finally, transnational operability of the privacy policy framework is also essential to promote digital safety.

This study primarily reviewed the available literature on the triad of digital technologies, consumptions, and environmental sustainability. We recommend future researchers to collect empirical data for analyzing the impact of digital technologies on environmental sustainability and consumers' wellbeing.

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A Corporate Social Responsibility View on Digital Disruption in Marketing

Irina Naoumova and Jerome Katrichis

INTRODUCTION

When and where the digital revolution began and how long it has been around are matters of debate and disagreement. What is certain is that digital disruption is with us and is impacting the lives of real organizations and real consumers around the globe every day (Karimi and Walter 2015). These disruptions have a deep and lasting impact on all involved. The purpose of this chapter is to examine the digital disruption that is currently occurring in marketing, with a view of the role of corporate social responsibility (CSR) in further developing digital marketing tools in participating organizations in the unsteady transitioning times with limited rules and regulations in existence for digital marketing. We argue that CSRE adds socially focused value to the digital marketing concept and secures its sustainable development as a tool, and thus leads to a humanistic way of developing businesses and society. Thus, in lieu of the main theme of the Handbook, we are interested in the following question—how can the digital era tools be used to provide a sustained societal development? Our answer to this question is that it would be possible if companies use CSRE as a strategy for corporate and societal development. Otherwise the digital era tools, digital marketing tools specifically investigated in our chapter, could create significant harm to the individual, and society as a whole. We used semi-structured interviews and questioned a number of practicing managers and marketing professionals. Based on their answers, we concluded that CSRE

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strategies could secure the socially valuable development of digital marketing tools and lead to sustainable societal development in the digital era while the formal regulatory institutions have yet to be developed.

The authors will look into disruptions created by digital marketing in the already existing CSRE strategies and suggest adjustments. The chapter will discuss future CSRE approaches associated with the future mobile phase of digital marketing transformation (Yadav and Pavlou 2014). The chapter will also provide suggestions for strategy management, investors, and practitioners for the year 2025 and beyond.

The chapter consists of an abstract, introduction, two sections, where we discuss a corporate social and environmental responsibility approach and digital marketing tools in the times of significant changes to the institutional landscape with weakened or not yet developed formal and informal institutions. This is followed by a methodology section, findings, conclusions, and discussions.

CSRE FOUNDATIONS AND RELATIONSHIP BETWEEN PILLARS

For the purpose of this chapter we will be using the definition of corporate social responsibility introduced by Carroll (1979) and developed further by him and others (Carroll and Shabana 2010; Dahlsrud 2008; Malik 2015; Schwartz and Carroll 2003). Carroll suggested four types of corporate social responsibilities: economic, legal, ethical, and discretionary. Economic responsibility suggests that firms are responsible for their economic/financial performance. Other scholars note that the natural environment should be distinct from the social environment (Mitchell et al. 1997; Freeman 1984). It has been demonstrated statistically that people have different attitudes toward the natural environment (Starik and Rands 1995; Shrivastava 1996; Babiak and Trendafilova 2011). Thus, CSR transformed into CSRE, where “E” designates environment.

Conceptually, the use of the new digital forms and tools of marketing leads to CSRE transformation. The current status is seen as a transition stage from traditional marketing to a new model (White 2005; Etter et al. 2019).

The role of CSRE undergoes distinctive changes in times of transitions (Wenzel and Will 2019). We expect significant erosion in economic and legal responsibility frameworks. Ethical responsibility will be affected but not that drastically. As for discretionary responsibility, it would increase its value for a firm’s strategic decision-making dramatically.

For economic responsibility, digital marketing is seen favorably—as a set of tools increasing product or service visibility and attractiveness (Saura et al. 2019). The accessibility of new markets worldwide launched a development of new mechanisms for driving revenues and decreasing costs, thereby increasing profits. Traditional regulatory instruments on national and international levels, although they also change, are not that dynamic and fail to catch up with new trends in digital marketing (Shiner 2019). Hostile trade wars are

demonstrating inefficiency of economic regulators and force an erosion of traditional economic responsibilities. Opening up the market for their products or services for international customers, companies are widening their customer base tremendously while still being limited with resources for quality customer service. Many firms just trade the quality of their customer service for profit (Kumar et al. 2000).

The legal responsibility is based on a country's laws and system of regulations and varies from country to country. International laws were also developed through various organizations, agreements, and associations. With increased uncertainty introduced by a wide use of digital marketing, legislative systems also failed to adequately reflect the contemporary voids. What is legal in one country could be illegal in another (Howells and Ramsay 2018). Unification exists, but only to a limited extent, and many international laws are considered as recommendations rather than strict regulations of business. In the unstable environment of transition from traditional legal regulations on a country level to rather vague recommendations on an international level, or with no regulations at all, the only limitation for firms is their internal CSRE strategy and their company's organizational culture. To sustain their CSRE strategies in the times of loose regulations for digital marketing, companies should make their codes of corporate conduct more detailed and strict (Judge and Naoumova 2004). The legal and economic regulations for digital marketing are not deployed yet, and thus the area has suffered significant erosion of CSRE concepts as stated above. It is most eroded in the layers which were well regulated in the past—legal and economic. The ethical concepts are mainly regulated not by formal but informal institutions, and therefore they are less damaged than the first two.

Ethical responsibility is based on societal moral norms and, although also changing, they change slower than regulations (Lacznik and Murphy 2019), and become a stabilizer for other dimensions of CSRE.

Discretionary responsibility relates to voluntary sponsorship and involvement in various activities needed for the health of society. Digital marketing tools increase a company's transparency (Baldassarre and Campo 2016), and thus lead to the accessibility of information on a company's voluntary activities. They start playing a more strategically substantial role, which leads to increased spending and better media coverage of such activities.

Interestingly enough, lately, the environmental responsibility framework started experiencing some erosion on the level of international regulatory institutions (Ağan et al. 2016) but seem to have experienced strengthening at a company level (Chuang and Huang 2018). Media coverage and transparency made this movement possible.

According to Carroll (1979), CSR pillars in the following order—economic, legal, ethical and discretionary/philanthropic—form a pyramid. A pyramid structure provides some integrity to the CSR definitions but turns the multi-functional CSR layers' relationships into a trivial model. Modeling principles require some simplification of reality, focusing on the most valuable features,

factors, and processes, thus clarifying the main issue. In the CSR pyramid, layers' relationships become even less clear. The main problem is seen in the goal to make a uniform model for a very complex context of CSR. It is impossible to be responsible "in general." Bringing a stakeholder approach to the CSR discussion, Carroll actually focused on a society (even a state) in general instead of relating CSR, "sliced" into smaller pieces, to each stakeholder. Thus, his model is not adequate and leads to misunderstanding of layers' relationships.

When an institutional framework is changing rapidly, informal institutions play an even more important role than formal structures (Judge and Naoumova 2004). They are not necessarily accepted by market players. They are introduced by the strongest market players in lieu of their strategies. They substitute for economic and legislative regulations until they are finally developed. It might happen that companies confront the new regulations and lobby against them when such regulations threaten their profits and strategies.

CSRE elements have more complex relationships that involve the whole range of stakeholders.

Figure 27.1 shows that CSRE vectors have different magnitudes for each stakeholder. It would be an unreasonable simplification to say that gradual increases in economic responsibility would then lead to the development of legal responsibility, later to ethical, and finally to discretionary or environmental responsibilities as it is proposed in the "pyramid" conception.

We suggest that the CSRE model would rather look like a "Christmas tree" with branches growing around, thicker or thinner, more or less developed. According to Baron (2001), CSRE activities are driven by altruism, strategy, and coercion. Institutional analysis (Scott 1995) provides additional knowledge to the issue. New digital era in marketing introduced new realities which are limited yet diffused among elements of formal and informal institutional frameworks. The diffusion is yet to be created. Formal institutions at the national and international level have to develop and then diffuse a common set of values, norms, and rules somehow standardizing organizational behavior (DiMaggio and Powell 1983) and forcing other companies to choose among expected strategies. The whole framework in its formal and informal institutional spectrums is in transition and thus, the most active driver of CSRE activities is company strategy.

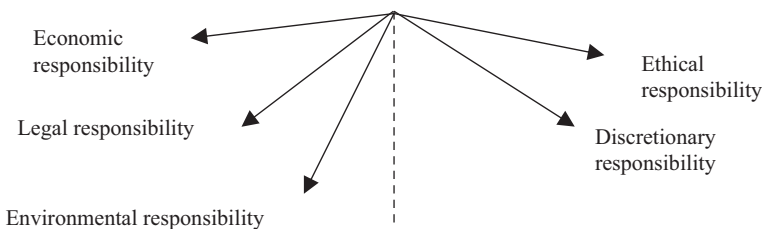


Fig. 27.1 CSRE "Christmas tree" model. (Source: Authors' creation)

The literature (Maignan and Ferrell 2003) confirms that different societies place different priorities on each of the CSRE dimensions. Globalization results in increased use of new technologies (Fatima 2017) and “predetermines” the evolutionary creation of a common global business culture (Barnet and Cavanaugh 1994; Bird and Mendenhall 2016). The expectations for the new global business culture seemed to promise a more sensitive attitude toward society and the environment (McWilliams and Siegel 2001). But the high pace of changes has amplified the uncertainty factor and led to dynamic erosion of traditional CSRE strategies as we discussed above. With the imbalanced “branches” of the Christmas tree it is clear that economic and legislative regulators are desperately needed.

DIGITAL MARKETING AND CSRE

Considerable research exists on how digital marketing improves company performance and increases firm value (Järvinen and Karjaluoto 2015). Direct benefits for customers are also well studied (Hendriyani and Auliana 2018). There is limited research (Brondoni 2010; Vazhappully and Hope 2018) on CSRE in the digitalization of company marketing and the challenges associated with it.

We will discuss six areas, or tools, that have emerged as primary components of modern digital marketing and examine the regulatory impact of corporate social and environmental responsibility. These tools include search engine optimization for website effectiveness, search engine and display advertising, content marketing, social media marketing, email marketing, and e-commerce. We will also examine the impact these tools have on customers (Colleoni 2013), including the development of customer “micro-habits” and the issues surrounding the gathering of data and the privacy invasions created by predictive analytics (Järvinen et al. 2012).

Economic, legal, ethical, discretionary, and environmental issues will be discussed in connection to the emerging digital marketing challenges (Green and Pelozo 2011): generating a website and social media traffic and product/company referrals; collecting and sharing digital information on customers; connecting to customers; keeping up with technology and competition; plugging into a company internal operations.

The major struggle for digital marketing teams is to balance the pressures for customer responsiveness and cost efficiency/standardization (Bughin et al. 2018; Maignan et al. 2005). In the corporate social and environmental responsibility approach, it is seen as a need for balancing an ethical, economic, legal, and discretionary focus, as well as environmental.

Most businesses today are faced with the prospect of digital disruption. A group from Accenture has developed a “Disruptability” index and estimate that 71% of 10,000 companies that they studied are either in the throes of disruption or on the brink of significant disruption (Abbosh et al. 2019). They indicate that disruption is not a short-lived explosion, but rather a persistent condition. The Forbes Technology Council asserts that no industry is wholly

immune from disruption and details a set of industries that are on the cusp (Forbes Technology Council 2019). The issue is certainly widespread, but is particularly acute with respect to marketing and marketing practices (McKinsey 2014).

While some (Westerman et al. 2014) take a somewhat broader interpretation of digital marketing, here we take the view that digital marketing can be defined primarily through a set of tools. Our objective is to examine each of these tools in terms of the potential implications they might hold with respect to CSRE issues. The tools we examine include search engine optimization and search results, search engine and display advertising, content marketing, email advertising, social media marketing, email marketing, and e-commerce. Each of the tools we examine bring their own challenges with respect to CSRE. Each are discussed in turn. Some of these challenges are traditional CSRE issues, others are created by the tools themselves.

The Digital Marketing Challenges

As stated above, digital marketing is typically seen as a boost for a firm's performance and increase in its value. The companies' challenges are associated with the lack of knowledge of its tools as well as regulations, limited professional personnel, and sociocultural and even economic consequences of digital marketing. Although digital marketing is already a reality, it is still rapidly evolving and there are gaps between the opportunities and firm resources and capabilities in each of these challenges. The gaps are large and growing in spite of the trend of hiring technology-savvy personnel because internal company conflicts are adding to the situation.

The Quality of New Marketing Personnel

Universities are not yet ready to reeducate a massive army of marketing professionals because the majority of the educational institutions worldwide are also lacking the needed skills. Thus, the erosion of traditional marketing takes place because of a strong "injection" of technical personnel in the marketing area. These gaps require immediate filling, so companies are rapidly restructuring, and the technical personnel become an internal "middle man" layer inside a company. There are two scenarios of this typical company conflict: (1) technical personnel would learn some of the marketing tools, and take over the entire marketing area; (2) marketing personnel would adjust somehow and learn from their technology-savvy colleagues. The conflict between technology-savvy people and traditional marketing personnel is a widely spread situation for firms in transition to the digital marketing era (Kakabadse et al. 2017). In the meanwhile, the quality of marketing services will diminish (Wang et al. 2017) and the statistical data would not necessarily reflect market preferences correctly (Xiang et al. 2015; Srinivasan et al. 2016).

Outsourcing of Marketing Services and Increased Rivalry

With digital marketing, companies learn to use new marketing tools and collect the needed data. They face rivalry from outside-industry, nontraditional players like Google and Facebook, who have bargaining power in big data collection, analysis, and reporting (Hull 2015; Flyverbom et al. 2019). It leads to structural changes in marketing services. Traditionally, larger companies kept marketing in-house, although used the services of specialized marketing companies. Smaller firms were using them as well for more standardized services, while those requiring customization were done in-house.

The landscape is now changing dramatically. Media companies, advanced in various marketing social media techniques, penetrate the industry and compete with traditional service providers for outsourced and in-house services. Given the lack of in-house and traditional service providers knowledge and resources and lack of regulations as well, they definitely win the competition and change the landscape (Khanna et al. 2019). Traditional CSRE models, which evolved in the traditional industry, do not work for them. Early on, digital marketing was complementary to their businesses, and thus not significantly limited by their internal CSRE policies. Additionally, a large number of international firms from developing or emerging economies flooded the market. With little knowledge and experience in good governance principles wide spread in the developed countries, they provide cheaper services and win the competition.

Transition to a New Regulatory Framework and Firm Opportunism

The digital era has seriously affected formal institutions nationwide and internationally (Li et al. 2012). Formal institutions are dealing with rules, regulations, and laws (Peng 2013), and thus are experiencing a strong need for adaptation to the new realities (Selwyn 2009). The research confirms a transition of regulatory-coercive power (Wang and Yang 2013) to a new system where the regulations will limit firm opportunism. Digital marketing is driven by data collection, analysis, and the resulting findings. Collecting big data becomes a primary function, and thus everything else could be threatened if customers are not willing to share information. Firm opportunism is based on an opportunity to easily use big data and more precise methods and models of market analysis; making it relatively easy to achieve customization of marketing content with the use of modern technology and even incorporating artificial intelligence in customer service. More actions and areas are covered with technology increasing company profits dramatically. Firms jump at opportunities provided by big data and social media mechanisms (Aral et al. 2013; Fan et al. 2015; Leeflang et al. 2014), and since the coercive framework on a national and international level is barely catching up with tremendous widening of the digital era marketing, firms get involved in opportunistic activities with little respect for principles and understanding of consequences. CSRE, as an internal company strategy, stays the only orientation point for them (Illia et al. 2017)

in the turbulent white waters of the changing nature of marketing and communication with customers.

In the regulatory framework, some countries are coming up with new regulations on how consumers' personal data could be collected and stored. For example, the European Union adopted a General Data Protection Regulation in 2018, which includes substantial fines for violators. In the United States, several states are already engaged in law suits against the companies that intentionally or unintentionally violated the Civil Rights Laws allowing targeting customers by race (Rocklin 2018). The USA Federal Trade Commission (2019) combines different acts on its site (www.ftc.gov), but they are rather scattered and not yet systemic.

Although on a national level some attempts have already been made, internationally there is no strong institutional framework (Singh et al. 2005; Edenberg and Jones 2019) focusing on coercive regulations in digital marketing and related areas. Apparently, a transition to a new regulatory framework is necessary to limit firm opportunism and uncertainty.

The Role of Informal Institutions in Marketing: CSRE Relationship

Peng (2013) suggests that norms, cultures, and ethics are attributes of informal institutions that are responsible for normative and cognitive pillars governing a firm and individual behavior. Countries adopt codes of good governance (Lopez Iturriaga 2009) and thus develop a normative framework for their businesses. The increased number of competitive and partnering peers who adopted the CSRE strategies is confirmed to be positively related to the firm following the same principles (Greenwood et al. 2011; Marquis and Tilcsik 2016; Raffaelli and Glynn 2014).

Customization of the marketing content becomes necessary when it comes to reaching out to international and culturally different customers. Companies market and sell abroad but often cut on customer services and return options because of distance and costly returns. In their race for short-term profits, they engage in opportunistic behavior and, as a result, increase transaction costs for their international customers and clients. While having higher margins at the beginning, they create a threat for sustainability of their businesses abroad in the long run (Das 2004; Martín and Camarero 2005).

CSRE has been reported as a substitution for formal and informal institutional functions at a company level (Kuznetsov et al. 2009) in the countries with a weak institutional framework. Therefore, we expect CSRE to become a leading strategy for firms engaged in digital marketing, helping to sustain their businesses in the times of transition to a new institutional framework.

DISRUPTIONS IN THE DIGITAL MARKETING TOOLS

Search Engine Optimization and Search Results

Search engine optimization is an area that hasn't garnered much attention in the CSRE literature. Search engine optimization is related primarily to what is referred to as "owned media," or an organization's own website, and it relates to how internet users find that website through a search engine. Ideally you would like your website to be listed as early as possible on the list of results the search engine returns as most searchers will not go too far into a list. When an internet user types key words or phrases into the search bar of their favorite search engine, the search engine returns two types of results. The first type of result displayed are typically advertisements related to the key search words that were typed in. Typically, the first few search results are these paid search engine advertisements. The order of these advertisements is determined by how closely the words or phrases match words or phrases selected by the advertiser and how much the advertiser bid in the continuous instantaneous auctions that happen every time someone uses a search engine. Following this set of advertisements, a list of "organic" search results is displayed. Organic search results are presented in order, based on page ranking. Every search engine has its own proprietary method for ranking relevant pages, but it is based mostly on how frequently and prominently the search words or phrases typed in by the searcher were used on the web page. Search engines use programs or bots (sometimes called spiders or crawlers) that read web pages to arrive at the rankings for each page. Every page on the internet is ranked, and search engine optimization is the practice of designing web pages that deliver a higher ranking than other websites in the "organic" ranking process. While it is certainly to the marketer's advantage to use as many potential search words as possible on their page, this can be taken to an extreme in order to drive a higher volume of traffic to the website. Web developers use tricks like stuffing their page with key words or phrases that do not actually seem to appear on the page. This can be done by using fonts that match the background color of the page. Most search engines recognize such tricks and tend to treat the perpetrator harshly in their web page rankings, if they are ranked at all.

A large part of the disruption to marketing has been caused by the shift in media consumption habits by the typical consumer. Today, more than half of the more than twelve hours US adult consumers spend with media is now spent with digital media (Dolliver 2019).

Search Engine and Display Advertising

While search engine and display advertising would seem to have little in terms of CSRE implications, since they pose little apparent differences from ordinary advertising, how ads are selected and served up to internet users certainly is an issue. Many websites use several different types of tracking cookies and device

fingerprinting which allows advertisers access to the browsing history of the user. Most search engines also assign unique identification numbers to users and keep track of search histories for each user, usually for as long as nine months. That way, advertisers can serve up only ads that the user has displayed an identifiable interest in. Users, of course, benefit by seeing more interesting ads, but usually without realizing how much of their privacy has been violated.

Content Marketing

The whole concept behind content marketing is for firms to enhance their image through producing content that is valuable to viewers. There is an enormous range of content that marketers can place on their websites or place in more conventional media, or both. Consulting and other firms sometimes provide white papers and other types of reports on their websites to help establish credibility for their firm. Two of the sources cited here (McKinsey 2014; Abbosh et al. 2019) are examples of such white papers. The range of media available to website developers has never been greater. On the other end of the spectrum might be an organization sponsoring a concert, or even a music tour.

While it is clear that all sorts of firms can offer all sorts of content, the central idea in content marketing is that the marketer controls the content. This is where content marketing collides with CSRE issues. The central issue revolves around content credibility, especially when the provider has a commercial interest in the information being provided and is a classic criticism of exposure to advertising in general. Of course, media range in their ability to maintain credibility, both across and within different media categories. Just as firms can be thought of as more or less credible and trustworthy, so can different media, and media outlets.

Content marketing also requires firms to bring media production capabilities and the individuals responsible in-house, as considerable media content is now created by the marketers themselves.

Social Media Marketing

Social media is more than just a label. Social media is called social media because it is not owned media, and the marketer does not have the same degree of control over the message. While the media platform (e.g., Facebook, LinkedIn) is owned, the messaging is socially constructed in a multidirectional flow. This is where the metaphor of a media vehicle delivering an audience to an advertiser falls down the most. In essence, each social media platform is not so much an advertising vehicle, but rather an advertising channel. Of course, while the consumer is being social, they are also exposed to advertising.

There is currently a societal outcry with respect to social media. It is utilizing advertising exposures which are based on the same kind of analytics and consumer tracking that are prevalent in search engine and display advertising. Consumers seem to believe that their social interactions are more sensitive than

their search history. There is also an ongoing debate in society regarding the relative merits and negative impacts of social media on society, culture, and even health.

Email Marketing

Some authors (Zahay and Roberts 2018) believe that all of internet marketing grew out of the area of direct mail marketing, or just direct marketing. They see the internet as simply one direct response medium. Direct mail marketing has probably the longest tradition of intense analytics in marketing. It really focuses on lists and list management. While some in the popular press speculate about the carbon footprint of email, it clearly has less of a carbon footprint than a direct mail marketing piece, even one on recycled paper.

It's clear that many in the population do not particularly like to be sent unsolicited email. The term "spam" was coined in the 1990s to mean unsolicited email, according to Merriam Webster. Typing "best spam filter" into the search line on any search engine will provide evidence of how little individuals care for unsolicited email. A great deal of effort has been expended to eliminate or at least reduce the number of unwanted emails individuals receive. In many cultures, email is regulated at least to some extent. Usually limits are placed on the number of unsolicited emails a marketer can send, or the requirement that recipients must "opt in" to receiving email.

e-Commerce

e-Commerce is simply conducting electronic transactions over the internet. While it would seem obvious that e-commerce is an advantage over traditional retailing with respect to CSRE issues, that is not really the case. One analysis (Weideli 2013) saw the difference so close that the carbon footprint advantage depended on the mode of transportation of a terrestrial shopper, whether they came from an urban or suburban location and whether an online shopper expected express shipping. Next-day or two-day shipping seems to dramatically increase the carbon footprint of the online shopper.

One area of e-commerce that gets enormous attention in the literature is the online customer review process. Customer review platforms on e-commerce websites really provide a type of specifically commercial social media, as this content is socially constructed. This type of social media tends to garner significantly different levels of management attention than others. Positive reviews on e-commerce sites can be thought of as a type of "earned media," much the same as positive mentions and reviews on social media.

Niu and Fan (2018) provide one approach to dimensionalizing the management process for customer reviews. There are a number of dimensions of customer review management that really have no established standards. For instance, no standards exist with respect to providing incentives to customers that provide positive reviews. There are no standards that exist with respect to

the number and types of interventions that are reasonable. There is even the issue of how reasonable it is to manage reviews in the first place.

METHODOLOGY AND FINDINGS

Semistructured Interviews

The discussions above have built the foundation for the need to understand the situation and bring the practical experience into judging the literature statements. For these purposes we conducted semistructured interviews with students in MBA and executive training programs. We approached those who were decision-makers for their companies, regardless of industry. We recorded 32 fully answered interviews specifically focusing on digital marketing and corporate social and environmental responsibility company strategies. The interviewer had the list of initial questions that was developed based on the discussions in the literature presented in the discussions above. The interviewer was also generating questions naturally based on the discussion topic, as is required in semistructured interviews (Rowley 2012). There are two traditional forms of such interviews, specifically telephone interviews and face-to-face interviews. There are advantages and disadvantages to each of them (Cachia and Millward 2011). We used a video conferencing approach that combines advantages of the above but is easily available now with a variety of software applications with accessibility even during traveling plans (Sedgwick and Spiers 2009). Seven of our respondents were on business trips and we had to adjust interviews to their time zones.

Examples of the initial questions are provided below:

- What digital marketing tools does your company use on a regular basis?
- What are the limitations to the business, and to the society in using these tools?
- Are the companies responsible for the negative consequences in using these tools? If so, in what way?
- What are the rules and regulations that are holding the company responsible for the negative consequences in using these tools?
- Does your company follow the CSRE strategic directions?
- If so, does it help in limiting the discussed about negative consequences?

SUMMARY OF RESPONSES

All 32 respondents confirmed the challenges on an “incomplete” (the term was used by one of respondents) institutional environment. The sample consisted of 18 (56.25%) male and 14 (43.75%) female respondents. Educationally, 26 (81.25%) had one graduate degree already and were seeking their second degree, the remaining 6 (18.75%) were in the process of getting their first

graduate degree. All 32 interviewees are in top or middle level management position in their companies. The firms represented included 16 companies (50%) that are larger than 1000 employees.

Out of 32 respondents, 12 (37.5%) specifically mentioned the lack of advice from regulatory institutions in regard to the use of digital marketing tools. Nineteen respondents (59.375%) stressed the need for an advanced control from a municipality or a state and developing legislative mechanisms further. All 32 respondents confirmed that legal and economic responsibilities of a company exist but they are difficult to control from regulatory institutions with the lack of new instruments. Thus, the company has to make an informed decision whether to continue to follow the CSRE principles even without significant pressure of regulatory forces. Once committed, a company has to stay firm on its principles to be a good citizen, and thus grow customer loyalty. The violations are typically self-reported and self-admitted. Out of the 32 respondents, 30 (93.75%) confirmed a need for “nontraditional forms of collective self-control” (the term used by one of the respondents). The suggestions were: the control functions should move from a state and formal regulatory institutions to trade associations, professional associations, customer associations, etc.

Respectively, 27 (84.375%) and 21 (65.625%) respondents stressed the increasing role of ethical and environmental responsibility as a need for the development of a “healthy digital marketing system” (the term was used by one of the respondents).

Eighteen respondents (56.25%) noted the significantly increased, lately (in 3–5 years), value of voluntary activities adding to the positive image of the company. Interestingly enough, 16 of them (88.89%) belonged to the companies that are more than 30 years old and had a chance to compare with past experience. All 18 respondents, who pointed out at the increased role of discretionary responsibility, confirmed its connection with the introduction of digital marketing tools.

All 32 respondents confirmed their companies are using more than 3 digital marketing tools, 29 (90.625%) reported that they use all the digital marketing tools discussed above. The same 29 interviewees reported content marketing as the most affected by limited regulations and underlined the need for institutional control. Notably, all 32 respondents confirmed that reputational risks increased dramatically with the development of digital marketing systems. The firms are also affected by fake accusations and unfair rivalry. Thus, in turbulent times they see CSRE as a “defense mechanism” (the term was used by one respondent) saving their reputation and increasing customer loyalty. When asked a question on social media marketing, 27 interviewees (84.375%) confirmed that it is the most progressing tool but at the same time the one that generates more reputational risks for the companies.

The interviews of practitioners confirmed that CSRE is seen as a mechanism of developing a “healthy” system of a company’s digital marketing tools and, at the same time, becomes a self-regulatory strategic approach and “defense” mechanism substituting for underdeveloped or yet not existing institutions.

CONCLUSIONS AND SUGGESTIONS FOR STRATEGY MANAGEMENT, INVESTORS, AND PRACTITIONERS

The literature review on the role of CSRE in developing digital marketing tools at a company level and current institutional challenges are consistent with the findings from semistructured interviews with 32 company decision-makers.

Based on the chapter discussion, the technology-savvy strategists would need to develop and closely follow their CSRE strategies, develop a balanced approach, focusing on all of its pillars, make them a part of the firm governance mechanism and popularize them among industry peers and partners. In the times of transitioning to a new regulatory environment, organizations could take a proactive role and be responsible and lobby for institutional developments. For both customers and investors, it would confirm that the company is conducting a sustainable and healthy business. Policymakers would benefit from stressing the need for businesses to incorporate CSRE strategies. It alone could become a form of a control mechanism for authorities to maintain sustainability of a healthy, socially responsible business. In the immediate future, it might become even more popular among companies, small businesses, and large corporations. Thus, we predict CSRE will be a strategic instrument for creating a new institutional environment for digital marketing.

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Trust, Transparency, and Technology: Blockchain and Its Relevance in the Context of the 2030 Agenda

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INTRODUCTION

In the first semester of 2020, the most widely recognized applications of blockchain technology was still bitcoin cryptocurrency. However, since its inception in 2008, blockchain has been gaining space in different areas, with the number of applications and actors increasing steadily. Its impact is already quite significant and disruptive for current business models, with potential for the whole world.

In 2017, Iansiti and Lakhani (2017) acknowledged the hype for blockchain, and how it had the potential for deep transformation of business. However, they also understood and reported the reasons why its mass adoption would take longer than expected. It will take a long time because blockchain is a foundational technology (having the potential to create new foundations for social

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and economic systems), and in order for it to work, high levels of technological, social, and regulatory complexity need to be established and coordinated. However, Iansiti and Lakhani are clear that although it will take many years, the impact blockchain will have on people, society, business, and governments is so great that the process of digital transformation had to begin straight away. In the authors' words "it will take years to transform business, but the journey begins now" (Iansiti and Lakhani 2017: 1).

Melanie Swan (2015), founder of the Institute for Blockchain Studies, explains in her book *Blockchain: Blueprint for a New Economy*, that blockchain technology can be considered the fifth disruptive computational paradigm after central computers (mainframes) in the 1970s, personal computers (PCs) in the 1980s, the internet in the 1990s, and mobile social networks in the first decade of the 2000s.

For this reason, she suggests thinking about blockchain as an advanced information technology with technical levels of escalated sophistication, with multiple applications for any form of asset registration, inventory, and exchange, including all areas of the economy, tangible and intangible assets (ideas and patents, climate change, health data, hotel reservations, contracts, etc.). In fact, all public records (such as registration of properties, civil status or car ownership, business licenses, birth and death certificates) could migrate to blockchain. Moreover, blockchain is a new organizational paradigm for discovery, valuation and transfer.

The best-known application of blockchain technology is Bitcoin, the leading cryptocurrency. Since 2013, Bitcoin, Ripple and Litecoin have been growing steadily, and in 2017, the world witnessed the first cryptocurrency boom. By December 2017, the total market capitalization of cryptocurrencies had reached the colossal peak of \$6 Billion (Statista.com 2020). Just Bitcoin on its own rose its value by 2000% in the period January to December 2017

However, blockchain and Bitcoin are two different things. Blockchain is a distributed database that promotes trust and transparency and can be used to transfer all sort of things, while bitcoin is a cryptocurrency that promotes anonymity and is a device for currency transfers using blockchain technology. Bitcoin is powered by blockchain, but blockchain has many uses beyond Bitcoin (Marr 2019).

The potential benefits of blockchain technology extend to political, humanitarian, scientific, and social issues of the real world. For example, its application to the management and coordination of public data repositories and the irretrievability of transactions can be a fundamental step to advance and perhaps reconfigure different aspects of humanity. In October 2019, UNICEF announced a digital crypto fund, and the first time the United Nations became able to accept donations in digital currencies (Forbes 2019).

This has meant that both governments and local and international investors are imposing regulatory measures for cryptocurrencies. As of October 2019, several countries had developed regulations for cryptocurrencies: in countries such as Switzerland, Canada, and Mexico the use of cryptocurrencies is legal

and is a generally accepted method for payments (Viens 2019). In October 2020, that Internal Revenue Service (IRS) of the United States issued guidelines on cryptocurrencies which are expected to be effective from 2020 (Forbes 2019). In this way, the introduction of regulatory mechanisms into blockchain technology and applications has become a major critical issue for developing blockchain's potential and establishing a global legal framework that includes individuals, companies, and governments by 2030.

With the changes in dynamics, actors, and relations due to these types of technologies, issues such as privacy, trust, and transparency become relevant for people and organizations. Blockchain offers protected data storage and security, as it enables privacy of information combined with a certain level of transparency, thus generating trust.

Additionally, at the United Nations conference on climate change in 2017, a group of experts led by Tom Baumann identified blockchain's potential in dealing with climate change, since it allows for greater transparency and participation of different interest groups in the search for solutions to problems associated with climate change. The open global initiative Climate Chain Coalition (CCC) (created in December 2017 and with more than 170 organizations around the world in membership by January 2020) seeks to advance blockchain technology and other digital solutions such as the internet of things and big data to support the mobilization of climate finance and improve measurement, reporting, and verification (MRV) to escalate actions for mitigation of and adaptation to climate change. This chapter is intended to contribute to the analysis of application of blockchain technology and its linkages with business transparency, trust, and sustainability. Specifically, it aims to answer the question: How does blockchain technology guarantee transparency, trust, and sustainability in the context of Agenda 2030?

The rest of this chapter is structured as follows: A description of blockchain technology is presented, followed by details of its capacity to generate trust among parties involved, as well as its characteristic transparency. Next, sustainability issues related to its implementation are discussed, and finally, some conclusions are presented to provide some insights from business practitioners and scholars.

CONTEXT AND BACKGROUND

Blockchain: The Technology

The paper by Satoshi Nakamoto (2008), "Bitcoin: a peer-to-peer electronic cash system," popularized the applicability of blockchain for the development of a cryptocurrency. Interest from academics, governments, investors, and users has subsequently grown exponentially. A Google Scholar search on blockchain in April 2020 resulted in more than 216,000 hits, while the same search in May 2019 revealed 55,300 publications of studies on the technology in the preceding decade.

The blockchain or chain of blocks consists of a ledger or ledgers where all operations are recorded, control over which is dispersed among different computers in a network, each of them with a copy of the chain, thus eliminating the need for confidence in just one administrator. This technology, which uses self-monitored and self-controlled algorithms, has the power to reject malicious attempts to manipulate the system.

In the first instance, blockchain was seen as a threat to traditional models of financial transactions; however, this conception has changed, since the world's biggest banks are now carrying out research and investing heavily in this innovative technology, as it is perceived as the most secure technology for financial and non-financial institutions.

Deloitte (2016) defined blockchain as a type of database that records transactions that are copied to all the computers that participate in a network. With blockchain technology, each transaction creates a block that is added to the chain, registered in a linear and chronological way with the date and time, and assigned a unique hash by the system (hash function). Blockchain effectively blocks manipulated transaction attempts and describes them with an alphanumeric string resulting from data encoding using cryptography. Hence, any attempt to falsify one of the blocks in the chain would require manipulation of the previous blocks, all of which have been registered and assigned a unique hash. This set-up guarantees the authentication, transparency, and efficiency of each transaction, and maximizes the security of the mechanism by blocking attempts to modify transactions.

Blockchain can be also defined as a distributed “database of records, or public ledger of all transactions or digital events that have been executed and shared among participating parties. Each transaction in the public ledger is verified by consensus of a majority of the participants in the system” (Crosby et al. 2016: 7). In its functioning, each transaction in the chain is transmitted to every node and it is also recorded in a public or private ledger. Each node needs to verify the ownership and identity of a block to proceed with the recording phase (Crosby et al. 2016).

Seebacher and Schuritz (2017) in an attempt to explore the concept and characteristics of blockchain, conducted a systematic literature review that allowed them to analyze a total of 31 articles and to propose a definition of the technology, which is synthesized as:

A blockchain is a distributed database, which is shared among and agreed upon a peer-to-peer network. It consists of a linked sequence of blocks, holding time-stamped transactions that are secured by public-key cryptography and verified by the network community. Once an element is appended to the blockchain, it cannot be altered, turning a blockchain into an immutable record of past activity (Seebacher and Schuritz 2017: 14)

Additionally, Seebacher and Schuritz (2017) expose that this new technology has specific characteristics that can be listed as: trust, shared and public,

low friction, peer verification, cryptography, immutability, decentralization, pseudonymity, redundancy, versatility, and automation. The most important ones are its decentralized nature and its capacity to generate trust. These two characteristics group the others in the following way: trust can be facilitated by the integrity of data, the transparency of the network, and the immutable design of the chain, which can be interpreted as the impossibility of altering the transactions that are added to every block. On the other hand, this decentralized network guarantees privacy or pseudonymity of participants, as well as reliability of information and its versatility.

Hence, combined with artificial intelligence (AI), blockchain can affect and act upon data in different ways. This combination gives deeper and more accurate data insights as blockchain can act as an access layer, whereas AI can process the data. This reveals a need for collaboration with other technologies such as machine learning or big data to achieve more computational power and improve business models.

In this sense, trusted interactions and the decentralized network constitute the core aspects of this system in any industry or application. This is translated into security and privacy issues that are also related to business sustainability. In this regard, blockchain technology may impact development-oriented investment through improvements in decentralized technologies that can benefit citizens, companies, and governments.

BLOCKCHAIN AND TRUST

In the past, the security of information, or a physical object, depended on the capacity of someone to keep it safe. Now, this has changed (Anjum et al. 2017). Blockchain is a system that can store information in an independent and decentralized manner that goes beyond the ability of just one person or entity to provide safety. It offers trusted and secure economic transactions (Beck et al. 2016).

The relation between blockchain and trust has been analyzed since 2016. A search on Web of Science in January 2020 for articles in the categories of economics, business, business finance, and management that contain both the terms “blockchain” and “trust” resulted in a total of 48 articles (See Table 28.1).

Hence, in terms of personal data, blockchain can be used to storage or to share information in a trust-free way. This was demonstrated by Zyskind, Nathan, and Pentland (2015) in their study of a decentralized personal data management system that did not require trust in a third party.

From a network perspective, blockchain is seen as a community without hierarchy as it is run by a group of people with a common belief in a transparent and trustworthy system in which the greater the number of participants, the greater the level of trust and security among them. They can interact directly without the intervention of a third party and with a null probability of data modification (Blockchain Council 2018).

Table 28.1 Blockchain and trust

<i>Year</i>	<i>Title of article</i>	<i>Source</i>
2016	Fraud detections for online businesses: a perspective from blockchain technology	<i>Financial Innovation</i>
2016	Trustless computing-the what not the how	<i>Banking Beyond Banks and Money: A Guide to Banking Services in the Twenty-First Century</i>
2017	Smart contract relations in e-commerce: Legal implications of exchanges conducted on the Blockchain	<i>Technology Innovation Management Review</i>
2017	Hitching healthcare to the chain: An introduction to Blockchain Technology in the Healthcare Sector	<i>Technology Innovation Management Review</i>
2017	A Blockchain ecosystem for digital identity: Improving service delivery in Canada's public and private sectors	<i>Technology Innovation Management Review</i>
2017	The future of money and further applications of the blockchain	<i>Strategic Change – Briefings In Entrepreneurial Finance</i>
2017	Blockchain and the (re)imagining of trusts jurisprudence	<i>Strategic Change – Briefings In Entrepreneurial Finance</i>
2017	Blockchain and sensor-based reputation enforcement for the support of the reshoring of business activities	<i>Reshoring of Manufacturing: Drivers, Opportunities, and Challenges</i>
2018	Cryptocurrencies and business ethics	<i>Journal of Business Ethics</i>
2018	Blockchain and the potential of new business models: A systematic mapping	<i>Revista de Gestao e Projetos</i>
2018	Blockchain technology for providing an architecture model of decentralized personal health information	<i>International Journal of Engineering Business Management</i>
2018	Political economy of distributed capitalism (on the book by D. Tapscott and A. Tapscott, <i>Blockchain revolution. How the technology behind bitcoin is changing money, business, and the world</i>)	<i>Voprosy Ekonomiki</i>
2018	Unpacking blockchain trust	<i>Blockchain and the New Architecture of Trust</i>
2018	Blockchain as/and law	<i>Blockchain and the New Architecture of Trust</i>
2018	Trust in a viable real estate economy with disruption and blockchain	<i>Facilities</i>
2018	Blockchain: What it is, what it does, and why you probably Don't need one	<i>Federal Reserve Bank Of St Louis Review</i>
2018	The impact of financial technology on the transformation of the financial system	<i>Financial and Credit Activity – problems of Theory and Practice</i>
2018	A TISM modeling of critical success factors of blockchain-based cloud services	<i>Journal of Advances in Management Research</i>
2018	Questioning centralized organizations in a time of distributed trust	<i>Journal of Management Inquiry</i>
2018	Case study of Lykke exchange: Architecture and outlook	<i>Journal of Risk Finance</i>
2018	Business model innovation and value-creation: The triadic way	<i>Journal of Service Management</i>

(continued)

Table 28.1 (continued)

<i>Year</i>	<i>Title of article</i>	<i>Source</i>
2019	Blockchain in the IS research discipline: a discussion of terminology and concepts	<i>Electronic Markets</i>
2019	Effect of blockchain technology adoption on supply chain adaptability, agility, alignment and performance	<i>Management Research Review</i>
2019	Buyers of ‘lemons’: How can a blockchain platform address buyers’ needs in the market for ‘lemons’?	<i>Electronic Markets</i>
2019	Blockchain startups and prospectus regulation	<i>European Business Organization Law Review</i>
2019	A decentralized token economy: How blockchain and cryptocurrency can revolutionize business	<i>Business Horizons</i>
2019	Triple-entry accounting with blockchain: How far have we come?	<i>Accounting and Finance</i>
2019	Blockchain and supply chain relations: A transaction cost theory perspective	<i>Journal of Purchasing And Supply Chain Management</i>
2019	Towards a taxonomy of E-commerce: Characterizing content creator-based business models	<i>Technology Innovation Management Review</i>
2019	Blockchain technology in commercial real estate transactions	<i>Journal of Property Investment and Finance</i>
2019	Applying Blockchain to the Australian carbon market	<i>Economic Papers</i>
2019	Key success factors of Blockchain platform for micro-enterprises	<i>Journal of Asian Finance Economics and Business</i>
2019	A fair contract signing protocol with blockchain support	<i>Electronic Commerce Research and Applications</i>
2019	Information asymmetry in initial coin offerings (ICOs): Investigating the effects of multiple channel signals	<i>Electronic Commerce Research and Applications</i>
2019	Blockchain technology: Implications for operations and supply chain management	<i>Supply Chain Management –An International Journal</i>
2019	Proof-of-work blockchains and settlement finality: a functional interpretation	<i>Journal of Financial Market Infrastructures</i>
2019	Accounting and auditing at the time of Blockchain technology: A research agenda	<i>Australian Accounting Review</i>
2019	It’s real, trust me! Establishing supply chain provenance using blockchain	<i>Business Horizons</i>
2019	Theory and reality of cryptocurrency governance	<i>Journal of Economic Issues</i>
2019	Toward a distributed carbon ledger for carbon emissions trading and accounting for corporate carbon management	<i>Journal of Emerging Technologies in Accounting</i>
2019	Agri-food supply chain traceability for fruit and vegetable cooperatives using Blockchain technology	<i>CIRIEC – Espana Revista de Economía Pública Social y Cooperativa</i>
2019	Benefit and risk perceived as determinants of the use of cryptocurrencies in modeling of structural equations	<i>Contabilidad y Negocios</i>
2019	Blockchains, real-time accounting, and the future of credit risk modeling	<i>Ledger</i>
2019	Energy-efficient mining on a quantum-enabled Blockchain using light	<i>Ledger</i>

(continued)

Table 28.1 (continued)

<i>Year</i>	<i>Title of article</i>	<i>Source</i>
2019	Blockchain technology and complex flow systems as opportunities for water governance innovation	<i>Revista Brasileira de Inovacao</i>
2019	Cryptocurrencies and Blockchain: Opportunities and limits of a new monetary regime	<i>International Journal of Political Economy</i>
2019	Trust, reputation and ambiguous freedoms: Financial institutions and subversive libertarians navigating blockchain, markets, and regulation	<i>Journal of Cultural Economy</i>
2019	The blockchain as a backbone of GDPR-compliant frameworks	<i>Quality – Access to Success</i>

Source: Authors' creation

The implications of this technology are also seen in the inter-organizational relations of companies from different industries who need to create reliable and trustworthy relations, as well as to guarantee security and corruption-free systems (Beck et al. 2017). This is especially important for banks or financial services companies, health care, logistics, and entertainment industries, in which blockchain appears as a fundamental and helpful tool.

As Casey and Vigna (2018) state, the importance of blockchain lies in its decentralized character in which information is not managed by a single centralized institution, but by multiple participants of the network. Moreover, as the information is grouped into blocks that are chained together, the truth cannot be changed. Here, any change requires a consensus of the total chain, making this technology an incorruptible one.

In this regard, Hawlitscheka, Notheisena, and Teubner (2018) explain the potential of blockchain technology for solving issues of trust in the sharing economy. The authors suggest that “the promise of the blockchain as a trust-free technology points at the replacement of trusted third parties such as platform intermediaries” (p. 59). In this sense, blockchain can be seen as a system that can revolutionize interactions and relations between peers who need a high degree of control and trust. It can also safeguard the cybersecurity of companies and help them overcome the infrastructure obstacles of the context.

As an example of this, Ying, Jia, and Du (2018) conducted a study on Hainan Airlines (HNA), a Chinese conglomerate that implemented blockchain technology in its e-commerce platform. The study showed that blockchain can be used to protect sensitive information, to eliminate intermediaries and enable organizations to create their own cryptocurrencies. Here “trust is not established by a central authority but rather, a crowd of nodes on the blockchain network. This approach is more reliable because it is not subject to a single point of failure” (p. 3).

In this way, blockchain technology is credited with the potential to make truly disruptive changes, since the way in which its decentralized and trusted systems and processes have application for individuals, companies,

organizations, governments, and the economy. Likewise, according to Jem Bendell, professor of leadership in sustainability and founder of the Institute for Leadership and Sustainability (IFLAS) of the University of Cumbria, in England, although public opinion and the media have had fluctuating positions in favor and against blockchain, it is important to take into account the intentions and contexts in which this technology is used. Professor Bendell, who spoke at UNCTAD's World Investment Forum (WIF) on October 24, 2018, in Geneva, argues that advances or novel technological proposals will always cause intrigue and concern, and it cannot be affirmed with certainty if any technology is good or bad for humanity. However, in trying to answer a question about what the positive results are and how they can be maximized, Bendell proposed "With blockchain technology, basically data cannot be hacked." Although there are not many examples, and the technology not yet having the critical mass necessary to be adopted globally or in day-to-day activities, there is evidence of its contribution to poverty reduction. Some examples are smart contracts, the Stellar platform in Africa, and currencies that have been created to facilitate agricultural transactions.

For Bendell (2018), blockchain has the potential to underpin the transformation of the current economic system based on debts and loans, and to transform it quickly to avoid speculators, through collective leadership that can be scaled to meet the needs of our time. In the same vein, Werbach (2018), argues that the potential of blockchain can be totally exploited only with the help of effective governance; if this does not happen, blockchain cannot guarantee trust at all. The question here is about the need for regulation but also for the potential of this system to regulate and be regulated. This leads to a call for more integration of blockchain's developers and the legal entities that are willing to implement it.

Moreover, in order to construct trust in this technology, it is necessary to convince users of its potential. The fear of fraud is present in the minds of consumers and sensitive industries such as finance and health care are still unsure of blockchain's ability to guarantee privacy and avoid fraud. The vulnerability of information can make people and companies unwilling to share their precious money and information online. But the force of blockchain's decentralized custody, execution, and settlement can persuade users to accept its security and give it their trust. Another way to build trust in this technology is to actively seek out and examine those with malign aims, such as hackers, and develop ways to be protected online (Zelbst et al. 2019).

BLOCKCHAIN AND TRANSPARENCY

Satoshi Nakamoto (2008) introduced bitcoin cryptocurrency as a blockchain technology application; however, the vast majority of people began to hear about blockchain because of the bitcoin boom. In fact, in an HSBC bank survey in 2017, 59% of people said they had never heard of blockchain, and those who recognized this technology nearly all associated it negatively with bitcoin.

This explains the aversion of many people towards blockchain. However, its characteristic of decentralization allows parties to make transactions without intermediaries. Such transactions are more transparent than those that are made with intermediaries or centralized systems (Francisco and Swanson 2018).

The relation between blockchain and transparency has been analyzed by many authors since 2016. A search on Web of Science in January 2020 for articles within the categories of economics, business, business finance, and management that contain both the terms “blockchain” and “transparency” resulted in a total of 23 articles (see Table 28.2).

Table 28.2 Blockchain and transparency

<i>Year</i>	<i>Title</i>	<i>Source</i>
2017	The networked record industry: How blockchain technology could transform the record industry	<i>Strategic Change – Briefing in Entrepreneurial Finance</i>
2018	What problems will you solve with Blockchain?	<i>MIT Sloan Management Review</i>
2018	Competency-based management in a system of sustainable development of banks, financial and technology companies	<i>Contemporary Issues in Business And Financial Management in Eastern Europe</i>
2018	Trust in a viable real estate economy with disruption and blockchain	<i>Facilities</i>
2018	Case study of Lykke exchange: Architecture and outlook	<i>Journal of Risk Finance</i>
2019	Overcoming economic stagnation in low-income communities with programmable money	<i>Journal of Risk Finance</i>
2019	A decentralized token economy: How blockchain and cryptocurrency can revolutionize business	<i>Business Horizons</i>
2019	Study of factors influencing the decision to adopt the blockchain technology in real estate transactions in Kosovo	<i>Property Management</i>
2019	Triple-entry accounting with blockchain: How far have we come?	<i>Accounting and Finance</i>
2019	Blockchain technology in commercial real estate transactions	<i>Journal of Property Investment & Finance</i>
2019	Blockchain-based platforms: Decentralized infrastructures and its boundary conditions	<i>Technological Forecasting and Social Change</i>
2019	Key success factors of Blockchain platform for micro-enterprises	<i>Journal of Asian Finance Economics and Business</i>
2019	Supply chain re-engineering using blockchain technology: A case of smart contract based tracking process	<i>Technological Forecasting and Social Change</i>
2019	Accounting and auditing at the time of Blockchain technology: A research agenda	<i>Australian Accounting Review</i>
2019	Blockchain disruption and smart contracts	<i>Review of Financial Studies</i>
2019	Reengineering the audit with Blockchain and smart contracts	<i>Journal of Emerging Technologies In Accounting</i>

(continued)

Table 28.2 (continued)

<i>Year</i>	<i>Title</i>	<i>Source</i>
2019	A primer for information technology general control considerations on a private and permissioned Blockchain audit	<i>Current Issues in Auditing</i>
2019	The supply chain value of POD and PGI food products through the application of Blockchain	<i>Quality – Access To Success</i>
2019	Blockchain and smart contracting for the shareholder community	<i>European Business Organization Law Review</i>
2019	The end of “corporate” governance: Hello “platform” governance	<i>European Business Organization Law Review</i>
2019	Embedding distributed systems into organizations. How Blockchain reinforces transparency and accountability in PA’s new governance models	<i>Social Issues in Contemporary Society: Relations Between Companies, Public Administrations, and People</i>
2019	Blockchain technology and complex flow systems as opportunities for water governance innovation	<i>Revista Brasileira de Inovacao</i>
2019	Blockchain and business ethics	<i>Business Ethics – A European Review</i>

Source: Authors’ creation

In this vein, Changpeng “CZ” Zhao, CEO of Binance, the blockchain foundation, explains that given that transparency is the biggest advantage of blockchain, it offers the possibility of having an immutable public record of transactions and tracking them from the source to the final destination. Additionally, Nowinski and Kozma (2017) argue that blockchain technology creates value to companies in different ways; first via transaction authentication mechanisms; second, by reducing costs, since it eliminates intermediaries that were necessary for operations and transactions; third, improving operational efficiency, so decreasing waiting time. These synthesize the attraction of blockchain with its four elements: simplicity of technology, decentralization, coordination, and transparency of transactions.

Supporting this, Vanessa Grellet, the director of ConsenSys, an organization that develops blockchain technology solutions, identifies the following as priorities for the use of blockchain: Transparency in the supply chain; transparency in financing; support for human rights activism; follow-up on the impact of philanthropic donations; actions in favor of the environment and climate; trade without intermediaries; energy exchanges without intermediaries; carbon markets; and financial inclusion proposals. Similarly, for Galia Benartzi, co-founder of the cryptocurrency converter company Bancor, the biggest potential of blockchain is its transparency and impossibility of being manipulated, since anyone can see the transactions and oppose them, but nobody can manipulate them. On the other hand, Louis De Bruin, leader of Blockchain in IBM Digital Operations, stated that the biggest virtue of blockchain is its efficiency, since everything carried out under this technology is describable by the phrase “all transactions visible to everyone.”

The transparency characteristic of blockchain is an asset to any type of industry. For example, in the logistics industry, it facilitates the traceability of a product through all the phases of a supply chain, at the same time avoiding negative practices within it: blockchain is a traceability and transparency guarantor. In this regard, Jeppsson and Olsson (2017) analyze the applicability of blockchain from the loading of products in a supplier's facilities until its final destination. The authors argue that this ledger allows all parties involved in the process to check the history of the product and to locate it wherever it may be. Additionally, they assert that blockchain creates transparency in the whole chain and within all participants, increases credibility, and contributes to the sustainability of the industry. However, effective use depends on cooperation between parties, motivation for its implementation, and system integration (Jeppsson and Olsson 2017).

In another area, Benchoufi and Ravaud (2017) analyze blockchain's applicability to the health industry, and more specifically to clinical trials. They found that blockchain offers a high degree of control and autonomy of data that enables it to provide historicity and inviolability. Moreover, traceability allows the creation of Smart Contracts with all the patients or stakeholders of the clinical trial. Smart Contracts enable the creation of a trusted relationship without the intervention of third parties, a feature that is lacking in present-day systems.

From a political perspective, blockchain has the potential to guarantee transparent and democratic elections; its great appeal here reflects the low credibility and confidence in the current electronic systems of voting. Here, Moura and Gomes (2017) analyze the possibility of incorporating blockchain into a digital government repertoire that will impact voter's confidence, election scrutiny, and transparency that will be reflected in improvement of societal problems, specifically of voting issues.

Likewise, the food industry can also benefit from the implementation of blockchain in the way that it can contribute to food safety and traceability, as well as waste- and cost-reduction that optimizes the supply chain. Additionally, its benefits go beyond the mere traceability of food as it allows participants to acquaint themselves with the sustainable or unsustainable ways in which food was grown (Yiannas 2017).

The applications mentioned above reveal the strength of decentralized systems due to their capability of data protection and confidentiality. Nevertheless, their privacy benefits and advantages can also represent risks for end-users. This statement is supported by De Filippi (2016) with the argument that privacy is hampered when everyone has access to all the history of a set of transactions. In practice, however, there is not a conflict between privacy and transparency as people can identify ways to preserve individual privacy in these networks.

Likewise, Akram and Bross (2018), analyzing the privacy and transparency issues of blockchain, argue for a difference in public and private blockchains. In a public blockchain there are no restrictions regarding participants and all the transactions are identified and validated publicly. On the other hand, a private

blockchain involves the monitoring of permissions, which makes it less decentralized than public blockchains. Consequently, a private blockchain has more transparency as users are known and not anonymous. In this way, the degrees of privacy and transparency depend on the kind of blockchain being used.

Other relevant issues here are social and ethical considerations, as blockchain is changing the nature of cultures and organizations. Its transparency characteristic should also be reflected in its capacity to affect the consequences and risks of the system that impact the whole network.

BLOCKCHAIN AND BUSINESS SUSTAINABILITY

Blockchain has the potential to generate societal, economic, and environmental impacts that can represent new challenges and opportunities for the digital transformation.

In this regard, the relation between blockchain and sustainability has been analyzed by many authors since 2018. A search on Web of Science in January 2020 of articles within the categories of economics, business, business finance, and management that contain both the terms “blockchain” and “sustainability” resulted in a total of only six articles (See Table 28.3).

As noted by Kewell, Adams, and Parry (2017), blockchain can be used to achieve and fulfill the sustainable development goals of the United Nations, which means it could be applied for public good. From the consumer’s perspective, this technology can enhance sustainability as it provides verified information such as the origin of products in a secure and accessible platform (Nikolakis et al. 2018).

Similarly, Beck, Avital, Rossi, and Thatcher (2017) argue that this distributed ledger technology or “record of digital events” can become an enabler of social and economic transactions that will result in positive implications for organizations and societies as well as in the facilitation of value creation. Here,

Table 28.3 Blockchain and sustainability

<i>Year</i>	<i>Title</i>	<i>Source</i>
2018	Business model innovation and value-creation: The triadic way	<i>Journal of Service Management</i>
2019	Blockchain applications and business sustainability	<i>Amfiteatru Economic</i>
2019	Blockchain technology: Implications for operations and supply chain management	<i>Supply Chain Management – An International Journal</i>
2019	Defining supply chain management: In the past, present, and future	<i>Journal of Business Logistics</i>
2019	Biomass Blockchain as a factor of energetical sustainability development	<i>Entrepreneurship and Sustainability Issues</i>
2019	A conceptual model of sustainable supply chain management in small and medium enterprises using blockchain technology	<i>Cogent Economics and Finance</i>

Source: Authors’ creation

Blockchain for Good (B4G) can deliver social, economic, and environmental positive outcomes that go beyond the simple benefits of cryptocurrencies (Adams et al. 2017).

Moreover, for the specific case of the bank industry, this disruptive technology can boost sustainable development, as it contributes for the optimization of the financial infrastructure and the use of more efficient systems; additionally, blockchain can support economic growth and green technologies' implementation (Cocco et al. 2017). Blockchain can also be analyzed from the perspective of the supply chain, exploring its potential in logistics, as was the case of the study conducted by Saberi et al. (2018), in which it appears as a tool to overcome supply chain management problems or barriers which can be categorized as inter-organizational, external, technical, or intra-organizational; this, in the end, will result in the accomplishment of acceptance of stakeholders' demands for sustainability and contributions for development as well as in a trust enhancement of different actors and avoidance of corruption.

Other arguments put forward the point that the large number of new startups dedicated to blockchain means that the supply of talent is not enough to meet the growing demand for blockchain developers. According to Yoav Vilner, blockchain expert and columnist at Forbes, IBM and Mastercard have submitted more than 80 patents each for blockchain-related technology, and both companies are struggling to find enough talent to develop their initiatives (Vilner, 2018).

It must be conceded that blockchain can represent a threat to climate stability and the environment as it is a resource-intensive technology that can increase greenhouse gas emissions. Applications of blockchain technology such as bitcoin require vast amounts of electricity, and this implies significant level of carbon emissions (Stoll et al. 2019). As a matter of fact, Mora et al. (2018: 931) found that that "projected Bitcoin usage, should it follow the rate of adoption of other broadly adopted technologies, could alone produce enough CO₂ emissions to push warming above 2 °C within less than three decades." Louis De Bruin from IBM noted that "blockchain energy consumption is not sustainable." The Cambridge Bitcoin Electricity Consumption Index (CBECI) (2020) estimates that by January 2020, bitcoin was using 86.74 TWh per year, more than the total annual electricity consumption of countries such as Finland, Belgium, Switzerland, Philippines, Austria Chile, or Colombia.

Blockchain's negative consequences can be reduced by the effective implementation of fiscal policies targeted at mitigating energy consumption (Truby 2018). This assumption can be interpreted in the light of the necessity for effective governance and a legal framework that will allow the achievement of meaningful goals and the development of blockchain as a tool that can be used for the reduction of waste and environmental damage for the benefit of businesses and people around the world (Sulkowski 2019). Moreover, blockchain can address different environmental challenges through three mechanisms related to resource rights, behavioral incentives, and product origins that reflect the underlying challenges of environmental management and sustainable

development (Le Seve et al. 2018). On the social side, blockchain can ensure human rights and fair labor, as well as consumer confidence in transparent products.

Just as in blockchain technologies, decentralization in business sustainability requires a higher level of commitment of people as they are involved in the whole process and they are aware of the possible consequences of their acts. This can mean also higher motivation for more efficient use of natural, human, and financial resources.

The massive adoption and full development of the blockchain's potential will depend, according to Fredrik Voss, Nasdaq's vice president of Blockchain Innovation, of having a complete ecosystem. In the view of the OECD policy forum on blockchain, in order to reach its potential, it is necessary to guarantee the integrity of the processes and the creation of adequate policies and measures, and also to face the possible risks of its misuse. For this, governments and the international community will have to play a significant role in the creation of policies and the regulatory environment of the blockchain bases that are aligned with the challenges to promote transparent, fair and stable markets, as is already under way in countries such as the United States, where 28 states introduced blockchain legislation in 2019 (Morton 2019).

In this way, trust and transparency, major benefits of this technology, can be developed and provided to the business community, as no other technology has been able to do before. This immutability of information makes it even more trustworthy as every action follows a dictated protocol without the need for any intermediation by a third party. Consequently, this will be translated into major business sustainability that will help to correct redundancies, contract violations, and bottlenecks in the flow of goods.

CONCLUSIONS

The 2019 Digital Economy Report of the UNCTAD (United Nations Conference on Trade and Development) highlights the role of digital transformation in the achievement of the Sustainable Development Goals and Agenda 2030, with a focus on developing economies, while at the same time, it urges international cooperation as a tool to reach the sustainability potential of digital technologies.

In this sense, different trends in digital economies can be identified (blockchain technologies, three-dimensional printing, internet of things, 5G mobile broadband, cloud computing, automation and robotics, artificial intelligence, and data analytics).

In regard to blockchain technologies, they are referred to as "a form of distributed ledger technologies that allow multiple parties to engage in secure, trusted transactions without any intermediary. It is best known as the technology behind cryptocurrencies" (UNCTAD 2019: 6). What is important here is that by 2017, China accounted for almost 50% of patents relating to this type

of technology; the United States accounted for another 25% (Chamber of Digital Commerce 2018).

This represents a call for cities and companies to adopt digitalization as a tool to create trusted and sustainable relations (Kunndu 2019). Blockchain Technologies as Distributed Ledger Technology (DLT), provides security, traceability and transparency for managerial and control issues (Saberri et al. 2018). Windolph, Harms, and Schaltegger (2014), exposed the scandal of multinational companies publishing different sustainability reports nationally and internationally in order to achieve legitimacy, success, and internal improvement. The reporting of sustainability practices is used as a tool to head off critiques of their social and environmental commitments that can affect their trade and production worldwide (Kolk 2003).

Additionally, the advantages of the digital transformation are remarkable for companies in terms of efficiency, flexibility, and sustainability (Savastano et al. 2018), for that reason, we require detailed analyses of the strategies needed to take advantages of their benefits and to overcome obstacles in the implementation process. This can also be analyzed for the implementation of sustainability practices as there is a need to measure the impact of those strategies, due to the fact that companies can implement them in order to diminish liability of origin (Park 2018).

There is a need to better understand blockchain technology, its applications and implications; for this it is necessary to exclude preconceived concepts about cryptocurrencies. According to James Zhan (2018), director of the Investment Division of the United Nations Conference on Trade and Development (UNCTAD), there are great gaps in terms of the scope and implications of blockchain that must be filled before the issuing of recommendations to those responsible for public policies, mainly in developing countries.

In terms of non-financial applications, opportunities for blockchain are increasing. This technology promises to become the engine of digital growth as it can be extended to any industry and geography in the world. Specifically, Crosby et al. (2016) identify the opportunities for the introduction of blockchain into the notary public, music, insurance, medical, and legal professions and industries, arguing that it can eliminate the need for a centralized authority that controls information.

In this sense, it is possible to argue that the role of digital transformation and its related technologies such as blockchain in implementing Agenda 2030 is gaining relevance, as it becomes a key tool guiding different interests and actors towards common goals in a quantifiable and reliable manner (Denny et al. 2017). However, it is important to highlight the need for a framework that integrates individuals, companies, and governments in a process of improvement of monitoring mechanisms that will guarantee the accomplishment of Agenda 2030's goals.

Like the achievement of the aims of Agenda 2030, and a global sustainable business environment, the wide adoption of the foundational technology of blockchain is a continuous process rather than a single endpoint. To reiterate,

“It will take years to transform business, but the journey begins now” (Iansiti and Lakhani 2017: 1).

In spite of this, it is also critical to understand that blockchain’s environmental negative externalities need to be tackled by algorithm engineers, policymakers, and citizens. Available evidence demonstrates that the electricity consumption of this technology could have a tremendously negative impact on global temperature (Mora et al. 2018; Stoll et al. 2019; Sutherland 2019). Without addressing these environmental (and social and political associated consequences), blockchain is not sustainable (Howson 2019).

Finally, blockchain should reflect the following assumption “technologies used for digital transformation can also be leveraged to enhance trust—when they’re used to enhance transparency, reinforce ethical practices, boost data privacy, and harden security” (Albinson et al. 2019).

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The Rise of Unicorn Companies: A Magical Growth?

Cyntia Vilasboas Calixto Casnici

INTRODUCTION

Unicorn firms (Lee 2013) are startups valued at US\$1 billion or more and have become a status symbol rather than a key business goal. The total number of unicorn companies around the globe is unknown since there are different sources and methodologies that jointly account for more than 400 firms in 2019 (CB Insights 2019), and newspapers update the list frequently with a “newbie” in the club.

Advances in information technology enable an increasing number of firms to operate overseas shortly after their foundation (Knight and Cavusgil 2004). Unicorns have created a different business model than traditional firms since they are technological and asset-light firms. They are breaking the logic of competition worldwide, demonstrating that the regulatory landscape needs to be reshaped to deal with the new modes of organizing economic activities (Cohen and Kietzmann 2014).

It’s important to note that a small group of investors is actively capitalizing several, even competing, firms. Investors such as Tiger Global Management, Tencent Holdings, and Sequoia Capital have financed approximately 40 different unicorns each in recent years (CB Insights 2019). Venture capital organizations injected money to make the expansion possible, but it seems that not all of these companies have had time to develop organizational capabilities to expand worldwide.

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Investors are looking forward to a value-creation opportunity and cash-out. Therefore, they pressure the unicorns to go public (often an Initial Public Offer – IPO) in order to have better governance and transparency (*The Economist* 2019). However, they will need to face different pressures from investors and regulators and some of them might not be prepared for those challenges. Therefore, it is reasonable to ask “Are unicorns’ success a magical or a sustainable growth?” and “What are the internal and external factors that might influence their exponential growth?”

This chapter seeks to evaluate the exponential growth of four unicorn companies in the last decade and analyze the challenges and opportunities facing those companies in sustaining their growth. Therefore, it can show some potential technological and managerial trends for Business 2025, a digital era.

The chapter is structured as follows: after this introduction, Section 2 discusses the theoretical background that anchored the study. Then, the research design presents criteria for case selection as well as the sources of data. Next, the findings illustrate the main information about each selected company and compares their path, opportunities, and challenges. Final considerations and managerial contributions close the chapter.

THEORETICAL BACKGROUND

Exponential Growth: a Dynamic Capability Analysis

In unstable business contexts, according to Teece et al. (1997), challenges become even more crucial and require reconfigurations of resources and capabilities to be executed rapidly and efficiently. The dynamism necessary to configure resources, supported by innovation (Teece et al. 1997) and strategic conversions, becomes apparent when faced with situations that need not mere problem-solving, but changes to the way that problems are solved (Zahra et al. 2006).

Dynamic capabilities can be measured based along three dimensions: processes, positions, and path. For Teece et al. (1997), processes refer to doing things such as routines and standards in progress in the firm, as well as the learning what arises from these activities; positions are related to existing technological resources, intellectual property, client base and inter-organizational relations with suppliers and companies; path is understood as being the strategic alternatives a company has at its disposal, the presence, or not, of advantageous returns, and tendencies to depend on its path, which for its part can be undergoing evolutionary changes (Teece et al. 1997).

The development of an organization’s path can be modified and, according to Mahoney (2000), this may occur without any theoretical explanation of the change. Managers face several challenges along its trajectory. A passive perspective on each situation could point out some specific answers to regular issues. Or managers could go through unfamiliar alternatives, which would change the organization’s path. Therefore, assuming proactivity, after a contrafactual

analysis, change is incorporated and comes to determine new directions, generating new resources for the organization (Kor and Mahoney 2005).

The business model can influence the firm's dynamic capabilities based on the impact on the organization's design. A firm's dynamic capabilities are fundamental to the maintenance of profitability in the long term (Teece 2018). It may require a business model's adjustments and even its innovation in order to keep a company growing. There is a correlation between growth and a firm's dynamic capabilities.

The Unicorns Wave

Mobile internet helped in building opportunities for new type of startups. A fast-growing market of consumers, low cost of entry, and a large amount of private funds (VC and equity) helped the rise of unicorn companies. In the previous technological wave, companies needed to invest heavily in logistics and infrastructure (Simon 2016). Now, developers are more common, everyone has a smartphone, and consumers are familiar with apps, all factors that facilitated the proliferation of startups.

Development of a different business model, challenging traditional industries, convinced investors that they could obtain higher returns from believing in entrepreneurs. Since that type of firm is usually asset-light, it is easy to structure and start operating (Kenney and Zysman 2019).

In this wave, several crowd-funding websites, angels, accelerators, and micro-venture capitalists decided to surf on it, willing to advance capital to young, unlisted firms. Recently, sovereign wealth and private equity funds have also joined in. One of the consequences is that startups can now run more losses in an effort to triumph over competitors (Kenney and Zysman 2019). When startups can stay private, they can test new ideas, pivot their business model and build an innovative culture that anticipates change. This helps them stay ahead of competitors and innovate continuously (Govindarajan et al. 2016).

However, many unicorns are not doing as well as expected. Common reasons are unrealistic valuation, excess spending, failure to keep innovating, and increased competition (especially if big groups like Apple, Amazon, or Google can provide similar services) (Govindarajan et al. 2016).

A concern on unrealistic valuation is that some of those firms might never be profitable or can easily collapse. Then, these unicorns might fade like the Cheshire Cat from *Alice in Wonderland*, leaving investors with just the smile (Kenney and Zysman 2019).

International New Ventures in the Digital Era

The first years of an organization are crucial in determining its chances for survival. Some entrepreneurs set their sights to a longer range, taking steps into the foreign market during their first years in business (Knight and Cavusgil 2004). Oviatt and McDougall (1994, p. 49) define International New Ventures

(INVs) “as business organizations that from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries.” The authors classify INVs on the basis of the number of their coordinated activities in the value chain and the number of countries involved. A firm with few coordinated activities abroad and reaching a few markets is classified as Export Start Up; increasing the number of activities moves a firm to Geographically Focused Start Up; one operating in many countries is a Global Start Up (Oviatt and McDougall 1994). Finally, Multinationals are firms that are present in a variety of countries and are always seeking opportunities where the business networks are established to coordinate multiple organizational activities, without geographic limit (Oviatt and McDougall 1994).

Later, Fernhaber, McDougall, and Oviatt (2007) laid they are in more than 120 cities worldwide New Ventures were influenced by some characteristics of their industry such as evolution, level of concentration, knowledge intensity, global integration, and level of venture capital.

Nowadays, digitalization has blurred the boundaries of industries and changed traditional business models, altering the way organizations create and deliver value through digital platforms. They can create value through the establishment and coordination of a network of users (Brouthers et al. 2016; Teece and Linden 2017). Internationalization has led to an increase in the possibilities of digital startups scaling up globally by serving multisided markets. The motivation to expand activities can be related to resource acquisition and the need for different layers of architecture. In order to reach these types of resources, digital startups need to activate a network with high technology and content providers around the globe (Ojala et al. 2018).

RESEARCH DESIGN AND METHODS

Case Selection

Case studies are usually the method chosen for exploratory International Business (IB) research. I selected four startups in the exploratory case to develop a theory (Yin 2003). Since unicorn companies have become a new trend topic in the media, I decided to investigate several of them to evaluate their growth. In selecting the companies to be studied, I chose the two most valuable from CB Insights ranking (CB Insights 2019), and, for contrast, two famous recent cases of failure. I used multiple sources to investigate unicorns that no longer exist or are close to bankruptcy. The main goal was to investigate variance among the cases, evaluating possible theoretical diversity (Eisenhardt and Graebner 2007). In order to reduce external influence, the selected companies are all from the United States, the largest home country for unicorns. Table 29.1 summarizes the companies selected, their highest valuation in the market, which will confirm the unicorn label, and the industry in which they operate.

Table 29.1 Case study selection

<i>Company</i>	<i>Valuation in October 2019 (USD)</i>	<i>Industry</i>
JUUL Labs	50B	Consumer & Retail
WeWork	47B	Other
Theranos	0	Healthcare
Arrivo	1B	Automotive & Transportation

Source: Author's creation

Table 29.2 Videos

<i>Documentary/ Interview</i>	<i>Company</i>	<i>Producer</i>	<i>Year</i>
<i>How Juul Became a \$15 Billion Giant</i>	JUUL Labs	CNBC	2018
<i>Inside The Heated Battle Over Juul: Creating Teen Addicts or Saving Lives?</i>	JUUL Labs	NBC	2018
<i>Arrivo Loop – XD Innovation</i>	Arrivo	XP Innovation	2018
<i>The Dropout</i> (6 episodes)	Theranos	ABC	2019
<i>The Inventor: Out for Blood in Silicon Valley</i>	Theranos	HBO	2019
<i>What's Next for Juul</i>	JUUL Labs	<i>Business Insider</i>	2019
<i>How WeWork Makes Money</i>	WeWork	<i>Business Insider</i>	2019
<i>WeWork: Profile of a Company in Crisis</i>	WeWork	<i>Financial Times</i>	2019
<i>Why WeWork's Business Model is Risky</i>	WeWork	<i>Wall Street Journal</i>	2019

Source: Author's creation

Data Sourcing

This study used only secondary sources, although different types of data were drawn on to improve reliability through triangulation (Cuervo-Cazurra et al. 2016). Newspaper articles from *Forbes*, *Fortune*, *CNBC*, *Financial Times*, *The New York Times*, *The Guardian*, and *The Economist* anchored the research. Considering the type of companies selected, information technology magazines and blogs such as *Wired*, *The Verge*, and *Techcrunch* were a great source of information about the firm's investors, expansion and failure. In total, 262 articles were read about the four selected startups. In addition, I analyzed many documentaries and online interviews about their paths, challenges, and expansion. Table 29.2 shows the main videos used in this study. Most of them are documentaries about their business model.

Thus, even though some of the analyzed firms no longer exist, the data available were updated and relevant for this study. Interviews also helped to understand the founders' personal characteristics and style.

FINDINGS

*Magical Growth**JUUL Labs*

Juul Labs manufactures electronic cigarettes (e-cigarette) for adult smokers. It was founded in 2015 by two Stanford grad students, Adam Bowen and James Monsees, who aimed to find an alternative to smoking. Its headquarters is in San Francisco. Juul has three-quarters of the US e-cigarette market (CNBC 2018). In addition, the company has online stores in 20 different countries. In December 2018, Altria Group, one of the world's largest cigarette manufacturers, acquired a 35% stake for US\$12.8 billion. Currently, the e-cigarette is manufactured in China and the pods in the United States (Juul 2019).

The company faces lawsuits and upcoming FDA regulation. Therefore, it is investing significantly in clinical and non-clinical studies to support its examination by the FDA. Juul needs to submit the product to be reviewed by August 2022 (NBC 2018).

The company claims that their mission is: "Improve the life of the world's one billion adult smokers by eliminating cigarettes." Therefore, they claim to be only targeting adults. However, their marketing strategy was based on social media, and used models to show a lifestyle that appealed to young adults. There was even a verb ("Juuling") among their customer base (NBC 2018) to differentiate the habit from regular smoking. Lately, the company has started to use adult smokers who have switched to Juul and can provide real-case testimonials (CNBC 2019) in its website and social media campaigns. In addition, Juul recently added nicotine warning labels to their packages (CNBC 2019) to inform users of the consequences of vaping.

In September 2019 the CEO, Kevin Burns, resigned in the middle of the teen vaping crisis in the United States. More than 500 people presented cases of vape-related lung illness. Altria's senior vice president and chief strategy and growth officer, K.C. Crosthwaite became Juul's new CEO.

Furthermore, President Donald Trump pushed to ban all non-tobacco-flavored e-cigarettes and the FDA quickly responded to his wishes by warning Juul about breaches of the policy restricting the sale of flavored vaping (WSJ 2019b). The main issue for Juul is that the FDA prohibits the tobacco industry from using flavors, because they make the habit attractive to children. Fruity flavor is one of the main arguments Juul make to encourage regular smokers' conversion to e-cigarettes (CNBC 2019).

We Work

WeWork is a commercial real estate company, created in 2010 in New York by Adam Neumann as an alternative working space for entrepreneurs and small business. As at April 2020 it was one of the biggest co-working companies with 846 different locations in 123 cities across 38 countries (WeWork 2020). What

makes WeWork different than their competitors? They excel in branding and aesthetic: industrial, clean, cafes, open space with bright lights (*Business Insider* 2019b; WSJ 2019a). The goal is to change the way people work (*Financial Times* 2019), opening new locations worldwide using different membership options that range from young entrepreneurs to blue chip companies (WSJ 2019a).

In 2019 the company diversified and changed to launch We company, offering co-living spaces, school and gym. The company is losing a lot of money due to its strategy of being a real estate player with technology incorporated (*Business Insider* 2019b). Softbank valued it at US\$47B in January 2019, but after releasing the information for a possible IPO, the market valued the firm at only around US\$12B. Investors are concerned about lease obligations. So far, the company has invested ten times more than it is able to earn from membership lease signings. It is still unclear how much of its total space the company needs to fill in order to break even (WSJ 2019a). Therefore, they decided to delay the IPO and the CEO, Adam Neumann, resigned.

Unicorn Myth or Cheshire Cat

Theranos

Theranos was founded in 2003 by Elizabeth Holmes. She was the youngest woman to figure in the Forbes list of self-made billionaires. Frequently compared to Steve Jobs and Bill Gates, Elizabeth also dropped her studies to invest in her idea of a startup for blood testing (*Business Insider* 2019b). Elizabeth's admiration for Steve Jobs was highlighted in John Carreyrou's book, *Bad Blood: Secrets and Lies in a Silicon Valley Startup*. Some lifestyle and managerial characteristics mentioned in the book were the company dress code (black turtleneck shirt) and the hiring of former Apple employees and suppliers (Carreyrou 2018b).

Theranos's machine ("Edison") was claimed to be able to run many laboratory tests from a single finger-prick and few droplets of blood. Theranos would provide clinical testing cheaper and faster to customers (Kasoff 2015). In 2004 the firm was able to raise almost US\$7 million in funding. Theranos's valuation reached US\$30 million just one year after its foundation. Three years later, the company valuation reached US\$197 million and by 2010 it was valued at US\$1 billion (Tun 2019).

Theranos's path changed in 2013 when it started to be mentioned in newspapers, Ted talks, and public events. They achieved the public image that they needed to persuade large numbers of customers to access their blood test results in a painless and cheap manner. One of the main investors interested in the firm was the pharmacy store chain Walgreens. Their partnership established Theranos Wellness Centers inside Walgreens stores in Arizona in 2013. In 2014 Theranos was valued at US\$9 billion and Elizabeth Holmes became a multibillionaire, since she owned 50% of the company. (Tun 2019).

All the media attention also incited curiosity about the firm and its technology. Theranos never explained Edison's analytical capability in detail. In 2015, John Carreyrou, a Pulitzer Prize-winning reporter, started to investigate the firm and soon was able to interview former employees. He published a series of articles in *The Wall Street Journal* about Elizabeth's management incompetence and questioned the firm's technology (Kasoff 2015). Later, it was stated by ex-employees that Edison's quality control failed many times, which put patients at risk by either misdiagnosing or missing results, and that Theranos was using Siemens and other standard blood-testing equipment for the majority of its tests (Kasoff 2015; Carreyrou 2018a, b; Cao 2019).

The articles contributed to the collapse of the company. Theranos settled lawsuits with an investor and Walgreens. Elizabeth Holmes and her chief operating officer, Ramesh Balwani, were charged by the Securities and Exchange Commission (SEC) with criminal fraud for making false claims about the effectiveness of Edison's blood testing. Theranos laid off most of its workforce and was dissolved in September 2018 (Solon 2018; Dickson 2019).

Arrivo

Arrivo was founded by Brogan BamBrogan, former SpaceX engineer in 2016. The idea was to develop a transportation system for autonomous cars on magnetic tracks. The company's slogan was: "The End of Traffic". Unlike other hyperloop projects, they were proposing a high-speed magnetic levitation technology (O'Kane 2018; Szymkowski 2018; XD Innovation 2018).

In order to implement it, Arrivo planned to build a test track in Colorado in partnership with the Colorado Department of Transportation to connect Denver's suburbs to the International Airport (Gordon 2019) by 2021. This project would demonstrate full system functionality (XD Innovation 2018). In addition, the Chinese state-owned corporation, Genertec, offered a US\$1B line of credit to build a transportation system in any project worldwide, but which could not be used to fund Arrivo's operations (McBride 2018; O'Kane 2018).

At the end of 2018 Arrivo ceased to exist due to lack of funding and laid off its 30 employees. There was no evidence that the company could prove their transportation concept (Gordon 2019). Some employees claimed on social media of a lack of guidance and unstable working environments. The founders left the company months before it ceased operations, which corroborates other observations on distant leadership (O'Kane 2018).

WHAT CAN WE LEARN FROM THOSE UNICORNS?

Analyzing the selected companies' capabilities, we can understand their process were similar in the way that all of them searched for venture capitalists to finance their idea. In some cases, the startup did not have a final product or developed technology at the time of the first rounds of investment. The lack of technology or viability of the business model can be highlighted in the cases of

Theranos and Arrivo, but WeWork is still under evaluation as it is still trying to prove that it can be profitable for investors before launching its IPO.

In the case of WeWork, the required dynamism of reconfiguring the firm promoted diversification a strategic conversion to try to solve co-working's vacancy problems (Zahra et al. 2006). The proactive changes determined new directions, generating new resources for the organization path (Kor and Mahoney 2005), but the market is still evaluating the changes and investors are assessing the profitability of the new segments. Arrivo, on the other hand, did not have time or financial resources to solve its problems. The company collapsed before testing its business model in Denver; it could not advance through the prototype phase.

JUUL and Theranos needed institutional approval to operate. Since legislation is outdated for tech companies, both companies could find ways to postpone sending documents and information to be evaluated by authorities. Authorities can alter organization's path in several ways (Teece et al. 1997; Kor and Mahoney 2005); Theranos was closed by the FDA, but Juul needs to have a stronger relationship with them in order to keep selling flavored pods.

Regarding their position, JUUL is the market leader for e-cigarettes, WeWork is one of the main players worldwide for co-working space, but after having its valuation questioned by the market is "in crisis," requiring restructuring of its business model to remain attractive to investors. It is now under severe pressure to prove the robustness of its business model before the hoped-for IPO. Finally, Theranos and Arrivo are finished, out of the market due to financial crisis.

It is important to note that WeWork and JUUL developed international coverage a few years after their foundation, as seen in Table 29.3. In the case of JUUL, the firm is already selling in 20 different countries and part of its manufacturing is allocated to China, outsourcing the less strategic part of the e-cigarette. According to the proposed classification of Oviatt and McDougall (1994), JUUL would be categorized as an Export Start Up. They have some commercial offices abroad, but most of the value chain still lies in the home country, because the pods are the main value-added part of production. Even with institutional constraints, JUUL is expanding consistently and Altria's investment (it is the owner of the all-powerful Marlboro brand) will probably

Table 29.3 Internationalization and current status

<i>Company</i>	<i>Founded</i>	<i>Internationalization</i>	<i>Current Status</i>	<i>INV</i>
JUUL Labs	2015	2018	Market leader	Export Start Up
WeWork	2010	2015	"In Crisis"	Global Start Up
Theranos	2003	x	Closed	x
Arrivo	2016	x	Closed	x

Source: Author's creation

speed this internationalization process thanks to all its acquired knowledge of the market for regular cigarettes.

WeWork has already acquired or built offices in 38 countries. Due to the fact that the company relies on physical assets, it would be classified as a Global Start Up. Marketing and sales could be concentrated in regional offices, since they are in more than 120 cities worldwide (Oviatt and McDougall 1994). Because they are establishing contracts with large firms in different locations to reduce their vacancy rate, customers might require a more local interaction too.

With regard to internationalization, the digital startups increased their chances of scaling up globally by serving multisided markets. The motivation to expand their activities can be related to resource acquisition and the need for different layers of architecture. In order to reach these types of resources, digital startups need to activate a network with high-technology and content providers around the globe (Ojala et al. 2018).

CONCLUSIONS

It is important to note that the selected companies rely on a product or physical assets to operate. In the case of Juul it is the e-cigarette itself, for WeWork, Theranos and Arrivo would be the infrastructure to provide their services or show their embedded technology such as co-working spaces, blood-testing machines and magnetic tracks. Therefore, it is not possible to generalize the findings of this study to all unicorn companies, since many of them are operating as digital platforms – for instance Didi Chuxing, Epic, and Airbnb. Then, their business model would be more related to the coordination of a network of users (Brouthers et al. 2016; Teece and Linden 2017).

Unicorns are increasing in number due to the amount of private investment available; a magical growth is possible because venture capitalists worldwide are willing to surf on that wave. However, they will only be able to sustain this exponential growth if the startup develops strong dynamic capabilities and keep innovating consistently. Otherwise, they will become the Cheshire Cat (Kenney and Zysman 2019) and perish.

No one applied the Silicon Valley expression “Fake it until you make it” better than Theranos. The scandal precipitated huge concern over the ethical behavior of local entrepreneurs. This case specifically will be relevant for business managers and entrepreneurs to reflect on the consequences of their actions to multiple stakeholders. Authorities, investors, employees and patients were tricked by Theranos and the consequences are still being analyzed by the US legal system. Thus, policy-makers may revise their regulations based on the challenges brought by start ups in this digital era. Finally, academia can also benefit from the four presented cases while there is still a need to understand more about unicorn companies: their main differences from traditional business, how sustainable they are, and how their business models impact not only competitors, but also the ecosystem.

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Intellectual Capital Disclosure in the Digital Era: Challenges and Opportunities for MNEs

Lukasz Bryl

INTRODUCTION

The rapid growth of digitalization has led to intellectual capital becoming a concept of growing interest and importance to scholars and business practitioners. Abeysekera (2006) defines intellectual capital as a form of knowledge that is not presented in traditional financial reporting. Brooking (1996) perceives intellectual capital as combined intangible resources that allow organizations to operate and utilize the knowledge possessed by a person or a company to make better usage of human and natural assets (Kwiatkowski and Stowe 2001). Dumay (2016) defines intellectual capital as “the sum of everything everybody in a company knows that gives it a competitive edge. Intellectual capital is intellectual material, knowledge, experience, intellectual property, information that can be put to use to create value.” Not only does intellectual capital per se play a significant role in the development of companies, but its disclosure by firms is perceived as crucial as it contributes to a firm’s value creation. The timely reporting of key information (including intellectual capital) plays an important role in the development of a strong and transparent financial system (Basuony et al. 2018). Corporate reporting fosters financial markets by eliminating barriers to the flow of important information to the various stakeholders, thus leading to the reduction of information asymmetry and enhancing equality among investors (Gallego Alvarez et al. 2008; Fuertes-Callén et al. 2014).

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Three incentives can be identified for companies to disclose their intellectual capital. First, to provide more insight into the firm and thus resolve uncertainty among investors, which may lead to share price increase (Edvinsson 1997; Lev 2001). Second, to help companies to focus on certain key areas they come to recognize because of reporting intellectual capital (Cooper and Sherer 1984; Stewart 1997). Third, enterprises that disclose their intellectual capital could be perceived by the labor market as more sustainable and hence more attractive to individuals with higher skills and experience. Intellectual capital reporting is especially important for large, globally recognized firms, since with their growth, their visibility increases and they become subject to greater interest from their stakeholders. This phenomenon makes them more susceptible to potential negative reactions of these groups, which are more diverse due to the more diversified nature of large firms (Brammer and Pavelin 2004).

Recent changes in technology, capital markets and the media have affected firms' disclosure policies, especially the practices of reporting intellectual capital. Over the past two decades, companies have started to use the internet for communication purposes. The rise of the internet revolutionized the way enterprises report their financials and consequently, it has enabled the merging of traditional annual reports with additional financial and non-financial information in multiple forms (Jones and Xiao 2004). Even simple corporate websites offer practically unlimited space for sharing information and therefore help firms to potentially save costs. Potential savings derive from the lower cost of production and distribution of information to much wider range of stakeholders (Dolinšek et al. 2014; Mohamed and Basuony 2014) reached within the given firm's disclosure policy. Campbell (2003) and Gallego Alvarez et al. (2008) suggest that internet is possibly the most powerful tool to provide specific information to targeted stakeholders as a legitimacy strategy. Additionally, the internet enables timely reporting compared to traditional paper-based corporate disclosure (Koreto 1997), mainly in the form of annual reports.

Over a decade ago, Guthrie et al. (2008) suggested that the increasing prevalence of popularity of internet provoked questions about the significance of annual reports as the primary source for intellectual capital reporting. In addition, a study by Striukova et al. (2008) indicated that the annual report could not be treated as a proxy for the general pattern of intellectual capital disclosure. As a result many researchers have come to suggest that there are better corporate reporting channels to disclose intellectual capital information – especially in the context of the constant innovations in communication (Dumay and Tull 2007).

The aim of this chapter is to present various forms of the contemporary landscape of intellectual capital reporting practices with a special focus on challenges and opportunities of reporting via social media. Original research is incorporated in the chapter, presenting data on social media utilization among the 100 largest multinational enterprises (MNEs). The goal of the empirical analysis is to determine the potential of intellectual capital reporting via social

media by showing the current usage of social media by the largest MNEs. Therefore the research questions are:

RQ1: What are the main challenges and opportunities of corporate reporting via social media?

RQ2: What is the extent of social media usage among the largest MNEs?

RQ3: How popular are social media among the largest MNEs?

The chapter has three aims. First, it attempts to revive and foster discussion of the relevance of intellectual capital reporting in the context of rapidly developing digitalization. Second, it seeks to show the great potential of intellectual capital disclosure with the help of social media. Third, it serves as an answer to the call from scholars who try to conduct the exploration of new opportunities in intellectual capital reporting in terms of alternative technologies and communication channels, such as websites, LinkedIn, Facebook, Twitter, and Google+ (Lombardi and Dumay 2017). In this sense, the chapter analyses the potential of intellectual capital disclosure both theoretically and empirically by studying the current usage of the most popular social media among the chosen MNEs.

The structure of the chapter is as follows: Section “[Introduction](#)” is an introduction; Section “[Importance of Intellectual Capital Reporting](#)” examines the importance of intellectual capital disclosure; Section “[Intellectual Capital Disclosure Practices](#)” depicts the impact of digitalization on intellectual capital reporting practices; Section “[The Impact of Digitalization on Intellectual Capital Disclosure Practices](#)” describes key features of social media reporting; Section “[Disclosure of Intellectual Capital Via Social Media](#)” provides the methodical assumptions adopted in this paper; In Section “[Methodology](#)” the main findings of social media usage analysis are shown; Section “[Results](#)” presents the conclusions and suggestions for future lines of research.

IMPORTANCE OF INTELLECTUAL CAPITAL REPORTING

According to Dumay and Guthrie (2017) disclosing intellectual capital is defined as: “the revelation of information that was previously secret or unknown.” Reporting on intellectual capital has become a vital part in the process of company value creation (Petty and Guthrie 2000; Sullivan 2000; Williams 2001).

Addressing the theory of intellectual capital disclosure, Dumay (2012) states that there are two grand foundations: the MV/BV ratio, and greater profitability because of the lower cost of capital. In this sense theory suggests that better corporate disclosure should have a positive effect on access to new capital and on shareholder value, as it increases management credibility and improves analysts’ forecast (Bryl 2020). Consequently firms gain from greater transparency. Healy and Palepu (2001) indicate that majority of prior studies use agency theory and information asymmetry theory. In this sense, firms share

information on their activity in order to reduce agency costs and information asymmetries, as well as to comply with investor and analyst requirements (Koonce et al. 2011; Sharma 2013). Bismuth and Tojo (2008) argue that “ensuring that the nonfinancial information is consistent, comparable over time and across companies, material and reliable would allow investors to better assess future earnings and the risks associated with different investment opportunities, thus reducing information asymmetry.”

Abeysekera (2006) states that, just because annual reports are readily available, there is no guarantee that the information contained within is reliable and thus they “may not reflect the objective reality of the firm.” Additionally, annual reports are backward-looking and contain limited information about the future prospects of a company, something that would be expected in an intellectual capital report (Dumay 2016). Many authors (e.g., Striukova et al. 2008) feel that there are better corporate reporting channels companies could use to disclose information on intellectual capital. Voluntary communication practices can be performed by reporting management forecasts, analysts’ presentations and conference calls in press releases, on websites, in social media and other corporate reports (Dumay 2016).

INTELLECTUAL CAPITAL DISCLOSURE PRACTICES

Dumay and Cai (2015) found that annual reports were used as the primary data source in 79% of the examined research papers concerning intellectual capital disclosure. As indicated by De Silva et al. (2014) although there was an increase in the intellectual capital reporting found in annual reports of New Zealand firms between 2004 and 2010, there was no strong evidence suggesting growth of intellectual capital disclosure. In this sense, contemporarily the evolution of reporting intellectual capital via annual reports is stagnant. Therefore, firms tend to adopt other forms of disclosure, such as integrated reporting, which provides opportunities for new streams of intellectual capital disclosure; however, the early evidence indicates a possible fail (Cuzzo et al. 2017). With regard to the drivers of corporate intellectual capital disclosure, numerous authors (e.g., Bruggen et al. 2009; Yi and Davey 2010; Curado et al. 2011; Liao et al. 2013; An et al. 2014) point to the crucial importance of various factors (size, industry, ownership, type of auditor, listing status). Although certain studies provide contradictory conclusions, firm size and industry are the least questioned determinants of intellectual capital reporting. There may be several reasons identified why and what benefits firms achieve through disclosing their intellectual capital. As suggested earlier, better intellectual capital disclosure leads to lower information asymmetry, consequently firms decrease their cost of capital. Review of the studies conducted by Bryl, Fijałkowska, and Pysiński (2020) found that there is a negative relation between non-financial information disclosure and the cost of equity. Moreover, researchers observed that intellectual capital disclosure improves credit rating and thus lowers the cost of debt. With regard to the impact of intellectual

capital disclosure on firm value, there is not a coherent and strong link between intellectual capital disclosure in publicly available reports and value creation (Cuozzo et al. 2017) as firms tend to be more likely to keep valuable intellectual capital information rather than to report it (Schaper et al. 2017). This phenomenon may be understandable in high-tech industries, in which innovation play crucial role in a company’s competitive advantage. This suggests that reporting on intellectual capital not only does not lead to value creation, but in fact may be destroying it.

THE IMPACT OF DIGITALIZATION ON INTELLECTUAL CAPITAL DISCLOSURE PRACTICES

The direct impact of digitalization on corporate reporting practices can be identified in at least two dimensions. The first one is the shift from the non-ecological, non-practical printed-paper annual reports to electronic ones. This early change was a trigger to the development of later forms of intellectual capital disclosure, such as intellectual capital stand-alone reports, CSR/ESG/Sustainability reports, direct reporting via official corporate websites, Integrated reports and, finally, social media disclosure (Fig. 30.1).

Recent evidence shows that for listed firms the practice of creating stand-alone intellectual capital reports has almost died (Dumay 2016). Consequently research must still employ annual reports as a proxy for intellectual capital disclosure (Dumay and Cai 2014). With regard to corporate websites’ reporting, early studies (Guthrie et al. 2008; Gerpott et al. 2008) showed that the quality of intellectual capital reporting in annual report and website was significantly positively interrelated, but that disclosure of intellectual capital in annual

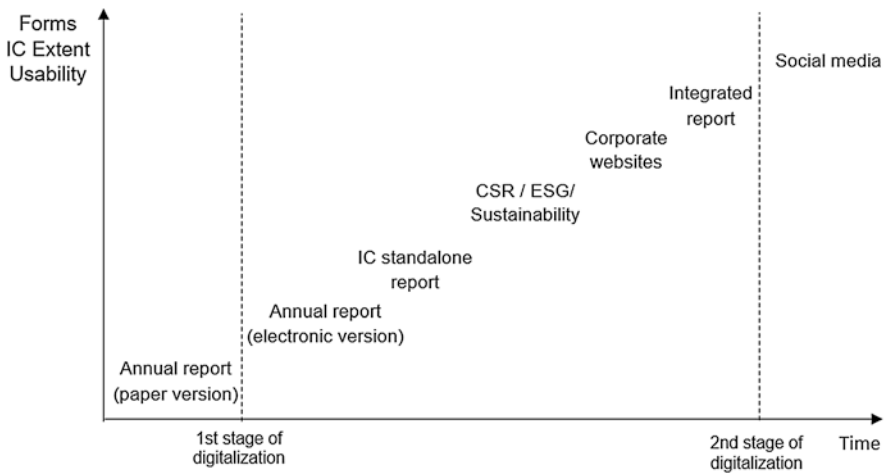


Fig. 30.1 Evolution of the intellectual capital reporting practices. (Source: Author’s creation)

reports was better than on websites. Contrary to this study, Branco, Delgado, Sousa, and Sá (2011) suggested that studied Portuguese firms were probably utilizing annual reports and the internet as complementary intellectual capital data sources. Studied entities were likely to manage the information on intellectual capital they wish to disclose in each of the reporting media. Research found that annual reports provided more human capital information than internet websites, whereas disclosure of information on structural and relational capital was performed better via websites than in annual reports. Hence, Portuguese-listed firms seemed to have realized the potential benefits of websites in terms of sharing data on intellectual capital. This may derive from the fact that annual reports content is focused on investors while internet websites have a much wider interest group. Moreover, with regard to corporate reporting practices, intellectual capital disclosure researchers are also studying the latest fad – integrated reporting, which includes intellectual (structural), relational, and human capital as part of its six capitals framework (Abeysekera 2013; Melloni 2015; Dumay 2016). However, recently, a growing interest in corporate disclosure has emerged in the form of social media that facilitates firm-directed, one-to-many communications enabling the bypassing of traditional media to allow firms to broadcast their intended message to a large network of stakeholders, readily observable to all (Lee et al. 2015). Therefore, both regulators and firms are starting to perceive social media as important channels for disclosing data. Additionally, technology makes reporting easier and enables companies to communicate with a wide spectrum of stakeholders (Dumay 2016).

The common feature of all studies adopting different reporting sources presented in the Fig. 30.1 is the content analysis method, which is described as a technique of gathering data (Abeysekera 2008). The aim is to codify qualitative and quantitative data into pre-defined categories in order to receive quantitative scales of different levels of complexity (Guthrie et al. 2006; Guthrie and Petty 2000; Abeysekera 2008; Dumay and Cai 2015). Although it has limitations, content analysis is perceived as valid in social science research (Schneider and Samkin 2008; Guthrie and Petty 2000; Yi and Davey 2010).

The variety of ways available to report intellectual capital leads to, the disclosure of greater amounts of data, and thus to the reduction of information asymmetry, while simultaneously causing confusion among investors, analysts, and researchers. It should be stressed that the above-listed tools rarely exclude each other, often they are employed by firms as complementary sources of shared information. Nevertheless, all intellectual capital reporting documents still have features which limit their usability, such as, inter alia, time-lag of the published data and a lack of interaction between a firm and its stakeholders. In this sense, we may identify the second stage of digitalization's impact on intellectual capital disclosure practices: social media reporting set apart from previously employed documents.

DISCLOSURE OF INTELLECTUAL CAPITAL VIA SOCIAL MEDIA

To communicate with stakeholders about intellectual capital, companies have at their disposal numerous traditional and modern communication channels. However, the shortcomings of the traditional channels have led to disclosed information often being met with skepticism (Du et al. 2010). Consequently, relying solely on traditional communication channels is unwise at the present time (Zizka 2017). It is clearly evident that passive, one-directional flow of information can be replaced with new communication tools that create a pool of interactive two-way exchange of relevant data (Lardo et al. 2017). Dumay (2016) argues that one way of going beyond established intellectual capital disclosure is to adopt social media.

Technology development, Big Data evolution and the way that society now communicates all move intellectual capital reporting practices away from traditional media toward online channels such as websites, Facebook and Twitter (Dumay and Tull 2007; Lombardi and Dumay 2017). In terms of one of the most challenging effects of mass digitalization, Big Data, online media channels such as websites, online reports, and social media are now the most important sources of information (Fortunato et al. 2017; Dutta 2010). Big Data provides new ways of discovering and creating knowledge, thus influencing activity, business, and competitiveness for all kinds of enterprises (La Torre et al. 2018).

Social media can be described as “a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content” (Kaplan and Haenlein 2010). Although websites and social media were not intentionally designed to disclose intellectual capital (Garanina and Dumay 2017), they supply huge, variable, and valuable amounts of data derived from a variety of sources that can be utilized for intellectual capital disclosure (Secundo et al. 2017). The interactive nature of social media works as a useful and rich channel for communicating intellectual capital information between organizations and their stakeholders (Chua 2011). Social media foster and facilitate reporting, broadcasting, and sharing of useful information, such as news, bulletins, events, alerts and updates, to a large group of stakeholders through a variety of forms (Lee et al. 2015). It may be legitimate to state that social media have a significant potential to change, or at least strongly influence, current and future corporate disclosure practices, offering further opportunities for research on the role of intellectual capital disclosure.

Firms incorporating social media into their disclosure policy are usually followed by many interested parties and possess the power to respond to any stakeholder’s comments. This interaction is potentially beneficial since a firm that is active in social media can discover the perceptions and opinions of its various stakeholders and react to them (Gupta 2011). Consequently, firms can use social media to reduce negative reactions to adverse situations; hence,

reporting and reacting via social media may be an effective strategy to reduce information asymmetry (Blankespoor et al. 2014; Lee et al. 2015).

Employing social media for corporate disclosure purposes provides the possibility of interaction, not only between the firm and its stakeholders, but also between stakeholders (Vernuccio 2014; Broekemier et al. 2015). In this sense, social media can be used by external parties to report information about a firm. For firms, motivation to use social media for disclosing non-financial information is usually the same, as in the case of other reporting tools: creation of a positive corporate image and informing the world of a firm's achievement of its goals. Further, Pisano et al. (2017) suggest social media have stronger influence in some sectors than conventional online media and so allow firms to conduct designed strategic disclosure of information to stakeholders of particular interest. With the help of social media, firms can reach a wider range of stakeholders on a real-time basis in an easier manner, can initiate a real exchange of views with their stakeholders, and can improve online information sharing among stakeholders (Du and Jiang 2014; Zhou et al. 2015). As social media enable more direct and interactive contact with stakeholders, these improved relationships can lead to a better reputation that can result in improved financial results (Eberle et al. 2013; Schmeltz 2012; Schultz et al. 2013). Additionally, releasing information on a firm's intellectual capital via social media may create greater credibility as original corporate posts and stakeholders' comments are visible. This is important, since the public may become suspicious when few or no comments are available (Eberle et al. 2013). Moreover, employing social media as a channel for communicating information about intellectual capital limits firms' ability to pursue a strategy of greenwashing – the “selective disclosure of positive information about a company's environmental or social performance while withholding negative information on these dimensions” (Lyon and Montgomery 2013). Because of the possibility of immediate reaction from stakeholders, firms have to take into consideration that unfavorable actions conducted in the past, or future negative attempts, may evoke public outrage and thus lead to the deterioration of corporate reputation. Table 30.1 summarizes the most important challenges and opportunities of intellectual capital reporting in social media.

METHODOLOGY

This chapter will analyze and evaluate the extent of social media usage among the largest MNEs. In particular, it aims to assess MNEs' readiness for potential intellectual capital disclosure via social media.

Social media prevalence was examined in the five most popular social media: Facebook, Instagram, Twitter, YouTube and LinkedIn. The study was conducted in several steps. First, prevalence in all social media was determined. By “prevalence” was understood the possession of an official channel containing the name of the company. By adopting this methodology, the study excluded all profiles that referred to the firms' brands. The second step took account of

Table 30.1 Features of reporting intellectual capital matters via social media

<i>Challenges</i>	<i>Opportunities</i>
Confusion while managing the content in numerous official profiles	Simple and cheap communication channel
Risk of spam, haters attack, hacking or manipulation	Release of relevant information in a timely manner
Loss of control over disclosed theme	Real-time interaction including two-way dialogue
Corporate image distortion by external parties	Possible wide range of disclosed data
Great amounts of stored data	Focusing on stakeholders of and with particular interest
Formal reporting of less consequence	Immediate management of a potential image crisis
Reduction of corporate greenwashing	Increased analysts' coverage, leading to diminished information asymmetry and lower cost of capital
Lack of auditors' control	Potential higher credibility once trust is established

Source: Author's creation

the relative popularity of each of the given social media in order to determine which of them had the greatest potential to reach stakeholders in the process of intellectual capital disclosure. To perform this, the study adopted different measures for different social media: for Instagram, Twitter and LinkedIn, the number of followers was counted, for YouTube it was the number of subscribers and for Facebook it was profile likes. The third step involved identification of the ten best-performing MNEs with a division on the given social media. Where possible additional statistics were provided.

Data were collected manually in September 2019 by either using the Socialblade (www.socialblade.com) database or by entering the company name in the search field of the given social media. The Fortune 100 Global 2018 listing was used to identify the 100 largest MNEs.

One hundred MNEs were studied. Cumulated revenue exceeded 13 trillion USD, and assets amounted to more than 57 trillion USD. The MNEs employed more than 25 million people in worldwide. The group was diversified in terms of geographical origin. Most MNEs derived from the United States (37), followed by China (21), and Japan (9).

According to Cuzzo et al. (2017) "continental Europe" is the most studied region in terms of intellectual capital reporting, accounting for 38% of articles, followed by Australasia (37%). Within the European nations the countries dominating in intellectual capital disclosure research are: Italy, Spain, Germany and Netherlands. Interestingly, the United Kingdom and North America are under-represented. Therefore, the proposed study is complementary to the previous studies on intellectual capital disclosure, since the sample in this study consists mainly of US and Chinese firms.

RESULTS

The first step of the study was based on the analysis of the prevalence of the given MNE in various social media. It was observed that the majority of the studied MNEs are present (have launched an official corporate channel) in all analyzed social media (Table 30.2).

The most popular social media tool appeared to be LinkedIn (86%) followed by Facebook (85%). The least popular was Instagram (68%). MNEs that did not launch an official social media channel on Facebook derived mainly from China (7%) and Japan (3%). This is a consequence of Chinese government regulations and a different cultural background. However, of the 21 largest Chinese MNEs, 14 possess an official Facebook profile. Fifty-six MNEs (56%) that pursued a strategy of simultaneous presence in all five social media.

The second step of the study involved determining which social media have the greatest average popularity. Social media popularity indicates the possible extent of information sharing with a firm's stakeholders. Since social media tools vary in terms of usability and features, their popularity indices also are differentiated. For example, Instagram, Twitter and LinkedIn employ the category of *followers*, Internet users who can see a company's posts on the profile and feed. They can also view Instagram corporate stories and contact a firm directly. Naturally, the more followers a firm "possesses" the greater the audience it can target. Facebook uses the notion of profile likes, which is also a measure of corporate popularity. When people "like" the profile of the company, it means that they are interested in the activity of the given firm and wish to be notified about new status messages and photos. Additionally, YouTube, the video and music streaming platform, entices Internet users to subscribe to a firm's channel. Like the other popularity indices, subscribers are persons who wish to be notified about videos uploaded by the company. With reference to Gupta (2011), the quantity of followers/likes/subscribers drives a firm's ability to get the opinion of stakeholders and to react appropriately. It should be stressed that each social medium possesses unique features thus enabling firms to communicate with stakeholders in a different form. Therefore, it is to be expected that MNEs employ many social media in order to maximize the positive results of disclosing crucial corporate information.

Table 30.2 Percentage of MNEs with an official social media channel

	<i>Facebook</i>	<i>Instagram</i>	<i>Twitter</i>	<i>YouTube</i>	<i>LinkedIn</i>
Percentage with named channel	85%	68%	75%	66%	86%
Dominant nationalities of MNEs lacking an account	China (7%)	China (21%)	China (14%)	China (16%)	China (8%)
	Japan (5%)	US (8%)	Japan (3%)	Japan (4%)	Japan (2%)

Source: Author's creation

As a result, Facebook (>4 million profile likes), followed by its equity-related entity, Instagram (>1.4 mln followers) were the most popular social media in terms of quantitative employment by MNEs. That means that these social media are the most recommended ones in terms of potential interactive communication with the stakeholders. The oldest social medium, LinkedIn (founded in 2003) recorded slightly fewer followers than the newest one, Instagram (2010). However, concerning the median score for LinkedIn significantly outperformed Instagram.

In order to go beyond the average and median misleading scores, Tables 30.3, 30.4 and 30.5 present statistics about the ten best performers in the given social media.

Walmart and Volkswagen were the most popular of the ten MNEs on Facebook. The official profiles of these MNEs are observed by more than 30 million people worldwide. The lowest score among the ten best performers was that of Apple, which is followed by “only” around 11 million people. The total number of profile likes of the top ten performers exceeded 220 million. The second-most popular social medium among the best corporate performers was Instagram. Interestingly, five best-scoring Instagram MNEs were also among the five best performers in Instagram. However, the best-scoring Instagram firm, BMW, recorded a much lower number of followers than the best Facebook performer (20 million vs. 34 million). Nevertheless, the high score of BMW may attributed to high Instagram activity (more than 6 thousand media uploads).

The detailed analysis of Twitter statistics among the top ten performers is presented in Table 30.4.

The best Twitter performer appeared to be Google (>21 million followers). The second-best, Microsoft, recorded only one-third as many followers.

Table 30.3 Top ten MNEs in social media (Facebook, Instagram)

<i>Facebook</i>		<i>Instagram</i>				
<i>MNE</i>	<i>Profile likes</i>	<i>MNE</i>	<i>Followers</i>	<i>Media Uploads</i>	<i>Average likes</i>	<i>Average comments</i>
Walmart	34,343,627	BMW	23,364,476	6241	200,589	560
Volkswagen	34,090,273	Apple	18,978,435	527	320,729	1730
Amazon	29,281,498	Google	10,764,656	1151	59,570	303
Google	27,344,816	Sony	7,427,604	1654	43,542	2400
Nissan motor	21,667,484	Volkswagen	6,904,570	2295	27,390	105
BMW	20,297,411	Samsung electronics	5,061,242	474	28,152	188
Ford motor	15,788,593	Nissan motor	4,869,921	4368	33,624	148
Microsoft	13,527,564	Honda motor	3,869,504	1907	14,548	132
Dell Technologies	12,541,386	Ford motor	3,626,060	1456	48,506	291
Apple	11,842,787	Microsoft	2,320,782	532	12,166	195

Source: Author's creation

Table 30.4 Top ten MNEs in social media presence (Twitter)

<i>MNE</i>	<i>Twitter</i>				
	<i>Followers</i>	<i>Likes</i>	<i>Tweets</i>	<i>Average likes</i>	<i>Created</i>
Google	21,523,432	2302	102,265	1141	2009
Microsoft	8,721,044	1786	16,254	319	2009
Sony	4,343,499	47,277	27,813	678	2009
Apple	3,457,733	n/d	n/d	n/d	2011
Amazon	3,129,193	6489	31,268	211	2009
BMW	2,001,769	16,897	31,633	1598	2013
Verizon	1,665,159	11,759	124,223	111	2009
Ford motor	1,196,463	11,405	42,503	784	2008
Honda motor	993,426	7943	202,737	271	2009
Walmart	992,354	11,303	543,709	n/d	2008

Source: Author's creation

Table 30.5 Top ten MNEs in social media presence (YouTube, LinkedIn)

<i>MNE</i>	<i>YouTube</i>				<i>LinkedIn</i>	
	<i>Subscribers</i>	<i>Uploads</i>	<i>Video Views</i>	<i>Created</i>	<i>MNE</i>	<i>Followers</i>
Apple	10,100,000	297	672,335,078	2005	Google	13,108,648
Google	7,930,000	2264	2,637,521,693	2005	Amazon	9,686,088
Samsung	3,900,000	952	436,683,152	2006	Microsoft	8,458,106
electronics						
Ford motor	2,000,000	671	355,441,041	2005	Apple	7,843,891
Sinopec group	1,060,000	34	398,498	2018	Nestlé	7,171,011
BMW	960,000	903	173,057,258	2006	IBM	7,000,493
Microsoft	622,000	621	69,640,044	2006	Johnson and Johnson	3,505,153
Boeing	564,000	553	217,279,246	2006	Siemens	3,056,771
Huawei	560,000	258	39,013,281	2010	General Electric	3,002,769
Honda motor	413,000	1268	88,745,259	2005	Total	2,314,440

Source: Author's creation

Consequently, the total number of followers of all top ten performers was much smaller (~48 million) than in the case of Facebook and Instagram. Although, Google had the greatest number of followers, this was not the most active firm (102 thousand tweets) in the top ten; this was Walmart (>500 thousand tweets) which was also the oldest participant, as it joined in 2008, only five years after Twitter was created. Seven of the most popular MNEs on Facebook appeared in the top ten on Twitter.

Table 30.5 presents the data on corporate presence on YouTube and LinkedIn.

Apple is the leader on YouTube with more than 10 million subscribers, followed by Google (>7 million). However, Google was much more active in

Table 30.6 Average life in years of MNEs in social media

	<i>Facebook</i>	<i>Instagram</i>	<i>Twitter</i>	<i>YouTube</i>	<i>LinkedIn</i>
MNE	No data available	No data available	9 years	10 years	No data available
Score	Profile likes	Followers	Followers	Subscribers	Followers

Source: Author's creation

terms of video uploads than Apple. Consequently, due to its more than 2000 uploads, Google's total number of video views exceeded 2 billion, which was more than the sum of the views of the remaining nine best performers. In LinkedIn popularity, Google outperformed the rest of the firms as well, achieving more than 13 million followers.

The last step of the study was the average presence (in years) in the given social media among the studied sample (Table 30.6).

Due to lack of publicly available data, only two social media (Twitter and YouTube) were analyzed. The average lifetime of MNEs on YouTube was longer than on Twitter (10 vs. 9 years). This means that, on average, MNEs started to use these communication channels after the channels had been in existence for four years (in both cases).

CONCLUSIONS

Researchers argue that the disclosure landscape has been changed by social media, offering further opportunities for studies on the significance of intellectual capital disclosure (Lardo et al. 2017). This study attempted to present contemporary intellectual capital reporting practices with a special focus on the future potential of social media adoption in pursuing disclosure strategies.

With regard to the first research question it was concluded that among the major challenges of employing social media in the process of intellectual capital reporting are the following: confusion while managing content in numerous official profiles; loss of control over a disclosed theme as a result of spam, haters' attack, hacking or manipulation that subsequently may lead to distortion of the corporate image. However, at the same time social media will enhance immediate management of the potential image crisis by performing real-time interaction, including dialogue; hence, once trust is rebuilt, social media foster potentially higher credibility. These challenges can, then, be opportunities that face firms which disclose intellectual capital via social media. Other opportunities include simplicity and low cost of sharing information, and the ability to focus on stakeholders of particular interest.

With regard to the extent of social media usage (RQ2) among the 100 greatest MNEs, 76% of the studied firms use some social media. LinkedIn was the most widely used (86%), followed by Facebook (85%). The least-used social media were YouTube and Instagram, which were employed by only 66% and 68% of the studied MNEs respectively. The vast majority of MNEs adopt social

media, though usage breakdown shows that there are certain social media that could be employed more frequently. Slightly more than a half of the studied firms adopt all five social media.

Concerning the third research question, which was aimed at studying MNEs' enthusiasm for social media, on the base of our empirical analysis, Facebook appears to be the most popular social media channel utilized by MNEs for the potential disclosure of relevant corporate information and sharing it with stakeholders. Instagram was second, followed by LinkedIn. This has direct practical implications, in the sense that the analysis shows which social media should be subjects of greatest interest by the managers pursuing a strategy of disclosing relevant data. The greatest enthusiasm for social media was displayed by MNEs from the digital technology industry: Microsoft, Apple and Google. These three were present in the top ten of all studied social media. Activity in social media measured by, for example, video uploads and/or tweets does not correspond directly to popularity classed by the number of followers and/or subscriptions.

MNEs' presence in the most popular social media shows an important trend – the necessity for contemporary MNEs to report via new communication channels. Therefore, it is justifiable to state that social media presence and activity is a strategic choice, additionally fostered by the strong development of digitalization. Based on the studied sample, disclosure of intellectual capital via social media has strong foundations to evolve and increase the employment of this relatively new and innovative set of media for communication of intellectual capital information. Social media should be perceived by managers as a vital source of data and a convenient tool for disclosing intellectual capital, and their attention should be drawn to the challenges and opportunities of intellectual capital reporting via social media. The chapter contributes to academic study by informing and stimulating discussion among scholars conducting or planning to conduct research on the relevance and positive effects of intellectual capital disclosure via social media.

The study has its limitations, such as its relatively small sample, with data referring to the one year only. Future studies could be enriched by intra-industry comparisons of social media presence. Moreover, with regard to disclosure of intellectual capital, studies should concentrate on the extent and quality of social media reporting, with a special focus on determining whether disclosure via social media is related to companies' financial and non-financial performance.

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Human Dynamics of Automation and Digitalisation of Economies: Discussion on the Challenges and Opportunities

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INTRODUCTION

Automation and digitalisation are the current manifestations of technological development trend which has historically offered both opportunities and challenges for the societies (e.g. Wajcman 2017). Economic and sociological studies have addressed the influences of similar earlier changes in detail. These studies highlighted the changes in societies, including employment dynamics due to developments such as industrial revolution, the Fordist manufacturing revolution and the rise of the Internet (Matthews 1996; Giovannetti et al. 2003; Stearns 2018). However, the current trend of automation-based change (including robotic and artificial intelligence), as well as digitalisation, has far-reaching implications for societies including specific concerns for both blue- and white-collar workers (Tegmark 2017; Ustundag and Cevikkan 2017). It has been argued that the Fordist revolution paved the way for the United

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States of America's industrial dominance for the major part of the twentieth century and resulted in a significant rise in the standards of living for different categories of workers (Dean and Broomhill 2018). During 1970s and 1980s, this aspect of industrial efficiency was dominated by Japanese firms that resulted in concepts like total quality management and continuous improvement gaining traction (e.g. Womack et al. 1990). In recent years, the rise of emerging economies from Asia and Latin America have been linked to efficient labour management, low costs and increased investments by multinational firms (Chakraborty 2018; Gunvald Nilsen and von Holdt 2019).

Technological advancements such as the use of artificial intelligence and robotics, as well as digitalisation manifested through the Internet of Things (IoT), mean that many traditional industrial sectors face restructuring leading to new competitive dynamics. For example, IoT coupled with advancements in three-dimensional (3-D) printing is influencing the traditional manufacturing sector significantly. Manufacturing sector was once difficult to enter due to the high costs associated with plant establishment, but these technological advancements are opening it to many new players (e.g. Petersen and Pearce 2017; Heinis et al. 2018). Such technological advancements raise a significant question with regard to their influences on human beings—especially in terms of jobs and work (Stearns 2018; Frey 2019). It should be noted that the previous industrial and technological revolutions not only improved efficiency, but also resulted in lifestyle improvement for most of blue- and white-collar workers (Berlanstein 2003; Allen 2009). However, the current pace and multidimensional influences of automation and digitalisation are challenging the notion of improvement in the well-being of the human workers that were historically associated with technological advancements. This key characteristic of automation and digitalisation in current times forms the starting point and motivation of our chapter. We argue that a better understanding of the multifaceted nature of present-day automation and digitalisation is important in order to specifically address the challenges presented by it, as well as highlight the potential opportunities it presents. The contribution offered by this chapter is twofold. Firstly, it is one of the very few studies that attempt to take a broader view of the complex phenomenon of automation and digitalisation with a focus on both challenges and opportunities for the people (humans), rather than a narrow organisational focus as is the case in many studies. Secondly, despite being conceptual in nature, this chapter presents some important statistics that clearly highlight different dynamics of the situation in different European countries, thereby providing a basis for future studies to delve further and analyse issues arising within specific countries.

This chapter aims to undertake this task by adopting a step-by-step approach. We firstly present an overview of the current trends in automation where issues such as robotics, artificial intelligence, 3-D printing and digitalisation aspects including IoT will be discussed. This is followed by a section dedicated to the discussion of influences for humans of this automation by specifically discussing challenges, including job losses. Alongside presenting theoretical arguments

incorporating multidisciplinary prior research, we also use relevant publicly available statistics to further highlight the different aspects of these challenges and opportunities. It should be further noted that in order to make the discussion specific, we focus on European developed economies, as their industrial dynamics tend to differ significantly from North American and Southeast Asian developed industrial economies. Therefore, the statistics used in this chapter represent mostly European economies with occasional references to other developed industrial economies. The next section takes a pragmatic look at automation and tries to highlight the opportunities for humans in the form of both new jobs associated with specific skill set requirements and entrepreneurial opportunities that are emerging from the current automation trend. The chapter concludes with the presentation of specific theoretical and policy implications.

CURRENT TRENDS IN AUTOMATION AND DIGITALISATION OF ECONOMIES

The automation of economies is manifested by the increased visibility of artificial intelligence (including robotics), digitalisation and Internet of Things which has specifically been linked to the rise of 3-D printing (Lipson and Kurman 2013; Schwab 2017; Frey 2019). Artificial intelligence has been mentioned as a key driving force behind automation by many scholars (Pérez and Falóatico 2019). Alongside industrial processes, artificial intelligence is increasingly becoming visible in home-based electronic devices (smart devices) illustrating an increase in the level of trust placed in them over the years (e.g. Abbass 2019). Beyond this, the notion of self-driving (automated) vehicles is becoming a reality, with some arguments augmented by the notion of improved road safety standards and a reduction in the number of fatalities caused by human error (Vella 2017). Self-driving vehicles are now visible on the roads of different European countries (Marletto 2019), and there is an ongoing debate regarding their regulation on the issues of risk and responsibility (Liu et al. 2019). It should be noted that the increase in self-driving vehicles will not only impact transportation and logistics industries, but also influence the way associated industries such as finance and insurance operate (Lohmann 2016; Clements and Kockelman 2017). Artificial intelligence usage is becoming more visible in the service sector as well, illustrated by the adaptation of artificial intelligence-backed decision making in the banking, insurance, healthcare and media sectors (Lipton et al. 2016; Gentzkow 2018; Riiikinen et al. 2018; Eisen 2019). Specific statistics about automation in all these industries and services are not readily available due to these being a new and ongoing trend. There are, however, some recent studies and policy reports that focus on different European countries, where references to automation and the use of artificial intelligence in some of these sectors have been made (Frontier Economics

2018; Jin 2019). We build on these prior works and present a specific discussion focused on the European context as given later.

We start by presenting some statistics on global industrial robot stock and usage. According to IFR (2019), annual installation of industrial robots is increasing by approximately 10% with additional ca. 400,000 robots being installed every year during the last decade. This number is expected to increase to ca. 500,000 robots being installed annually during 2020–2020 (IFR 2019). These statistics highlight that the replacement of human workers will take place across a range of global economic sectors, and more specifically in the manufacturing sector.

In this specific context, it is also important to refer to statistics about robot density per 10,000 employees (industrial workers) in the key European industrial economies, as well as an average at European Union (EU) level. The statistics show that Germany leads the way in usage of industrial robots per 10,000 employees followed by Sweden, Denmark and Italy. In case of Germany, there are currently more than 300 robots per 10,000 industrial workers (IFR 2019). This number is closely followed by Sweden at approximately 250 robots per 10,000 employees (IFR 2019). The current average in EU is approximately 100 robots per 10,000 industrial workers (IFR 2019). An interesting observation in this concern relates to France, a heavily industrialised economy where industrial usage of robots in the manufacturing sector is slightly less compared to Germany and some other European economies (IFR 2019). This can be partially explained by referring to peculiarities in the French industrial context, regulations and the role of unions (Arntz et al. 2016; Courtioux and Erhel 2019). As the artificial intelligence technology develops making robots more effective and efficient, it is logical to expect that human (employees)-to-robot ratio will increase further in all EU countries in the future.

Following this discussion on artificial intelligence and robotics, we move our focus towards the digitalisation. Digitalisation has influenced international markets and workforces in both positive and negative ways. Competition usually brings with it not only an increase in consumer choice, but lower prices (Pekgun et al. 2017). The advancement of the Internet has ensured that sales now take place internationally without the need for the development of complex distribution networks, thus the realistic markets that suppliers can work within have expanded without the subsequent need for investment to buy into the said markets. The logical conclusion here is that the benefits to the consumer are significant, improving standards of living and ways of life. Yet, as identified by Brennen and Kriess (2014), “digitalisation serves both as an organising mode across social domains and as a destabilising force”.

There is research evidence to suggest that a significant number of people believe that digitalisation brings benefit to business. However, at the same time, less than 50% believe that digitalisation also results in new business models (Siemens 2019), which can potentially have significant influences of humans in the labour market. Such a point, if it is an accurate prediction, carries with it the expectation that the future will simply be a continuation of the past—with

the difference being the movement of the industrial and financial power bases to different continents. However, such assumptions fail to acknowledge the significant impact digitalisation brings with it. Principally, digitalisation requires a deeper understanding of methods of analysis and integration within the organisations for it to be operationally viable. Furthermore, it needs to be grounded and controlled relative to presently available data and shown to be of economic value before it is more widely used (Siemens 2019). The assumption that digitalisation in itself is the answer is therefore an oversimplistic view to take. It is clearly a management and operational tool, yet as with all such tools, it needs to be considered in line with financial and other practical considerations. Alongside such considerations run the concerns associated with ethics regarding its usage and encroachment on an individual's privacy. Subsequently, some European researchers argue for the development of a set of specific ethical guidelines to ensure that negative issues do not arise, so as to build trust in the technology (Sciencebusiness.net 2019).

Digitalisation is increasingly being manifested by IoT and 3-D printing. IoT comprises any electronic and electrical equipment that connects to the Internet and ranges from cell phones to home electronics to oil rigs (Forbes 2014). It should be noted that IoT is closely related to the earlier discussion on robotics and artificial intelligence. IoT can be considered as a series of disruptive digital technologies, influencing the daily life of both individuals and businesses (Del Giudice 2016; Santoro et al. 2018). IoT enables firms to become more intelligent in developing, adopting and adapting disruptive technologies in their business processes, in order to increase their efficiency and innovativeness through knowledge flows and data/information gathering (Del Giudice 2016). IoT usage has increased dramatically since 2010 and is expected to continue increasing in the future with the number of connected devices reaching approximately 50 billion by the end of 2020 (NCTA 2019). The resulting interconnectedness between the increasing numbers of IoT devices offers significant opportunities to many smart firms and entrepreneurs but carries with it the risks of many firms losing out and individuals losing their jobs (Solima et al. 2016).

Increased digitalisation manifested by IoT and other advancements has resulted in firms adapting new and disruptive strategies which have the potential to change the overall landscape of economies as we know them. Tesla, for example, has removed all worldwide electric vehicle patents so as to help grow the market and make their technology the industry standard (Tesla 2019). Such a radical step could never have been envisaged from Ford or Toyota in the past. Similarly, Ingersoll-Rand has developed a monitoring system for its air conditioning units to remotely balance light and heat-level needs in line with energy-reduction goals (Trane 2019). Whilst such a system may align (to some extent) with home-based smart systems, new business concepts such as Philips' Pay-per-lux, sold to various organisations, including airports, ensure clients only pay of the light used rather than the fixtures and fittings (Luxreview 2019). Hence, the digitalisation process can be argued to change the very

nature of business models in many sectors. However, if business models such as these are more widely adopted, it is not so much the manufacturing processes that hold value—it is the development of the technologies, forms of delivery and changes in ownership that will hold the key to market control.

Along with IoT, 3-D printing is an aspect of digitalisation which is also increasing rapidly at a global level. 3-D printing technology has been around since 1984, but its popularity grew at the turn of the millennium when the cost of printers dropped and manufacturing possibilities increased rapidly (Bogue 2013). 3-D printers are increasingly being utilised in a range of industries, from basic to complex manufacturing, thereby resulting in new competitive dynamics for traditional manufacturing firms. An interesting example in this concern is of GE (General Electric), which now utilises 3-D printing for part manufacturing of its Leap Engine such that multiple parts are produced that are five times stronger than those in the past from one print run (Fortune 2019).

The popularity of 3-D printing is increasing globally. According to Grand View Research (2019), global 3-D printing market is rapidly increasing, and currently the biggest market is in North America (40%) followed by EU (28%). Moreover, 3-D print spending in Europe is increasing and expected to reach seven billion US dollars annually by 2022 (IDC 2018). Hence, the use of 3-D printing in European countries will be visible increasingly in all industries, resulting in several challenges for the humans (both workers and entrepreneurs). It is from this point that we begin to discuss the challenges of automation and digitalisation in the next section.

CHALLENGES OF AUTOMATION AND DIGITALISATION

Automation was once a state-of-the-art process developed under Fordist principles and it offered substantial benefits to modern organisations (Hurley 2019). Automation under Fordist principles initially increased the employment levels. However, the ongoing developments surrounding automation and digitalisation depict a decrease in employment throughout industrial economies globally (Pierce et al. 2019). It should be noted that there have been earlier instances in history representing similar significant changes. However, the relationship between humans and machines has never been as complex as it is now. In earlier technological advancements such as the steam engine and electrification, machines predominantly replaced physical effort and complemented the human work (Landes 2003). As technologies advanced further and the second machine age dawned, machines are doing direct physical work, as well as undertaking cognitive tasks using artificial intelligence. Hence, there is an increased discussion surrounding the disappearance of many jobs from society due to this automation. The jobs at the highest risk from automation are characterised by routine tasks and repetition, which can easily be automated and digitalised (e.g. Pouliakas 2018). Some practical examples in this concern are non-executive office occupations (routine information occupations) and industrial assembly occupations (routine manual occupations) which are slowly

disappearing. This may have been considered a risk for those operating at the top of the pyramid as upcoming competitors have less to lose through automation (from the basis of their starting point—it can only improve matters if starting at the bottom of the pyramid). The Fordist process experienced by organisations and countries largely brought about benefits, infrastructural improvements, investments and employment. The Fordist process took a considerable time to reach its full potential. However, the very nature of current automation and digitalisation in and of itself has speeded up the development process to such an extent that what might have taken decades to achieve 80 years ago may now be completed in a few years.

A new automated manufacturing plant can be set up virtually anywhere in a relatively short period of time and the newcomers can compete immediately with those already in the market. Their relative position has been improved by the requirement of a personal approach, flexibility, problem-solving ability or creativity associated with the work (which is more difficult to digitalise). During the second machine age, rather than only operating based on pre-programmed inference rules, machines themselves are learning to use neural networks and large data sets (Harteis 2018). This has added to the possibilities of utilising automation in many new applications associated with such fields as translating languages, pattern recognition, diagnosing illnesses and self-driving modes of transport. These new application areas may mean that the impacts on employment will also touch many information processing and cognitive occupations as well, which were deemed relatively safe some years earlier. In recent years, there is a significant decrease in the number of middle-wage workers across the European Union (EU) member states (Harteis 2018). This is driven by industrial and technological changes and has significant social implications as reduction in middle-class population is going to influence their purchasing power with spillover effect for many other businesses as well (Salvatori and Manfredi 2019).

According to Pouliakas (2018), almost 15% of EU workers are in sectors that are at a high risk of automation (70% or more job losses), and 40% are in sectors that are going through significant automation-related transformation (50–70% job losses). Hence, no industrial sector is safe from these changes, and even in the little change category, the expected percentage is higher than 10% (Pouliakas 2018). In this context, it has been established that routine tasks are at the highest risk of job losses due to automation followed by autonomous tasks and customer service tasks (Pouliakas 2018; Salvatori and Manfredi 2019). The tasks facing the least risk of automation in Europe are the ones that require 4C skills, that is, communication, creativity, critical-thinking and collaboration (Pouliakas 2018). This is an important aspect which we also highlight in later section while addressing new skills development in people in order to deal amicably with the challenges of automation and digitalisation.

It should further be pointed out that the rise of automation and digitalisation not only represents a bleak picture fraught with risks and challenges, but opportunities as well. In this context, researchers analysing similar topics have

found that the economic influences of these technological advancements have been milder than originally anticipated in many cases (e.g. Itkonen 2017). Moreover, these technological advancements have created new business models (e.g. Neumeier et al. 2017), which offer a number of new job and entrepreneurial opportunities for people. We offer a specific discussion on these opportunities in the European context in the next section.

AUTOMATION, DIGITALISATION AND THE NEW OPPORTUNITIES

In recent years, several researchers have focused on the changing nature of employment due to digitalisation and automation. It has been argued by them that in certain sectors, the concept of what constitutes “work” needs to be rethought (e.g. Anttila and Oinas 2018). It is evident from earlier discussion in this chapter that routine and low-skilled jobs are at the highest risk of disappearing due to automation. It should also be noted that even though some other tasks may not disappear, parts of them may become automated (e.g. Koski 2018; Salvatori and Manfredi 2019). It has further been argued that automation and digitalisation will create new tasks and occupations that will take time to be understood by potential employees due to the new skill sets required (Linturi and Kuusi 2018). There will be an increase in highly skilled and knowledge-based jobs, and even routine jobs may require a certain level of IT skills (Susskind and Susskind 2018). In sectors like elderly care, logistics and construction, the interaction between workers and automated machines (including robots) is slowly becoming visible (Koski 2018; Chen et al. 2018). Moreover, automation and digitalisation are expected to lead to what has been referred to as a “task-based mode of economy” (Acemoglu and Autor 2011; Nedelkoska and Quintini 2018). In such economic model, the demand for workers to undertake cognitive tasks will be higher (Harteis 2018; Koski 2018; Paus 2018).

Researchers have also predicted that the changes initiated by automation and digitalisation will increase the need for the retraining and development of relevant skills (Harteis 2018; Paus 2018). They are also likely to introduce new forms of jobs in the service sector (Acemoglu and Restrepo 2018; Susskind and Susskind 2018). There are expectations that independent and platform-based job opportunities will increase; thus, certain levels of new IT skills will be needed. This development is already present in Europe, alongside an increase in online jobs (relative to location-based jobs)—a trend that is anticipated to continue to increase as identified through data published by the ESDE (Employment and Social Development) index in the EU. It has been estimated that in professional services, creative tasks, translation, software development, sales and clerical tasks, already more than 30% work is online now (ESDE 2018). On the other hand, this percentage is still very limited in transportation and ancillary services (ESDE 2018). However, for transportation services, an increasing number of autonomous (self-driving vehicles) offer a challenge, which is expected to grow in future as well (Coppola and Esztergar-Kiss 2019).

At the same time, there are new opportunities associated with this specific technological development, which can be tapped in by target policy initiatives (Coppola and Esztergar-Kiss 2019).

In terms of the level of preparedness of European countries in terms of dealing with this change in employment dynamics, a useful indicator is digital economy and society index (DESI) developed by European Commission (DESI 2019). This index shows that Nordic and Western European countries are better prepared to deal with the changing work environment relative to other counterpart nations as depicted by their high DESI scores (DESI 2019). It is also important to mention that despite this digital connectedness, in a recent world economic forum (WEF) future of jobs survey, it was found that the need in days for reskilling in Western Europe is approximately three months (WEF 2018). This retraining needs to inculcate specific skills in vulnerable people (workers) which have been highlighted by Pouliakas (2018: 7). These skills include technical skills especially linked to the use of connected devices, problem-solving skills, continuous and on-job learning skills, team working skills, planning and organisational skills, foreign languages and communication skills and multifaceted customer handling skills.

Along with the new job opportunities and relevant skills development needs discussed so far, automation and digitalisation also offer many entrepreneurial possibilities that can be utilised by individuals possessing the needed skill sets. In this context, it is important to mention the important role of open innovation and platforms for this new entrepreneurship. A key aspect of open innovation is openness because established firms including multinationals are receptive to ideas and technologies sourced from elsewhere (e.g. Bogers et al. 2017). Prior researchers have found this openness, which was not there in past due to the strategies of undertaking in-house R&D, has helped many new biotechnology ventures to benefit from collaboration with large pharmaceutical firms (Nambisan et al. 2018). In a recent paper, Mittal et al. (2019) highlight that 3-D printers can significantly help the entrepreneurial firms (small and medium sized) to gain a foothold in previously out-of-bound (due to high entry costs) high-end manufacturing sector.

Alongside open innovation, another aspect of this technological change is rise of the digital platforms. These platforms not only enable entrepreneurship but also deal with a fundamental barrier of risk—a key concern in the minds of many entrepreneurs (Kenney and Zysman 2016). Platforms such as Alibaba, eBay and Amazon Marketplace have played a major role in redefining the nature and extent of market risk for small businesses by broadening market access (Nambisan et al. 2018). Similarly, cloud computing platforms and associated digital infrastructures help to enhance the overall agility of small businesses and enable them to up-scale their new ventures without assuming greater levels of investment risk (Moeuf et al. 2018).

Along with these aforementioned aspects, certain digital platforms (especially Apple's App Store and Google Play Store) have created entirely new markets for digital entrepreneurial activities (Kenney and Zysman 2016;

Nambisan et al. 2018). These platforms have radically altered economic aspects associated with starting a business, as well as reduced barriers and market risk (Zysman and Kenney 2018). It has also been argued that open innovation and digital platforms have enabled entrepreneurs to share their risk with several other actors. Financing has been an aspect, where many potential entrepreneurs have historically struggled (e.g. Burns and Dewhurst 1996; Herciu 2017). However, platforms such as Kickstarter offer new sources of start-up finance, and they have helped to significantly expand entrepreneurial activity outside capital-rich environments (e.g. Herciu 2017). Moreover, platforms such as CrowdSpring and others allow entrepreneurs to engage in a global pool of product designers, while platforms like Mobilework and Amazon Mechanical Turk provide access to low-cost, less-skilled workers (Lehdonvirta 2018). It has therefore been argued that crowd-based platforms make it easy to take control of routinised functions in entrepreneurial start-ups, leading to reduced costs and start-up time (e.g. Caspin-Wagner et al. 2018). Like the new job opportunities discussed earlier, these new entrepreneurial opportunities resulting from automation and digitalisation also require specific skills as well as their continuous development. These skills have similarities with the ones mentioned earlier for job hunt in the new automated and digitalised economy, as well as some entrepreneurship-specific skills. A key aspect in this concern has been identified in prior research as “dual skills”, where entrepreneurial mindset is complemented with communication and technological awareness skills (e.g. van Welsum and Lanvin 2012; van Welsum 2016). It has been argued that such skills are highly needed for the entrepreneurs in digital age to “pitch” their business case (van Welsum 2016) so that they can take advantage of the aforementioned new entrepreneurial opportunities. Hence, such skills development should be the focus of policymakers in European countries, an issue that we more specifically discuss in the next section.

IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The purpose of this chapter was to offer an overview of automation and digitalisation specifically in the context of European countries, highlight the challenges associated therein, and discuss the emerging opportunities. As the chapter has focused on a relatively less-researched and an emerging topic, it offers both theoretical and policy implications. A key theoretical implication of the chapter relates to the urgent need for management scholars to develop applicable theoretical frameworks with which to address these complex issues. Despite an increasing amount of research being completed on these topics, we found out that there is a rather lack of specific theoretical frameworks or conceptual models to address issues such as job loss dynamics, new work, entrepreneurial possibilities, continuous training and skills development need for employees and strategies of firms (both large and small) in an increasingly

automated and digitalised economy. Given the fact that automation and digitalisation are multifaceted topics with multidisciplinary roots, we believe that they offer fertile ground for specific theory development based upon established organisational, sociology and behavioural sciences theories. Such theory development work will enrich extant literature and guide future research in a more structured way in all domains of social sciences including management and organisation studies.

The policy implications of this chapter are associated with initiatives that can be undertaken to address the myriad of challenges as well as fruitful opportunities offered by automation and digitalisation for European economies. Firstly, each country according to its specific situation should have policy initiatives in place to identify vulnerable people who have lost or can lose their work (jobs and businesses) due to these changes. Retraining these individuals as well as linking social benefits to retraining and skills acquisition is important to avoid their alienation and problems of economic polarisation in society. As the role of automated and digital technologies will increase in all occupations in future, training programmes should incorporate technological and interaction skills for the people operating at all levels in different industries and sectors. This educational push should incorporate the earlier discussed elements identified by Pouliakas (2018), as well as the ones referred in this chapter and should be visible at all levels from basic to higher and vocational education. Another important aspect highlighted in the chapter relates to digital entrepreneurship and platform working opportunities in the changed environment. In order to fully utilise these opportunities, training and skill acquisition programmes should focus on specific areas rather than being general, as is the case currently in many countries. Moreover, there is a significant variance in European economies in relation to digital preparedness. The more competent ones like Nordics and Western European economies can embark on policy knowledge sharing programmes with other countries that are finding it difficult to cope with these issues.

A big risk for the future is linked to certain automated and digitalised businesses becoming monopolies and abusing their dominant powers. This coupled with these large automated technological giants not offering employment opportunities to a reasonable number of people, as well as pushing other competitor firms out of business, leads to more unemployment. This risk is difficult to tackle for individual EU member states due to the significant economic power of these technological giants. However, EU-wide regulative initiatives can be very helpful in tackling and regulating these power technological firms, as the recent cases involving Apple and Google may suggest (e.g. Moore and Tambini 2018). Moreover, labour mobility should also be supported to move workers to tasks that better match their retrained skills. Hence, specific regulations in this context as well as incentivising firms should also be the focus of policy makers.

The current model in most European countries has elements of welfare within it, which becomes very visible in the cases of Nordic and other Western

European countries. This welfare regime was developed in the post-World War II time period around the wage–tax relationship (Pierson and Castles 2006; Taylor-Gooby and Leruth 2018). Due to the changes in employment patterns presented earlier, including the rise of freelancing and platform work, it is reasonable to expect significant disruptions to that model. Hence policy makers in different European economies need to align social insurance and labour market regulations to minimise the influences of this disruption. Rather than initiatives such as universal basic income, whose effectiveness has been debated by academics, especially in the current form (e.g. Fouksman and Klein 2019), specific policy initiatives targeted at public support for mobility and the retraining of vulnerable people may possibly be more beneficial. In this concern, automated and digitalisation-specific taxation, sometimes referred as taxing the robots, has also been suggested by some scholars (e.g. Oberson 2017; Abbott and Bogenschneider 2018). Also, as most European countries are EU-member states, the role of the EU needs to be very visible in terms of ensuring such initiatives succeed in the coming years.

Our chapter has several limitations as well. Firstly, it is a conceptual piece of work supplemented by statistics based on publicly available data. As we have not undertaken primary research, specific insights in terms of the dynamics of challenges, as well as the work and entrepreneurial opportunities present in different European countries, are missing from the discussion. However, we believe that our chapter builds a suitable basis for future studies to delve into different aspects of these challenges and opportunities in different European countries more specifically. Moreover, future studies can also perform specific analyses of policy initiatives in different EU member states and see if those initiatives match the training and skill development needs associated with a more automated and digitalised economy. Finally, linking and analysing the roles of automation and digitalisation with the larger debate on sustainability are very important, and specific case studies with benchmark best practices from different countries (both European and non-European) can be developed by the future studies.

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Achieving the Triple Bottom Line Through Big Data Analytics

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INTRODUCTION

Sustainability is an everlasting theme in both literature and practice due to several critical global challenges. For example, poverty is one of the key social challenges, since the number of people who are living below the poverty line equates to 736 million people in the world, meaning that these people live at or below approximately \$1.90 US per day (World Bank 2015). Another major challenge is the environmental problem arising from climate change. It is clearly shown that the current worldwide resource footprint requires approximately 1.5 planets to sustain existing life, and by 2030, two planets will be required to sustain consumption (Moore et al. 2012). As discussed in the famous publication in 1972 (Meadows et al. 1972, p. 211): “The earth’s interlocking resources the global system of nature in which we all live probably cannot support present rates of economic and population growth much beyond the year 2100, if that long, even with advanced technology”. Due to these global challenges, industry, academic institutions, and public sectors have started to pay more attention to sustainability issues. In particular, sustainability research has increased tremendously in order to improve our understanding to cope with environmental and social problems, including a reduction in energy use and climate change while fighting with human rights abuses at the same time.

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Climate change is one of the key challenges facing sustainable development for contemporary business and society. Extreme climate-related disasters result in vulnerability for people and challenge both governments and companies (Haney 2017). Moreover, it is widely recognized that current violations associated with climate change are set to make addressing climate change an irresistible issue for future generations (Besio and Pronzini 2014). Interestingly, the present global and national legislations are inadequate in protecting the ecosystem around the world. Focusing on short-term temporary solutions leads to poor environmental management (Coyle and Simmons 2014). As a result, environmental sustainability has become a necessity.

Environmental sustainability addresses how environmental management strategies are used as tools for increasing a company's profits and enhancing its image. Organizations should sustain their growth and maximize profitability over the long term (Gupta 2015). However, companies can achieve economic sustainability by using the assets of an organization efficiently and by balancing economic (profit), social (people), and environmental (planet) measures to create profitability and ensure growth indefinitely (Oberoi 2014). The current sustainability agenda is pushing businesses to extend their focus beyond traditional economic goals to the triple bottom line (TBL) approach. The TBL concept is also referred as P3 (people, planet, and profit) (Elkington 1998); this is because it simultaneously takes into account social, environmental, and economic issues in order to create higher business value and sustain long-term success (Carter and Rogers 2008).

Digital technologies such as the Internet, social networking, and mobile technology create a huge amount of data every second (Kauffman and Donato 2012). Big data analytics (BDA) is the process of using advanced technologies to examine big data (BD) in order to uncover useful information (e.g. hidden patterns) to make better decisions across business processes among functions or companies (Waller and Fawcett 2013). In particular, BDA provides beneficial information allowing managers to manage their business more effectively according to social, economic, and environmental measures. Economically, BDA can increase profit (Schroeck et al. 2012) and market share and maximize sales and financial productivity (Manyika et al. 2011) as well as return on investment (Chen et al. 2012). Environmentally, BDA could reduce environmental footprint (Van Rijmenam 2014) and induce a reduction in emissions (De Gennaro et al. 2016). BDA could also help firms to respond to social, environmental, and social changes in an uncertain environment. By doing so, BDA can improve a company's sustainable performance (Hazen et al. 2016).

Considering the vital role of BDA for business success in several industries (McAfee et al. 2012), BDA and sustainability for firms have recently received interest from researchers. However, most of these studies offer conceptual evidence. Some existing empirical studies indicate the influence of BDA on three dimensions of the sustainability (i.e. environment, social, and economic), but they remain fragmented rather than comprising all aspects in a coherent manner (Song et al. 2017). Few authors have attempted to study the impact of

BDA on economic performance (Akter et al. 2016; Gunasekaran et al. 2017; Wamba et al. 2017) while others focus on the impact of BDA on environmental sustainability (De Gennaro et al. 2016; Koseleva and Ropaite 2017). However, the studies related to BDA and social sustainability are scarce (Song et al. 2017). Consequently, studies focusing on the impact of BDA on the TBL dimensions of sustainability in combination are still underdeveloped.

Additionally, there remains a lack of practical insights into how organizations utilize BDA to leverage sustainability. Therefore, this chapter aims to focus on the following questions and offer several insights from previous studies that might help to answer them:

1. What is the relationship between sustainable development and the TBL?
2. How could big data analytics be utilized to achieve all three dimensions of sustainability?

This chapter presents a conceptual study to discuss how to achieve sustainability by utilizing BDA. The next section introduces the TBL approach in examining three dimensions of sustainability (economic, environmental, and social performance), followed by a section that introduces BDA and provides examples of how they could contribute to sustainability. The final section summarizes the link between the TBL and BDA, and it concludes by offering suggestions for further studies.

UNDERSTANDING SUSTAINABILITY THROUGH THE TBL

Sustainability, in its most general conceptualization, indicates meeting the needs of the current generation without encroaching upon the requirements of the future generation (Brundtland 1987). However, corporate sustainability indicates the balance among social, economic, and environmental goals of an organization (Hansen and Schaltegger 2016). The sustainability of a firm is its ability to satisfy the needs and requirements of current stakeholders while developing continuous investment and managerial strategies to ensure future profitability, social well-being, and environmental protection (Pantelic et al. 2016).

Initial studies have, to some degree, been concerned with social responsibility and its impact on business performance (Filios 1983; Sturdivant and Ginter 1977). Despite these early studies, environmental sustainability had dominated the majority of studies on sustainability, focusing mainly on the impact of environmental aspects on the business's financial performance (Gil et al. 2001; Klassen and McLaughlin 1996). This trend has been overturned in the 2000s where new streams of studies are interested in adopting a more comprehensive approach toward performance inspired by the TBL.

In the TBL framework, the substantial dimensions of sustainable development have been used, directing environmental, social, and economic objectives within a business context (Blewitt 2014). Ultimately, the health or success of

an organization should be evaluated not only by its traditional financial value but also by its social or ethical values and environmental practices (Gimenez et al. 2012; Slaper and Hall 2011).

The TBL has been receiving more attention from profit, non-profit, and government sectors. As a result, the TBL is the most reported and cited framework for addressing sustainability activities of an organization (Alhaddi 2015). The TBL emerged during the mid-1990s and was developed by John Elkington, who sought out a method for assessing the performance of organizations in the USA (Elkington 1994). The TBL concept has been presented through a framework that endeavours to concurrently concentrate on social, economic, and environmental issues and strive to work harmoniously within these three performance domains in order to create greater business value and sustain long-term success. In other words, it incorporates the three dimensions of performance: social, environmental, and economic. That is why, the TBL framework is known as the three Ps: people, planet, and profit (Alhaddi 2015; Elkington 1998).

Even though businesses aim to attain the most profit, it is significant that the business's aim focuses on not only short-term (financial) benefits but also long-term (ethical and environmental) benefits as well. A business measures its performance and success by using the TBL framework, addressing environmental, social, and economic objectives within a business context (Goel 2010). Rogers and Hudson (2011) suggest that the TBL framework aims to attain a consistent and balanced focus on traditional financial value, environmental behaviours, and social or ethical value in order to create greater business value and sustain long-term success (Carter and Rogers 2008). In other words, organizations cannot be successful in the long run if they fail to take into account social, economic, and environmental issues (Elkington 1998). This chapter builds the foundation of the outcomes of sustainable development on the TBL performance pillars.

From a performance standpoint, TBL exhibits optimal conditions for overlap of the three dimensions. Elkington (1998) posited there are activities a firm can engage in which have a positive effect on both society and the natural environment, resulting in long-term benefits and competitive advantage. Porter and Kramer (2006) concurs in his discussion of the potential benefits for firms employing the same logic guiding their core business strategy with those of the firm's social responsibilities. The author further posits that this can be a source of competitive advantage, as well as enhancing a symbiotic relationship between the firm and community, resulting in both the firm's success and mutual reinforcement from the community.

The TBL approach motivates managers to balance their activities in order to achieve not only economic but also environmental and social outcomes. By doing so, it allows firm strategies to embrace sustainability by performing well in three dimensions: economic, social, and environment. The following subsections summarize each dimension and its importance for sustainability.

PROFIT/ECONOMIC PERFORMANCE AND SUSTAINABILITY

Different business activities play a vital role in maintaining the economic system, not only for the present day but also for future generations. All these activities seek to contribute to profit maximization at the firm level. Traditionally, business financial success is measured by using conventional accounting measures such as profit and revenue. Managers consider profit as the cornerstone of their business in order to survive in a competitive market and to boost its long-term sustainable growth (Gupta 2015). However, how can managers achieve both profit and sustainable growth?

Companies become economically viable if they achieve economic sustainability. Economic sustainability indicates using the assets of an organization efficiently and balancing economic (profit), social (people's), and environmental (planet's) measures to create profitability and ensure growth indefinitely (Oberoi 2014). Within a corporate context, economic sustainability means the improvement of the short-term and long-term shareholders' value as well as the building of a strong financial foundation for the continued survival of a company (Steurer et al. 2005).

According to the TBL approach, the economic pillar refers to the influence of the organization's business practices on the economic system (Elkington 1997). The economic sphere ties the business growth to economic growth and ultimately contributes to sustainability (Spangenberg 2005). Organizations can achieve economic value and support the people of tomorrow when they make serious attempts to integrate environmental issues into their strategic planning process (Ross 2015). Their business strategy, operations, and supply chain processes must all integrate social and environmental concerns. One of the popular examples is the Swedish furniture company IKEA. In 2016, IKEA raised its sales to \$37.6 billion, but it did not consume all the profit. Instead, the organization used its profits in recycling waste material, including the remnants of trees, which were transformed into new products. Now, IKEA is recognized as a company that runs an operating system of "zero waste to landfill" (Parinduri et al. 2019).

Green et al. (2012) reveal that the economic performance dimension of the TBL approach is mainly related to reducing costs associated with energy consumption, purchased materials, waste discharge, waste treatment, and disposal. Some alternative sets of indicators of economic performance include sales and brand image (Schaltegger and Burritt 2014). These alternative metrics are related to the sustainability performance of a firm since sustainable practices of a firm could attract customers, which result in a better brand image as well as sales (Schaltegger and Burritt 2014).

PLANET/ENVIRONMENTAL PERFORMANCE AND SUSTAINABILITY

Firms use natural resources and raw materials in manufacturing all the time. Consequently, the environmental performance of firms has a strong association with sustainable development. The environmental performance addresses

corporations' behaviour as well as how environmental management strategies are used as tools for increasing a company's profits and enhancing its image (Morali and Searcy 2013). The environmental pillar of the TBL refers to engaging in practices that do not compromise the environmental resources for future generations. It aims to protect and conserve biodiversity and the environment through efficient utilization of natural resources, waste management as well as reducing pollution such as greenhouse gas emissions. Alhaddi (2015) indicates that by protecting the environment, organizations achieve financial advantages from the reduction in operational costs (energy and water usage) and growing revenues from the improvement of innovative green products (Kearney 2009).

Businesses face increasing pressure from customers and regulations to minimize the ecological footprint of companies (Morali and Searcy 2013). In fact, the goal of reducing ecological footprint is not confined to the border of a firm. Companies need to conduct activities that could also reduce their ecological footprint throughout their supply chain. Unethical behaviours of supply chain partners damage the brand image of international corporations. For example, the multinational food company Nestle was accused of rainforest deforestation through its palm oil suppliers (Coombs 2014). Therefore, organizations working closely with their supply chain partners might lead to providing sustainable products and services (Gold et al. 2010).

Achieving environmental sustainability requires new forms of engagement among policymakers, researchers, and stakeholder to make a valuable contribution to minimizing the ecological footprint (Martens et al. 2016). Governments should embrace strategies to develop green industries like renewable energy and they should also set regulations to reduce carbon emissions (Misopoulos et al. 2019). On the other side, businesses should adopt environmental practices to minimize their footprint on the environment by adopting environmental practices such as efficient utilization of natural resources, waste management, and cutting of pollution such as greenhouse gas emissions (Elkington 1998; Song et al. 2017).

PEOPLE/SOCIAL PERFORMANCE AND SUSTAINABILITY

Social issues have recently been popular in debates on developing sustainability (Eizenberg and Jabareen 2017). For example, human rights principles are included in the 2030 Agenda for Sustainable Development. However, people are a vital asset for any organization, and every organization should consider the interests of the people within the organization (employees), while also taking into account its social impact on the community in order to nurture its long-term sustainable growth. This is because the people dimension of the TBL approach is focused on the organization's impact on employees, community, and society as a whole (Arowoshegbe and Emmanuel 2016).

The social line of the TBL indicates participating in beneficial and fair business actions that promote labour, human rights, and the community (Elkington

1997). These actions provide value to society and “give back” to the community, such as non-discrimination and avoiding employing forced and compulsory labour (Arowoshegbe and Emmanuel 2016).

Thanks to the rise of TBL-based reporting such as the Global Reporting Initiative, large businesses are paying more attention to assess the social, economic, and environmental impact of their operations (GRI 2014). In particular, two reasons encourage businesses to consider the social dimension of the TBL approach when they publish social reports: achieving positive publicity and recognition for their actions as well as meeting the demands of investors (Tschopp 2003). However, defining social sustainability is difficult because social values are dynamic, complex, and difficult to quantify. Recently, some studies have played a notable role in enhancing our understanding of social sustainability such as investigating the principles of social sustainability, the conceptualization of social sustainability, and investigating design for social sustainability that promote social sustainability in both outcome and process (Corsini and Moultrie 2019; Eizenberg and Jabareen 2017). For example, social sustainability could be referring to an ethical code of human growth and survival that should be achieved in a comprehensive, connected, fair, and prudent manner (Sharma and Ruud 2003). Other studies consider social sustainability as an approach, comprising social equity, social responsibility, social justice, health equity, labour rights, development, and community resilience (Long 2016; Takhar 2015). In a way, Sabella and Eid (2016) relate social sustainability to human capital, social capital, and human well-being. Policymakers and scholars use many terms interchangeably, such as social sustainability, corporate social responsibility (CSR), and corporate citizenship, to indicate business leaders’ roles to involve environmental aspects in the corporations’ strategic plan.

Assessing social performance effectively leads to improving social sustainability. Measuring social performance focuses on the interaction between the organization and the community as well as responses to issues that are related to community involvement, employee relations, and fair wages (Goel 2010). Social criteria are grounded in corporate social responsibility (CSR), which highlights an organization’s public acts of good citizenship (Luo and Bhattacharya 2009; Orlitzky et al. 2003). According to the CSR literature, social performance has two main aspects: an internal aspect, which relates to employee well-being and equity, and an external aspect related to community performance indicators, such as corporate philanthropic commitment (Jacobs et al. 2010; Montabon et al. 2007).

BIG DATA ANALYTICS

Technological innovations make vast volumes of data generated in the digital and physical world. The term “big data” (BD) was introduced to describe the data explosion, particularly in the digital world. Cisco estimated that the total amount of data generated by devices would reach 847 ZB per year by 2021 (Cisco 2018).

There are five “Vs”, which provide a comprehensive definition of BD: volume, velocity, variety, veracity, and value (Wamba et al. 2015). “Volume” refers to a massive amount of a large number of records or data that consumes enormous storage. “Velocity” refers to either the speed or frequency of creating data and/or the frequency of delivering data (Russom 2011). “Variety” represents the data generated from various sources and formats and entails multidimensional fields of data consisting of unstructured and structured data (Russom 2011). “Value” indicates economically worthy insights and benefits which are generated from big data by extraction and transformation (Dijcks 2012). “Veracity” ensures that the data used are trusted, authentic, and protected from unauthorized access and modification (Demchenko 2013).

Technologies such as the Internet create data every second (Kauffman and Donato 2012). Thus, firms are dealing with different forms of data, including customer-generated content, user logs, and customer transaction records. Firms could extract business insights from BD through two stages: data management and analytics. Data management consists of different processes: from data acquisition, recording, extraction, cleaning, and annotation to integration, aggregation, and representation. Data analytics involves modelling, analysis, and interpretation. That is why the term “BD analytics” (BDA) helps us understand how BD is implemented to solve the real problems of companies (Cetindamar et al. 2019). In other words, BDA is the process of using advanced technologies to examine BD in order to uncover useful information (e.g. hidden patterns) to make better decisions across business processes among functions or companies (Waller and Fawcett 2013). BDA is sometimes also defined as technologies (e.g. database and data-mining tools) and techniques (e.g. analytical methods) that a company can employ to analyse large-scale, complex data for various applications intended to augment firm performance in various dimensions (Kwon et al. 2014). BDA consists of the application of multiple analytic methods that address the diversity of BD to provide actionable, descriptive, predictive, and prescriptive results (Wamba et al. 2015).

BDA has a dominant role in a variety of industries. For example, BDA enhances manufacturing and industrial automation (Wilkins 2013). In the healthcare sector, BDA reduces operational costs and improve the quality of life (Liu 2014). From the perspective of supply chain management, BDA helps to improve visibility, resilience, and robustness (Gardner 2013).

Studies argue that BDA can create significant value for the world economy, enhancing the productivity and competitiveness of companies and the public sector (Manyika et al. 2013). Also, it is argued that BDA could reduce the environmental footprint (Van Rijmenam 2014).

THE USE OF BDA FOR TBL

Despite increasing attention about sustainability, there is relatively little managerial and academic understanding of how companies respond to sustainability issues. Most of the studies primarily focus on the strategy of sustainability

(Engert et al. 2016; Marshall and Brown 2003; Sabella and Eid 2016). While some others focus on the measurement of performance on sustainability (Paulraj et al. 2017), there are few studies on information technology utilization and its impact on sustainability (Gunasekaran et al. 2017; Song et al. 2017).

With the rapid evolution of BD technologies, employing BDA could solve sustainability issues (Shdifat et al. 2020). The following subsections present how BDA could affect economic, social, and environmental performance of companies.

Impact of BDA on Economic Performance

Firms use BD technologies in order to capture vast amounts of data from several sources, such as radio frequency identification tags, web information, and social media activities (Davenport 2014). These massive collected data can make radical changes in the way businesses manage their customers and their business models (Braganza et al. 2017, p. 329).

In the current business environment, the firm dramatically relies on information systems and data analytics to build its competitive advantage (Chen et al. 2012; LaValle et al. 2011). Several studies indicate the business value of BDA solutions to enhance financial performance (Akter et al. 2016; Wamba et al. 2015, 2017). BDA increases customer satisfaction and loyalty through improving corporate ability to meet their preferences (Wamba et al. 2017). In addition, BDA decreases customer acquisition costs (Wamba et al. 2015), which are critical factors for enhanced cash flows in order to enhance financial performance (Wamba et al. 2017). BDA can also increase profit and market share and maximize sales and financial productivity as well as return on investment (Schroeck et al. 2012). For example, BDA can help firms increase new products and services creation, satisfy customer needs at the right time and place, expand into new markets, and improve sales and revenue (Columbus 2014). The utilization of BDA in economic sustainability might be summarized under two key economic performance criteria: (1) profitability and (2) sales growth.

- (1) Predictive analytics-based BDA and text mining can reduce costs and increase profits (i.e. waste and fraud reduction). For example, an Australian healthcare organization uses CMC-I+Plus, an advanced analytical application providing claim-based intelligence to facilitate customers claim governance, balance cost, and quality (Srinivasan and Arunasalam 2013). As a result, managers can use the patterns of predictive analytics-based BDA and text mining to review a cost and profit summary related to each healthcare service, identify any claim anomalies, and thus make proactive decisions that eventually lead into increased profitability.
- (2) BDA can be used to enhance business value and firm performance by directly improving the sales. For example, personalized recommenda-

tion systems in Amazon generated 29% of Amazon's annual sales (JP 2012). The success of this recommender system depends on advanced data analytic tools and methods. It combines data from different sources: search and web browsing history, purchase history, other customers' purchase and browsing history, related products available, and current item in shopping carts. Amazon finds proper suggestions for new or existing customers by applying sophisticated mathematical algorithms (Linden et al. 2003).

Impact of BDA on Environmental Performance

There is an increasing call to address environmental sustainability matters in light of the new forms of analytics and insight that big data could generate. BDA can be used to improve sustainability by exploring hidden patterns, unknown correlations, and trends (Wu et al. 2016). There have been several studies on BDA for approaching environmental issues as pollution, waste, resource depletion, and ecology disruptions. For example, in order to improve the urban air quality to protect human health and control air pollution, Zheng et al. (2013) proposed a semi-supervised learning method consisting of a spatial classifier involving spatial-related features (e.g. length of highways) and a time classifier involving temporally related features (e.g. traffic). This method provides fine-granularity air quality prediction in real-time based on limited air quality monitor stations.

Another important use of big data's real-time analytics is processing data instantaneously. IBM Company's mainframe computer called "Deep Thunder" is designed to provide local, high-resolution weather predictions (Mukred and Jianguo 2017). This mainframe computer could be used to predict the locations where the public is going to face outages due to weather conditions. Consequently, any company using "Deep Thunder" can take the necessary steps to prevent that or fix it right on time, which leads to reducing the cost and optimising energy use for the company (Mukred and Jianguo 2017).

Utilization of big data in environmental sustainability can be discussed under four environmental performance categories: (1) enhancing energy efficiency, (2) reducing emissions of CO₂ and gases, (3) adoption of cleaner manufacturing practices, and (4) improving natural resource utilization.

- (1) One of the essential metrics to determine the degree of energy-savings is energy efficiency. BDA is considered an effective method to optimize energy use in order to reduce the relevant environmental impacts. BDA technologies collect data from different resources to extract valuable information to help create energy strategies, for example, energy efficiency in the building sector. BDA technologies could be utilized to analyse and understand individuals' energy consumption behaviour, which leads to improving energy efficiency and promoting energy conservation (Koseleva and Ropaite 2017).

- (2) Regarding emission of CO₂ and other greenhouse gases, BDA such as the analysis of extensive data based on the Global Positioning System (GPS) might be influential by improving systems management and planning. A study supported by the European Council (De Gennaro et al. 2016) declared that the main areas for reducing greenhouse gas emissions in the transport sector are turning to carbon-free or less carbon-intensive fuels and improving fuel efficiency. This study developed a methodology that provides a broad overview of data-processing platform applications designed to harness the enormous data potential of Europe's road transport policies. The platform mentioned above uses data from navigation mobility-focused systems and driving styles. A preliminary pilot study was performed, and its basic algorithms were developed based on two sets of data from conventional fuel vehicles assembled using on-board GPS systems. The emissions model shows how evaporative emissions can be measured from fuel vehicles based on real-world driving data. That is why BDA technologies can facilitate the reduction of emissions and lead to sustainable development (De Gennaro et al. 2016).
- (3) A combination with BDA and service-driven patterns that could help manufacturing firms to overcome the lack of complete data and valuable knowledge related to product lifecycle management. It could also encourage them to manufacture in a cleaner manner which leads to sustainable production and improve their sustainable competitive advantage (Zhang et al. 2017).
- (4) BDA could improve the utilization of natural resources that play crucial roles in sustainable development. Rapid improvement in an economy might lead to adverse influence on the ecosystem. Hence, manufacturing firms should consider sustainable management of ecological resources and human resources (Song et al. 2017). For example, in 2015, the multinational company Unilever achieved a zero-waste-to-landfill target at its more than 240 manufacturing plants in 67 countries (Unilever 2015). In 2017, it had lowered water usage by 20% across 90 of its sites through using BDA and Internet of Things-enabled sensors. The company also raised its annual consumption of renewable energy, such as wind and solar power, to 28%. By 2020, Unilever expects to reduce its dependence on coal to zero and thus cutting greenhouse gas emissions by 43% (Howells 2017). These actions will lead to a reduction in natural resource consumption and improve sustainable performance.

Impact of BDA on Social Performance

Social sustainability deals with social issues such as gender discrimination, inequality, poverty, education, diversity, and wages. Firms address social issues by adopting different strategies, such as corporate social responsibility (CSR) reports. Approximately 60% of the world's largest companies have CSR reports on their corporate websites (Jose and Lee 2007). These reports are used to

share their social practices with a varying degree of detail. For example, some firms even give data about the number of days lost due to injury to portray a safe working environment in their companies (Tate et al. 2010). Although a firm's commitment level should be apparent in these reports (Jose and Lee 2007), it is difficult to decide whether an organization was implementing socially responsible activities or merely reporting to satisfy stakeholders (Kolk 2003).

The development of information technology and sensor technology has enabled large-scale data collection from each supply chain partner (Mani et al. 2017). Those data could be potentially useful to reduce the lack of knowledge about social sustainability criteria and address social breaches in the supply chain. Therefore, BDA expected to find proper and accurate predictions, which can lead to enhancement in transparency in supply chains and mitigate social violations to achieve social sustainability (Keeso 2014; Song et al. 2017; Wu et al. 2016). Mani, Delgado, Hazen, and Patel (2017) employed BDA to mitigate supply chain social risk and demonstrate how such mitigation can help in achieving sustainability. The results show that companies can predict various social problems including workforce safety, fuel consumptions monitoring, workforce health, security, the physical condition of vehicles, unethical behaviour, theft, speeding, and traffic violations through BDA, thereby demonstrating how information management actions can decrease social breaches. There are two significant ways BDA might contribute to solve or mitigate social issues: (1) child labour and (2) health and safety.

- (1) Child labour is one of the most visible issues in social sustainability (Yawar and Seuring 2017). Although awareness is increasing on child labour and steps have been taken to cease child labour from many countries, changes in this issue do not come easily (or quickly) due to the embeddedness in the socio-cultural and economic structure of society. Performance monitoring is an effective technique to measure supplier performance, which identifies the breach level of social issues across the supplier base. It includes both comprehensive audits using the code of conduct and focused assessments in specific high-risk areas such as child labour. However, auditing for child labour in the lower tiers of supply chains can be difficult due to having a poor capability for capturing and reporting information about child abuses (Syafudin et al. 2017). As a result, investment in advance technologies for data gathering and analysing from suppliers will assist in monitoring the performance (Mamic 2005) that will ultimately help managers in deciding how to reduce social violations in supply chains in order to achieve social sustainability. An example of the use of BDA comes from the work of Thöni, Taudes, and Tjoa (2018). This study developed a novel model for social sustainability monitoring in supply chains based on a Bayesian network and big data analysis (text mining). A quantitative risk model continuously ranks suppliers based on their risk of breaching sustainability standards on

child labour. A Bayesian network uses various data sources such as statistical data, social media (twitter), audit results, and public reports of child labour incidents, which helps to determine the breach likelihood for each supplier location. The model includes child labour incidents automatically from publicly available news sources using text-mining algorithms in order to improve child labour standards in the supply chain.

- (2) BDA might contribute to the efficiency of health and safety performance of companies. Social media has become an essential channel used by firms to spread information and communicate with external parties. Official firm websites provide vast amounts of diverse information regarding firm performance and development. For example, a study (Wu et al. 2017) collected data from various types of data about light-emitting diode firms (such as qualitative data from management and social media data as well as quantitative data regarding operations) and employed a novel method based on big data analysis to develop sustainability by strengthening these firms capabilities to mitigate social risks, such as health and safety. This kind of different BDA models might be used to collect data regarding unethical issues from supply chain partners, such as health and safety, so that an international watchdog company could determine the breach likelihood along the supply chain base. As a result, this information might help managers to make decisions regarding reducing social violations in supply chains to achieve social sustainability.

CONCLUDING REMARKS

The overview reported in this chapter offer insights into the interplay between BDA and the three TBL elements. It is merely focused on one digital tool that is BDA, but the rest of the chapters in this book bring different aspects of digitalization and its impact on corporate sustainability. The chapter argues that the goal of long-term sustainability, meaning growing without harming the requirements of the future, requires the use of some managerial and technological tools. We argue that the TBL perspective might be an efficient managerial tool for companies. This perspective forces firms to perform well in three dimensions: economic, social, and environmental. In addition, we argue that BDA could be an effective and efficient technological tool while struggling with sustainability challenges. In the era of data revolution, stakeholders, such as shareholders and communities, have the power to press on a firm to consider the long-term impact of commercial activities on both the environment and society. BDA provides beneficial information allowing managers to manage their business more effectively according to social, economic, and environmental performances. In sum, employing BDA provides opportunities for companies to establish corporate sustainability in a competitive market.

To meet the demands of current and future stakeholders, this chapter recommends business managers and entrepreneurs to align their business, sustainability, and BDA strategies. BDA is a tool and it could be instrumental in overcoming TBL-related challenges for companies. However, this might not be automatic and businesses might not efficiently utilize BDA. That is why there is room for the intervention of policy makers to motivate businesses to adapt and implement in their businesses as well as regulate its implementation. In fact, policy makers could themselves use BDA for the sake of society. For example, BD can shed light on social breaches in the business market that were previously hidden, such as gender discrimination and inequality. Proper and accurate predictions are founded from BDA, which help policymakers to put regulations promoting a workplace to achieve diversity, equality, and fairness.

However, due to its descriptive nature, it has two limitations that might be opportunities for researchers in the sustainability field. First, it is an overview of the literature that could lay the base to develop a framework to examine the relationship between BDA and sustainability performance. Conducting empirical work in different industry settings and countries could enrich the knowledge on assessing BDA and sustainability performance as well as the impact of BDA on sustainability performance. Second, further studies might expand the scope of search to find out additional factors that might affect the impact of BDA on sustainability performance.

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Digital Transformation and Corporate Sustainability Accounting

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INTRODUCTION

Corporate sustainability (CS) has been a topical issue in accounting literature for at least three decades (Epstein 2018). Such interest is based mainly on two key factors that affect organizations: improvement on financial performance and public demand for ecological sustainability (Dyllick and Hockerts 2002). Firstly, the current literature has found that sustainability reporting improves financial performance (McWilliams and Siegel 2000). Secondly, public demand for ecological sustainability has resulted in several policies that force organizations to use natural resources and manage waste responsibly (Moon and Knudsen 2018).

However, in practice, it has been found difficult to efficiently report CS efforts (Sheehy 2015). Such complications arise mainly from a lack of appropriate accounting data and the technology to collect such data. Failing to produce timely and accurate accounting data can undermine the credibility, perceived by stakeholders, related to CS endeavors (Burritt and Christ 2016). Thus, digital transformation (DT) looks set to change the nature of corporate sustainability accounting (CSA) by improving the technologies used to generate the required data at the right time.

DT is another popular topic in accounting literature (Zhu et al. 2006). DT is seen as a revolutionary change in the way that accounting information is produced, distributed and interpreted. The main characteristic of DT in

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accounting is its ability to produce information almost immediately (Troshani et al. 2018). DT permits business units and individuals to share data in real time and use networks to develop a level of accounting awareness that was previously impossible. Such capability to generate relevant information in record time provides an attractive possibility regarding CSA efforts (Burritt and Christ 2016).

Due to the empirical data collected in this research, the focus of the study in regard to DT will be “business model innovation based on digital technologies” (Zhu et al. 2006). Examining DT from the business model innovation perspective allows us to understand the effect of digital technologies on the capabilities of the organization (Burritt and Christ 2016). Thus, the relationship between DT and CSA can be analyzed clearly.

This chapter examines the use of DT in CSA. The analysis provides an overview on how DT improves the quality of accounting information relevant to CS, but also highlights the most important challenges on managing such an implementation. To provide empirical evidence on how DT affects CSA, we use a case study from the Mexican forest industry. The case study examines the organizational efforts in implementing DT in CSA. It pays special attention to the regulatory role of the government and how corporations and organizations have made new efforts to generate valuable and timely accounting information relevant to CS endeavors. The case study uses the framework of CS systems proposed by Azapagic (2003). This framework allows us to analyze the effects of DT on different dimensions of the organizations. The research question of this study is: *How does DT improve CSA in an organization?*

CONTEXT AND BACKGROUND

Accounting scholars argue that CS is related to financial performance. Thus, several studies encourage practitioners to improve their CS endeavors and to report them in their financial and non-financial releases. Moreover, the current accounting literature identifies the increasing popularity of CS policies around the world. Such policies obligate organizations to report their CS endeavors to the government and to the general public. As noted by Aras and Crowther (2008), “A growing number of writers over the last quarter of a century have recognized that the activities of an organization impact upon the external environment and have suggested that such an organization should therefore be accountable to a wider audience than simply its shareholders” (p. 434).

As Ioannou and Serafeim (2017) argue, “reporting corporate sustainability efforts requires accounting data to ensure credibility” (p. 10) However, in practice, acquiring the correct accounting data has been problematic. In some cases, the financial and non-financial data is not capable of communicating the bigger picture of CS efforts in the organization. In other cases, the accounting data is already outdated when gathered, thus leading managers to equivocal conclusions (Johnson 2015). Studies on CSA have found that such problems arise for mainly two reasons: firstly, a failure in acquiring and processing

accounting data. Traditional accounting systems tend to focus their attention on financial performance (Gil 2018; Murray et al. 2017; Schneider 2015). Therefore, in several cases, these systems are not aimed to capture data regarding CS endeavors and senior managers' reports based on basic financial information. Secondly, scholars argue that organizations usually lack the technology to produce the required accounting information on time. The lack of required technology to gather and process accounting data usually causes organizations to generate outdated reports using old data (DeNisi and Smith 2014; Gil 2013).

The idea of DT has gained attention over recent years in accounting literature (Perrini and Tencati 2006). DT is changing the way in which business works, but also in old institutions embedded in the way accounting is produced (Dahmann and Grosvold 2017). DT in accounting is improving the way in which data is gathered and processed. Improvements in technology systems allow managers to gather real-time data in order to produce accurate reports (Bhimani and Willcocks 2014). Such capacities allow DT to be seen as a competitive factor in modern industry by improving the efficiency of internal processes: "Due to the high requirements in the logistics sector, e.g., regarding costs, efficiency, security, and sustainability, digital innovation is essential to stay competitive" (Heilig et al. 2017: 1341).

A Framework for Corporate Sustainability

Managing CS endeavors in an organization is a complex task (Baumgartner 2014). As a consequence, scholars have proposed different frameworks which aim to set a roadmap in managing CS. A particularly interesting framework was developed by Azapagic (2003). This framework aims to explain how new technologies, methodologies and systems affect the way in which a company manages their CS endeavors. The framework seems to fit the purpose of this chapter as it seeks to understand the effect of DT in the way that organizations account for CS endeavors (Porter 2008).

The framework suggests that CS endeavors must be coherent with strategy. This assumption states that CS endeavors are not extra operations that add to the core activities of the organizations; on the contrary, CS endeavors are intrinsically connected to the activities and systems of the organizations. Thus, if a new system or technology is introduced into the organization, the CS endeavors should be affected too. This chapter will use the CS system framework to understand how the introduction of DT affects the way in which the organization accounts for CS endeavors.

According to the framework, the first stage for implementing a new system or technology in CSA is defining the policy. Defining the policy must state what the objectives are of the company in terms of CS and how the introduction of the new system or technology will affect the chances of achieving such objectives.

It is very important that during the policy setting stage, the objectives and operational efforts are coherent, as it is possible that there might be

disconnections that could lead to operational failures. A recommended way to reduce the chance of failure is by recognizing the threats that emerge as part of the planned implementation. Senior managers might be able to foresee risks that could emerge and hopefully include detailed plans to overcome such barriers. Another issue during the policy setting period is to consider all of the possible stakeholders. Ignoring relevant stakeholders might produce incorrect outcomes from the implementation. Organizational members should carefully recognize all of the relevant stakeholders to produce the required information.

The second stage, according to the framework, is planning. The outcomes of the planning stage should be a series of very specific targets that need to be accomplished after the implementation of the new system or technology. The targets must consider not only the financial performance but also qualitative measures that can reflect environmental and social performance in the short and long terms. Performance indicators can be developed during this stage to help senior management to evaluate whether the objectives were achieved or not.

Finally, the implementation stage refers to a process in which senior managers prioritize and schedule organizational activities aiming to improve CS. The appropriate actions should be stated by senior managers to help the organization achieve its sustainability efforts. Though the monitoring of performance measurements during this stage is important, senior managers should not forget that this stage also aims to affect the attitude of the organizational members. If senior managers focus only on setting actions and revising performance measurements, they can forget the long-term effect on the organization, which is the attitude of organizational members toward CS endeavors.

Method and Methodology

Within the field of DT and CSA there have been many studies using different methodologies, such as qualitative, quantitative and mixed. Each researcher carefully chooses their methodology based on empirical evidence, background and theoretical traditions. While trying to answer the research question in this chapter, the researchers decided to use a qualitative methodology (Amis and Silk 2008). A qualitative methodology permits researchers to answer ‘how’ and ‘what’ questions (Feldman 2003). Furthermore, a qualitative methodology focuses on the interpretations of key individuals in the organizations studied (Cooper and Morgan 2008). Such features of the qualitative methodology fit correctly with the objectives of this research (Yin 2011).

Regarding the method, this chapter uses a case study method (Yin 2013). A case study method helps in developing an in-depth understanding of a phenomenon (Eisenhardt 1989). Furthermore, the case study method focuses on theoretical generalization rather than statistical generalization. By analyzing a single case study, it is possible to find similarities or differences in the empirics, compared to what the theoretical assumptions state (Eisenhardt and Graebner 2007). By contrasting the empirical findings of the case study with the

theoretical assumptions, it is possible to either agree with the current literature or propose a different contribution (Scapens 2004).

Data Collection

Researchers collected the empirical data through three main forms. The primary form of data collection was interviews. Researchers completed interviews with key individuals in the studied organization and in the relevant government office. Before the interview, the researchers prepared a semi-structured questionnaire that was developed from the theoretical concepts relevant to DT and CSA. During the interviews, the researchers could add new questions or explore interesting topics (Warren and Karner 2005); some of the interviews were carried out on Skype, while others were face-to-face, and the researchers took notes of qualitative aspects that they considered important, such as nervousness, from an interviewee. Furthermore, when the interview finished the researchers made quick notes of relevant information in addition to the interview transcript. All the interviews were recorded and then transcribed. Access to the organization studied and government office was granted by e-mail and an ethical declaration was signed by the interviewees where it was expressed that they could leave the investigation whenever they wanted (Wiles et al. 2008). Researchers stated that the purpose of the data collection was specifically in order to write this chapter (Bell and Bryman 2007).

The second form of data collection was acquiring internal documents from the organization studied. Documents were relevant because the organization studied kept evidence of their agreements and meetings. Therefore, researchers focused on collecting minutes from meetings or e-mails where senior managers agreed on a new idea. The purpose of collecting documents was to have physical evidence and then conclude that what individuals said during the interviews was true. Other relevant documents were manuals, reports and statements. All the documents were kept by the researchers on a special folder in 'Cloud' storage.

The third form of data collection was exploring the web and finding public documents that were relevant to the study. Most of the information gathered in this form was related to the government office that implemented the new mandatory reports. Press articles and official statements were collected by the researchers. The purpose of gathering these public documents was to understand the context in which the organization existed.

Data Analysis

The data analysis consisted of three stages: the first stage focused on building a timeline to understand the phenomenon (Huberman and Miles 2002); the timeline was built mainly with information from the interviews but also from private and public documents that were collected. Once the timeline was completed, the second stage consisted of finding triangulations of information.

Such triangulations allowed researchers to understand the phenomenon in detail and from different perspectives (Lincoln and Guba 1990). For instance, if there was an important topic that emerged from the timeline, the researchers focused on finding information relevant to this topic from different data sources. Finally, the third stage was to confirm the account that researchers had built. To do this, the researchers contacted the CEO of the organization and showed him the results of the study and minor details were added, as recommended by the CEO.

The interview transcripts were analyzed by the researchers; key topics emerged after the interviews were done and these topics were later used to build the timeline of the case study. The researchers did not use any qualitative analysis software. The reason for choosing to analyze the data without software was because the researchers knew the context relatively well and believed that their analysis would provide richer conclusions than those gained from using software. The documents were also analyzed using the key topics that emerged from interviews. Again, the documents were analyzed manually by the researchers in an effort to incorporate their knowledge of the context in the study. Finally, the researchers kept evidence of the data analysis process by writing their conclusions in a timeline and a table, with key findings of the case study.

BODY OF THE CHAPTER

Case Study

To illustrate the effect of DT in CSA, this research uses a case study from the forest exploitation industry in Mexico. This case study explores a local firm which has recently implemented a new DT strategy due to policy changes in the country and to improve its productivity. Using the CS system framework, this study explores how the organization designed, planned and implemented DT, and how it affected its CSA. In the organization of this case study, effects on CSA are more evident as government regulations urged the organization to produce better accounting information.

Background

The organization in the case study is a local forest exploitation firm. The firm was founded 29 years ago and at the time of the study, the organization had 105 employees. Most of the employees worked in the field, cutting, storing and transporting wood. Only ten employees were 'office employees', and they were mainly accountants, managers and salespeople. Senior management consisted of the partners that founded the company 29 years ago. In total, there were five senior managers; the CEO was a partner that specialized in sales and closing deals; however, he supervised all the operations in the firm; the CFO was a partner who had an accounting background and his job was to pay taxes and prepare financial reports; then there was a COO and an 'operations senior

manager', who were partners that had a lot of experience in cutting wood and planting new trees. Finally, the 'headquarters manager' was another partner who focused on 'human resources' and the relationship with the government. The five senior managers were the oldest members of the organization, their average age was 67 and each of them had at least 50 years of experience in the industry. The CEO stated during an interview:

I have been cutting wood since I was 5 and now, I am 68, I think that you can imagine how much I know about cutting wood.¹

Since early 2019, the forest exploitation industry in Mexico has experienced several changes in the law. Such changes focus mainly on two objectives; the first objective is to provide financial aid to local forest exploitation organizations in order to make them more competitive against their foreign rivals. Such financial aid includes discount on federal income tax, subsidies in water and electricity bills,² and transfers in cash that the firms should use to improve their CS efforts. The second objective from the changes in the law was to improve the way in which companies operate and to closely regulate the exploitation of natural resources. This second objective forced organizations to complete specific reports to monitor if ecological and industry standards were met. A government officer explained during an interview:

The federal government is giving a lot of financial resources to the forest exploitation industry. But at the same time, the government is also trying to improve the sustainability efforts in the industry, because of that the financial aid forces the company to improve and report their sustainability efforts.³

Although the changes in the regulation did not force any of the organizations to implement a DT in their operations, a few firms decided to start a DT process in order to improve their CS endeavors. One of those firms was the one examined in this case study. The firm decided to implement DT with three objectives.

The first objective was to improve their operations. According to senior managers, the firm had problems monitoring the status of the trees. The company had a report that specified if the trees were healthy. This report was created once a year in December, and in most cases, the data was not relevant because if the trees became sick in January, their illness would not be accounted for until the following December report. Another issue was that biological threats could not be detected on time. The information that was collected only included data from their own trees and it ignored other environmental threats,

¹ CEO, Interview, May 2019.

² In Mexico, water and electricity are provided by government companies. Thus, it is common that the government provides subsidies to specific industries.

³ Government officer, Interview, July 2019.

such as plagues nearby or illegal wood cutters. The CFO explained during an interview:

The status report of our trees was annual and that was a disadvantage. [...] The annual report focused only on the trees where we work, but it ignored the surroundings. For example, one time there was a plague in an area very close to where we worked, and the report did not account for the plague because it was not in our trees, but we were ignoring critical information!⁴

The second objective for implementing DT was to collect the required information for the new government reports. As stated earlier, the Mexican government increased the number of reports and the level of detail in the information regarding CS efforts. According to the accountant of the organization, the new reports caused trouble because the company was not generating information to fill the reports. The accountant explained:

The new reports required information that we did not have. For instance, we knew the amount of wood that we gathered in the year, but we did not know how many trees were left. Another thing that we did not know was the length of the trees in the forest. [...] The new reports also had a lot of qualitative information that we did not have, it was important to implement technology to gather the data.⁵

Policy Setting Stage

According to the CS system framework, defining the policies is the first step to implementing DT. In the organization studied, defining the policies was a phase that took place during December 2018. According to minutes from meetings, defining policies was a critical activity as it first appeared as a relevant topic in all the senior meetings from December 2018. On one of the minutes of those meetings, the following was stated:

Point 1: Clarify the scope and limitations of technology implementation in the firm. Important to check how technology can help us, how it will be implemented and how much will it cost. [...] Will it be ready for January 2019?⁶

According to senior managers, the objective of the policy setting phase was to determine the threats from implementing a DT aimed at improving CSA. As well as determining threats, senior managers also wanted to clarify who were the relevant stakeholders. At some point, senior managers believed that the only stakeholder was the government due to the new mandatory reports, but as they explained, later they realized that relevant stakeholders also existed

⁴CFO, Interview, May 2019.

⁵Accountant, Interview, July 2019.

⁶Minute from a meeting, December 2018.

inside the organization. Based on what senior managers stated, the accountant in the organization was relevant to the DT process as plenty of accounting information would be gathered using the new technologies. The CEO explained during an interview:

At first, we were obsessed with satisfying the government because we were scared about the new reports. However, we quickly realized that we could use the new technologies to collect information relevant to our accountant and managers. At that point, we stopped focusing only on the government reports and we had a more holistic view.⁷

Senior managers also realized that the new technologies could provide useful information regarding the health status of the forest. Thus, the supervisors of wood cutters and the person in charge of the health of the trees were invited to the senior management meetings. The objective of inviting more people to the meetings was to establish relevant policies not only for the government but also for organizational departments that could give good use to the collected information. The COO explained:

As we realized the possibilities with the new technologies, we had to invite more people to our meetings. At first, we were only senior managers at the table, in the end there were about 10 people discussing how to implement the new technologies.⁸

When the researchers analyzed the participants in the meetings, they could corroborate the story of senior managers. Moreover, the new attendants argued that during the meetings their point of view was considered and that senior managers were open to hearing them. For instance, the accountant explained that the accounting of the company could improve with more data about plagues and threats to trees. The accountant argued that such information would help him to register liabilities if such threats were relevant to the operations of the company.

The policy setting stage in the organization studied focused on identifying threats to the implementation of DT and identifying the relevant stakeholders. During this phase, the organization experienced something very interesting at a senior management level as they realized that relevant stakeholders were not only the ones that they had initially thought. As senior managers met and analyzed the implementation of DT in order to improve CSA, they realized that internal organizational members were also relevant. By acknowledging the importance of internal stakeholders, senior managers were able to produce richer and more relevant policies during this stage.

⁷CEO, Interview, May 2019.

⁸COO, Interview, May 2019.

Planning Stage

The second stage in the implementation of DT to improve CSA is planning. Planning involves setting specific quantitative and qualitative targets that the organization intends to accomplish. In the case of the organization studied, senior managers stated that qualitative and quantitative goals were equally important when implementing a DT process to improve CSA. According to senior managers, qualitative information was crucial due to the nature of the industry. The CFO explained during an interview:

When setting the targets of the DT process we believed that qualitative targets were very important. In the forest exploitation industry, it is sometimes impossible to explain every relevant thing with a number. [...] I would say that 50% of the targets were qualitative. [...] For instance, we wanted to know how many trees we have cut in the last year, of course that quantitative information was irreplaceable, but we also needed to know if the trees were healthy and if we met the industry standards while cutting the trees. We needed to have that in our accounting ... somehow.⁹

When the researchers revised the minutes from one of the meetings in December 2018, they found evidence that what the CFO was right. During one of the meetings the minutes revealed that senior managers revised the relevant targets for the implementation of DT. This included specific targets, of which more than 50% were qualitative. When the accountant was asked during an interview about how he perceived the qualitative targets, he explained the following:

At the beginning I was confused because before, I had not handled qualitative information. I thought that my job, as an accountant, was to register transactions, and when they told me about qualitative targets being monitored in the accounting I was confused. [...] After a few meetings with senior managers I realized that using qualitative information in accounting was not that confusing. We were able to register qualitative information. Thus, we monitored the accomplishment of qualitative and quantitative targets.¹⁰

The CEO explained that, from his perspective, the greatest challenge of the implementation was to collect relevant data on CS through DT and then to use that data in the accounting of the firm. According to the CEO, setting the targets was a complicated stage in the process of implementing DT because they were not sure about what data was relevant. The COO agreed with the viewpoint of the CEO. The COO explained that managers and accountants did not understand how the organization carried out their activities in the field. Thus, it was complicated for a manager or an accountant to interpret the data collected from the field. The COO explained during an interview:

⁹CFO, Interview, May 2019.

¹⁰Accountant, Interview, July 2019.

I think that the main problem was that managers and accountants and field workers did not speak the same language. Accountants would not know how to interpret the data that was collected from the field. Imagine that the data says that some trees are sick, how would the accountant interpret that and then register it in the accounting? It would be very complicated. In the end what we did was to be very careful on setting the targets by including tons of details on how to manage and register what we had in the reports. Also, it was very helpful that we [senior managers] worked closely with the accountants during the phase when we established the targets.¹¹

According to the collected information, in the organization studied, the target setting stage focused on establishing the relevant targets that the organization aimed to accomplish with the implementation of DT. Such targets included quantitative information but also qualitative information, which, according to senior managers, was critical in understanding the outcomes of CS. However, the biggest issue that the organization faced was to design targets that could be understood by both the accountants and the field workers of the organization. In the end, senior managers managed to set the targets by working closely with managers and accountants when setting such targets. When managers or accountants were confused, senior managers would help them to interpret the qualitative data in a useful manner.

Implementation Stage

The implementation stage in the organization studied started in January 2019. During this stage, senior managers in the organization studied intended to set the specific steps that would allow them to accomplish the targets stated during the previous stage. According to senior managers, this stage was even more complicated because “the previous stages existed only on paper, but now we had to put them in practice”.¹²

During the implementation stage of the DT process, senior managers focused on three dimensions: technology, CS practices and attitude. Technology referred to the technical requirements that the DT needed to be implemented. CS were what the CEO described as “what needed to change to make the business sustainable”.¹³ This second dimension focused more on changing institutional practices and was intended to redefine the way in which the organization operated. The final dimension, attitude, was mentioned by the five senior managers. The attitude dimension was intended to convince organizational members that the changes that were being implemented had a purpose and that its success would benefit the organization in the present and future. With all of these dimensions, there were challenges that the organization faced.

¹¹ COO, Interview, May 2019.

¹² CEO, Interview, May 2019.

¹³ CEO, Interview, May 2019.

During the implementation of the technology, the organization had to do important investments to acquire new technologies. For instance, the accounting software that the company was using was outdated and it was not able to generate real-time data. Furthermore, the organization had only one license for the old accounting software. Thus, there was only one person who could register journal entries, that is, the accountant. The sales manager explained the issues related to the accounting software.

Using the old accounting system was a problem. It was very complicated to register an operation, it relied totally on the accountant, so it was impossible for me to register anything. [...] Also, I could not generate reports because the only person who could do that was the accountant.¹⁴

Besides the problems with registering transactions, senior managers had the issue that whenever they needed a report they had to wait until the accountant had time to do it. For instance, when the organization applied for a grant in early 2018, senior managers reported that the government office asked the organization for several financial reports from the accountant. Senior managers argued that they asked the accountant for the reports, but it took him more than two weeks to complete the reports. The accountant argued that the report took longer than expected because he had to update important data before generating the report.

Due to the problems in the accounting software, senior managers believed that it would be necessary to acquire a new software as part of the implementation stage of the DT process. When choosing the new accounting software, senior managers asked managerial employees and the accountant for their opinion. According to senior managers, the most relevant features for the new software were the possibility of having multiple users, to be based on the Cloud, and that it could generate reports immediately. With such features in mind, senior managers decided to implement a new accounting software by January 2019. The CFO explained during an interview:

The accounting software was one of the most important technological acquisitions that we did. The software that we implemented solved a lot of the issues that we had in the past. By implementing this new software, we were able to generate reports immediately. Also, the accounting was updated because it did not rely only on the accountant. Now salespeople could register when the client paid or the finance department registered when we received merchandise. It was an important investment, but it solved a lot of problems.¹⁵

Another important issue within the technology dimension was related to the field where employees were cutting the trees. According to the COO, working

¹⁴ Salesperson, Interview, August 2019.

¹⁵ CFO, Interview, May 2019.

in the forest between trees and animals “has not changed in the last 30 years”.¹⁶ However, the COO also recognized that implementing technology in the field would help their employees and managers to have a better corporate view. The COO mentioned, as an example, that the organization was not aware of the illness that was affecting other trees close to where the firm was working. The COO explained that this lack of knowledge had led to problems in the past, as the organizational reports did not consider those threats. He added that by implementing technology, the organization was able to gather information from trees nearby. Thus, the organization reports would also include relevant information from nearby fields. In particular, the COO gave an example where the organization implemented the use of flying drones to get an aerial picture of the field and its nearby areas. He explained in detail during an interview:

A good example of the DT process and how it helped our CS efforts was the use of flying drones to get an aerial view of the nearby areas from where we were cutting trees. With such views, we were able to foresee possible threats to the health of our trees.¹⁷

The CEO added that implementing flying drones also allowed employees to have a better understanding of which trees they had to cut. He explained that sometimes tree cutters had problems understanding which trees were to be cut. With the aerial views provided by the flying drones it became clearer. Tree cutters got a picture captured by the flying drone and then a supervisor would specify which trees were to be cut. This process minimized the mistakes that had occurred in the past. The CEO explained in an interview:

By showing our employees the aerial picture of the trees that were to be cut, we made it very easy for them to understand the orders. This implementation solved a historical problem that we have had for several years.¹⁸

Finally, the CFO of the organization argued that the aerial view also helped him to complete the government reports. According to the CFO, the government asked for new mandatory reports with data about the status of the forest at the beginning and at the end of the year. He explained that such reports were difficult to complete, as counting trees was a time-consuming process. With the implementation of the aerial views, the problem was solved. The CFO explained that the flying drone could get a picture of the area and then with that picture they could prepare a report.

¹⁶ COO, May 2019.

¹⁷ COO, Interview, May 2019.

¹⁸ CEO, Interview, May 2019.

An Overview of the Digital Transformation Process

The DT process in the organization was intended to improve efficiency in the way that the company operated and to improve its work in CS and how the organization accounted for them. Based on the recorded evidence, the organization experienced three stages during this DT process. During the policy setting stage, senior managers identified the possible threats and identified the relevant stakeholders. While setting the relevant stakeholders, senior managers recognized the importance of the government as an external revisor. To fulfill the needs of the government, the company realized the necessity of improving CSA in order to produce relevant data and then to elaborate on the mandatory reports. Then, during the planning stage, senior managers stated the targets that were to be accomplished with the DT process. Such targets were quantitative and qualitative, and while setting the targets, relevant individuals in the organization were considered. The target setting focused mainly on accounting practices that would permit the collection of relevant information on time and the generation of the mandatory reports. Finally, the implementation stage focused on establishing the actions to take. At this stage, the organization focused on the implementation of a new accounting software and the introduction of novel technologies, such as the use of flying drones. These implementations affected the organization in its structure.

Discussion

The case study presented in this chapter allows us to answer the research question stated in the introduction. Some of the empirical findings highlight current theoretical assumptions while others might challenge these in order to expand the boundaries of the relevant literature. In particular, this chapter presents the following findings.

Firstly, evidence from the case study suggests that DT improves CSA. In the case study, the organization decided to implement DT in part because there was a stricter regulation by the government in terms of CS. Senior managers realized that the organization was not able to generate the required information in an efficient way. Thus, they decided to start with the DT process.

Senior managers recognized that the organization was not able to generate the information in time to fill the mandatory government reports. They added that through DT the organization would be able to generate the relevant data in the accounting of the firm. According to the evidence from the case study, the organization experienced a technological improvement that allowed them to generate the required information. In the end, the accountant of the firm recognized that the technological improvements allowed him to produce the CS reports (Perrini et al. 2011).

Secondly, the case study found that the DT process to improve CSA happened over at least three stages. Furthermore, during the process, not only were senior managers involved, but also managers and employees played an

important role at every stage. These findings are consistent with Hahn and Kühnen (2013) who argue that a CS system is not only the implementation of new practices and technologies, but a process of gradual change in the organization.

Another relevant finding from the case study is the use of quantitative and qualitative information in the CSA. These findings are also consistent with other studies that argue that qualitative information is important when accounting for CS endeavors. The use of such qualitative information allowed the organization to prepare better reports for the government, but also to improve their efficiency.

Thirdly, the case study revealed that senior managers believed that improving CSA was not only a matter of technology. Instead, senior managers argued that attitude played a critical role in the success of the implementation. These findings are somehow contradictory to some studies from the accounting literature in which the focus of an implementation is practices and technologies (Lozano and Huisingh 2011).

In the organization studied, senior managers found that besides focusing on the changes in attitude, it was important to have a coherent plan that involved several individuals in the organization. This approach also differs from some studies in accounting where institutionalizing new practices occurs in a top-down approach. In the case of the organization studied, part of the success in the process of DT was that individuals across the whole organization were involved from the policy setting stage until its implementation.

By analyzing the case study, it is possible to answer the research question stated in the introduction of this chapter. The DT process affects CSA by improving its efficiency through the use of new technologies, through a structured process that consists of three stages, and by considering changes in attitude and involving different organizational individuals in the DT process.

CONCLUSIONS

This chapter has three empirical observations. The first one is that DT fosters CSA. The findings are consistent with studies which suggest that DT provides an organization with the technological infrastructure to generate relevant and timely data to construct the necessary accounting. From the empirical findings it can be concluded that the use of technology allows the organization to produce relevant information on time in order to complete the government reports and to account for their CS endeavors.

The second empirical observation of this chapter is that DT, which aims to improve CSA, can be successfully implemented by following stages that start with the design and ends in the implementation. Following the CS system framework, researchers could identify the key stages on which the DT was carried out and its outcomes. These findings are consistent with Azapagic's (2003) idea that an implementation of a CS system requires order and logic.

Finally, the third empirical observation of this research is that, contrary to what some of the accounting literature suggests, CSA is not only about implementing technology. The empirical findings suggest that the successful DT process and its effect on CSA included a coherent planning and action by senior managers and other individuals in the organization. These findings suggest that CSA requires changes in attitude at the group and individual levels within the organization.

The practical contribution of this chapter can be applied by both practitioners and policy makers. Practitioners that read this chapter should acknowledge the role that DT has in CSA. It can be concluded that a DT process can be a good idea when a company is redefining its CS endeavors. Regarding policy makers, it can be concluded that promoting investments in technology which promotes DT can have a positive impact on CS.

Regarding the limitations of this research, it would be interesting to study what happened after the DT process. The organization will submit the new mandatory reports to the government by December 2020. Thus, it might be interesting to check the outcomes of these reports and if they met the criteria set by the government office. Furthermore, another possible study for the future can be a quantitative study measuring different companies that experienced a similar phenomenon to the one studied in this chapter. For such a study, this chapter should allow setting the relevant hypothesis to the test.

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APPENDIX

Table 33.1 Table of interviews

<i>Interviewee</i>	<i>Date of the interview</i>	<i>Length</i>
CEO	May 2019	79 minutes
CEO	Sep 2019	23 minutes
CFO	May 2019	68 minutes
CFO	Sep 2019	30 minutes
COO	May 2019	61 minutes
COO	Sep 2019	30 minutes
Accountant	July 2019	48 minutes
Salesperson	August 2019	52 minutes
Employee #1	August 2019	32 minutes
Employee #2	August 2019	42 minutes
Employee #3	August 2019	19 minutes
Manager #1	July 2019	44 minutes
Manager #2	July 2019	29 minutes
Government officer #1	July 2019	78 minutes
Government officer #2	July 2019	18 minutes
External accountant	July 2019	27 minutes

Source: Authors' creation

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Climate Change Disclosures in Different Cultures: A Study of Sustainability Reports

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INTRODUCTION

The digitalization that is currently fueling increased use of information and communication technologies (ICT) in our life is a key tool for companies to remain competitive and to maintain effective communication with stakeholders. While digitalization creates new businesses and new jobs, it also produces additional risks for economy, society, and environment. Among the risks, effects on the environment, especially climate change, necessitate specific attention (Ciocoiu 2011) because it is increasingly accepted that climate change is the most significant environmental issue that we face today (Norton and Leaman 2004).

Digitalization causes environmental effect by consuming resources in the production of PCs, tablets etc., and by consuming energy in running the digital infrastructure (Rappitsch 2017). Digitalization contributes to greenhouse gas (GHG) emission and climate change both directly and indirectly (Bieser and Hilty 2018). So, digitalization of world will lead to an increased demand for energy.

Not only digitalization but also climate change forces companies to transform themselves and their products in order to survive (Brännlund and Lundgren 2009). For that reason, firms have to have strategies to comply with digitalization and to address climate change risk factors, the latter being the most important environmental issue that concerns business in recent years (Lee et al. 2015; Jose and Lee 2007; Kolk 2008). In the same vein, companies manage their legitimacy by disclosing to stakeholders their operations' non-financial results, namely

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social and environmental effects, via corporate reports. The non-financial performance disclosure represents a strategy that companies can use to satisfy expectations from multiple stakeholders (Michelon and Parbonetti 2012).

Various characteristics (company size, environmental strategies, financial performance, firms' reputation etc.) can affect disclosure in corporate reports. The relationship between characteristics and climate change disclosure, especially in sustainability reports, has been investigated in several studies (Amran et al. 2011). Not only company characteristics but also national culture, with characteristic views and customs dealing with accounting issues or distinctive management behavior (Khlif 2016; Dragomir 2012) can be an important factor in corporate disclosure (Khlif 2016; Dragomir 2012).

The purpose of this chapter is to examine the relationship between cultural dimensions and the extent of climate disclosures in the sustainability reports of worldwide companies from six nations: the United Kingdom, Italy, Germany, France, Spain, and Turkey. The companies were selected from the energy sector, a sector that has a relatively good environmental performance and is at the center of the debate on climate change (Batruch 2017). The majority of greenhouse gases are produced in the energy sector (Birol 2019) and increasing energy-related carbon emissions make it increasingly difficult for humans to deal with global climate change. Energy-related emissions showed an increasing trend from 2014 to 2018. Especially in energy sector, companies can make progress in efficient use of energy resources and focus on renewable resources. By cutting down emissions, they can become more competitive and create high-performance jobs in the sector (Verhaar 2020).

This study has some contributions to make to this area. Firstly, it provides a critical assessment of sustainability reports that originate from different cultural values. Secondly, it discusses the role of national culture climate change disclosures, therefore Hofstede's cultural dimensions were used for analyzing climate change disclosures; specific keywords are selected based on previous studies in climate change reporting.

This study is structured as follows: Section "Climate Change Disclosures" discusses climate change disclosures; Section "Culture and Climate Change Disclosures" looks at the role of culture on disclosures; Section "Method" presents an account of research design and method before the research findings, their implications and limitations are examined.

CLIMATE CHANGE DISCLOSURES

The United Nations Framework Convention on Climate Change (UNFCCC), established in 1992, was the first international agreement on climate change. Later, with the adoption of the Kyoto Protocol in 1997 and the Paris Agreement in 2015, related parties came to support a global response to the threat of climate change. In the 2015 Paris Agreement, world nations took an important step to reduce greenhouse gas emission (GHG) and keep global warming below 2 °C. Companies also carry responsibility to deal with climate change (Comyns 2018). In analyzing earlier studies of corporate responses to climate change,

sectoral differences, varying time horizons and strategies objectives have to be taken into account (Weinhofer and Hoffmann 2010). Most large companies dedicate time and resources to climate change and environmental disclosures (Dawkins and Fraas 2011), and there are also pressures and demands from various stakeholders to report information regarding climate change (Haque and Deegan 2010). Specifically, investors who control huge assets for investment are a powerful and influential stakeholder group for companies, and they wish to obtain information about climate-related risks and strategies (Cotter and Najah 2012). The pressure of investors and environmental groups on firms to disclose their actions in managing climate change force voluntary disclosure of information (Ben-Amar and McIlkenny 2015). Corporate climate change disclosure is important in dealing with the problem, since repeated disclosure will present evidence about corporate learning about climate change and to satisfy stakeholders' expectations and concerns (Topping 2012).

The Carbon Disclosure Project (CDP) is an initiative that requests information on climate change from the world's largest companies (Berthelot and Robert 2011). In 2018, 6937 companies reported through CDP, measuring their climate-related risks and opportunities (CDP 2018). CDP identifies climate change as the "single biggest risk that exists to the economy today." Climate change reporting is a non-financial reporting practice, a subset of corporate environmental reporting, and it provides insight into climatic data used to guide organizations' approach to climate change issues (Ooi and Amran 2018).

Climate change disclosures carry some types of risk – regulatory, physical and other risks and opportunities associated with climate change, greenhouse gas (GHG) emissions, energy use, corporate governance and strategies, emission-reduction strategies. Companies can disclose information in annual reports, sustainability reports and their websites (Cotter and Najah 2012).

CULTURE AND CLIMATE CHANGE DISCLOSURES

Diverse environmental factors such as the national economy, capital markets, accounting framework and culture influence the disclosure practices adopted by companies (Haniffa and Cooke 2002). In order to understand trans-country differences, shared values, beliefs, expected behaviors that are deeply embedded, unconscious and often irrational, collected under the heading of culture, can drive the disclosure of information in company reports (Hooghiemstra et al. 2015). Different cultures, societal norms and regulations can affect reporting practices (Hahn and Kühnen 2013). For that reason, scholars and academics interested in accounting try to integrate cross-cultural differences in values to explain reporting practices (Han et al. 2010). Cultural differences based on Hofstede's (2001) dimensions have been widely investigated in accounting and disclosure research, and have been in use for many years (Dobler et al. 2016; Brewer and Venaik 2011).

There are six dimensions in Hofstede's study: Power distance, masculinity/femininity, uncertainty avoidance, individualism/collectivism, long-term orientation/short-term orientation, and indulgence/restraint. In this study, four

of Hofstede's dimensions – power distance (PD), individualism (IND), masculinity (MAS), and uncertainty avoidance (UAI) were used to generate comparisons. Power distance expresses how a society handles inequalities among its members. In societies with high power distance, people accept hierarchy. Hofstede defined individualism as follows: “Individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after her/his immediate family only” (Hofstede 2001: 225). The masculinity dimension of Hofstede centers on the observation that masculine societies tend to be competitive, more likely to behave in an assertive way, and focus on maintaining success (Williams and Zinkin 2008). Uncertainty Avoidance is “the extent to which a society feels threatened by uncertain and ambiguous situations by providing career stability, establishing more formal rules, not tolerating deviant ideas and behaviors” (Hofstede 1980: 46).

Gray and Vint (1995) found that the extent of information disclosure is positively correlated with individualism and masculinity and negatively correlated with uncertainty avoidance and power distance. On the other hand, empirical findings showed that uncertainty avoidance and individualism reveal a significant positive effect on disclosure practices when compared to power distance and masculinity (Khlif 2016). However, the relationship between the level of disclosure and Hofstede's cultural dimensions ought to be discussed in specific context (Santema et al. 2005; Cieslewicz 2014).

Thus, we stated the following research question:

RQ1: How do climate change disclosures in sustainability reports differ based on Hofstede's national culture dimensions?

METHOD

Sample

The main purpose of this chapter is to investigate climate change disclosures of selected companies in energy sector across six countries in the world and to analyze the national cultural differences in climate change disclosures of sustainability reports for the year 2017. The methodological approach is qualitative. Reports were obtained from Global Reporting Initiative (GRI) which hosts widely adopted global standards for companies. The selected companies were located in United Kingdom, Italy, Germany, France, Spain, and Turkey. The limitations for sample selection were: publishing the sustainability report in English, being a large company, and being based in one of the study nations. We analyzed only one annual report per company. There are 38 large organizations in energy sector for the year 2017 in the GRI database. National culture was ranked using Hofstede's individualism (IND), power distance (PD), uncertainty avoidance (UA), Masculinity (MAS). To compare the scores of countries, Hofstede's cultural survey tool was checked. Companies in the energy sector were selected, because climate change can influence the energy sector through supply and demand, and also have an effect on energy transportation and

Table 34.1 Company profile and culture scores

<i>Company name</i>	<i>Country</i>	<i>National culture scores</i>			
		PDI	IDV	MAS	UAI
Akenerji	Turkey	66	37	45	85
Cairn	UK	35	89	66	35
ERG	Italy	50	76	70	75
Iberdrola	Spain	57	51	42	86
Linde Group	Germany	35	67	66	65
Rexel	France	68	71	43	86

Source: Authors' creation based on GRI and Hofstede's study (GRI Sustainability Disclosure n.d., Hofstede Country Comparison n.d.)

All companies operated in the energy sector
All reports published in 2017

infrastructure (Schaeffer et al. 2012). According to the World Bank Climate Change Knowledge Portal, this sector is linked with climate variability and change through the emission of greenhouse gases (Climate Change Knowledge 2019). Table 34.1 presents companies studied and culture scores of the study nations.

We obtained the climate-change related information from companies' sustainability reports for the year 2017. Among the countries, France has the highest power distance and uncertainty avoidance scores, UK has the highest individualism score and lowest uncertainty avoidance score, Italy has the highest masculinity score, Spain has the highest uncertainty avoidance score with France. Germany has the lowest power distance score, Turkey has the lowest individualism score.

CONTENT ANALYSIS

Content analysis has been used to assess and explore the extent and nature of climate change disclosures. The coding instrument was used to measure the quantity of disclosure in sustainability reports. Table 34.2 lists studies from 2010 to 2019 that used key words related to disclosures on climate change. Climate-related disclosures in these studies, were analyzed to understand the factors that influence the disclosures in different cultures. However, culture indirectly influences climate disclosures as a specific context. Based on these studies (De Aguiar and Bebbington 2014; Kouloukoui et al. 2018, 2019; Kılıç and Kuzey 2019; Haque and Deegan 2010; Amran et al. 2014), 13 keywords were selected to analyze the sustainability reports and the information about climate disclosures in these reports:

- Carbon
- Carbon footprint
- Carbon management system
- Carbon pricing and trading
- CDP Climate Change and Water Program

Table 34.2 Studies on key words related to disclosure on climate change

Title	Kouloukoui et al. (2019)	Kouloukoui et al. (2018)	Haque and Deegan (2010)	Amran, Periasamy, and Zulkafli (2014)
Disclosure on climate change: Analysing the UK ETS effects	Factors influencing the level of environmental disclosures in sustainability reports: Case of climate risk disclosure by Brazilian companies Brazil	Disclosure of climate risk information by the world's largest companies	Corporate climate change-related governance practices and related disclosures: Evidence from Australia	Determinants of climate change disclosure by developed and emerging countries in Asia Pacific
Country	Brazil	China, USA, Germany, Ireland, Denmark, UK	Australia	China, Hong Kong, India, Indonesia, Japan, South Korea, Philippines, Singapore, Taiwan, Thailand, Malaysia, Australia, New Zealand

Key words	Emission Trading Greenhouse · Gas Climate Global Warming Kyoto Carbon Dioxide (CO ₂) Methane (CH ₄) Nitrous Oxide (N ₂ O) Hydrofluorocarbons (HFC) Perfluorocarbons (PFC) Sulphur Hexafluoride (SF ₆) Water vapor (H ₂ O) Ozone (O ₃) Carbon Monoxide (CO) Volatile Organic Compounds (VOC) Sulphur Dioxide (SO ₂) Nitrogen Oxide (NO _x = NO+N ₂ O) Hydrogen (H ₂) Aerosol Clouds	Climate risk Floods Carbon footprint Physical risk Natural disasters GHG protocol Regulatory risk Floods Environment Competitive risk Storm Pollution Legal risk Global warming Greenhouse gas Reputation risk Emissions Climate change Climate management CO ₂	Regulatory Risk Physical Risk Competitive Risk Legal Risk Reputational Risk Mitigation Adaptation Opportunities Climate Risk Climate Changes	Climate change policy/policies Actions Loans at lower prices to clients reducing GHG emissions Loans at lower prices to projects on renewable sources Incorporating environmental issues in lending policies and special advisory services related to climate change Board committee Use of new technologies Waste disposal Water consumption Energy conservation Building improvements Refrigeration and air-conditioning improvements Travel reductions Employee training Sponsorship GHG emissions and energy consumption accounting GHG methodology External verification Total GHG emissions GHG emissions by scopes GHG emissions by sources GHG emissions by facilities The comparison of GHG emissions with previous years Total energy consumption Energy consumption by type, facility, or segment Strategic planning Targets to reduce GHG emissions Targets to reduce energy consumption	Board oversight Senior management engagement and responsibility Emissions accounting Research and Development Potential liability Reduction Reporting/Benchmarking Carbon pricing and trading External affairs	Mention of global warming or of the Kyoto Protocol. Firm's plan to deal with global warming and the objective to control global warming. Potential costs to achieve the global warming objectives. Current costs to reduce GHG emissions Information on the extent of GHG emission
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(continued)

Table 34.2 (continued)

	De Aguiar and Bebbington (2014)	Kouloukoui et al. (2019)	Kouloukoui et al. (2018)	Kılıç and Kuzey (2019)	Haque and Deegan (2010)	Amran, Periasamy, and Zulkafri (2014)
Sample	32 organizations	67 companies	100 large companies in the world	52 banking organization	5 companies	111 companies
Findings	UK ETS was correlated with disclosure differences.	Climate risk disclosures are positively related to firm size, financial performance, and country of origin	There is a low level of disclosure about climate risks by companies in the sample.	The findings prove that some banks are not incorporated with climate change-related issues	There is an increasing trend in companies' climate change-related corporate governance disclosures.	Independent non-executives on the board of directors and firm practices would increase the climate change disclosure in their sustainability reports

Source: Authors' creation based on previous studies

- Climate
- Climate (change) management/policies/procedures
- Climate change
- Climate risk
- Emission
- GHG (Greenhouse gases)
- Energy conservation/consumption
- Kyoto

Reports were published in different languages; but all analysis of sustainability reports was conducted on English-language versions.

RESULTS

Descriptive Statistics

Table 34.3 represents the descriptive statistics of keywords in the six 2017 sustainability reports. It can be observed that the sample consists of 105 climate change-related keywords for the Turkish company, 163 for the UK company, 191 for the Italian company, 371 for the Spanish company, 260 for the German company and 32 for the French company.

The extent and content of climate change information disclosed in the sustainability report of the Spanish company is higher than any other company. The French

Table 34.3 Descriptive statistics of keywords in sustainability reports

<i>Keywords</i>	<i>Ak Enerji (Turkey)</i>	<i>Cairn (UK)</i>	<i>ERG (Italy)</i>	<i>Iberdrola (Spain)</i>	<i>Linde (Germany)</i>	<i>REXEL (France)</i>
Carbon	–	2	19	3	3	–
Carbon management system						
Carbon pricing and trading (Carbon certification and emission trading)						
Carbon footprint	3	16	20	19	25	5
CDP Climate Change and Water Program	16	–	3	–	–	–
Climate (change) management/ policies/procedures	1	3	2	5	–	–
Climate (change) risk	–	9	1	–	2	–
Climate change	17	60	31	88	3	2
Emission(s) GHG (Greenhouse gases)	38	49	99	203	160	18
Energy conservation/ consumption	11	2	–	33	24	2
GHG (Greenhouse gases)	19	22	15	20	41	5
Kyoto	–	–	1	–	2	–
Total	105	163	191	371	260	32

Source: Authors' creation based on sustainability reports

company has the lowest disclosure score. The most common term used in sustainability reports is Emissions, followed by Climate change and Greenhouse gases.

The findings show that companies are mostly concerned with the reduction of emissions. On the other hand, companies specifically do not focus on the CDP Climate Change and Water Program. In terms of which section of the report houses climate-change related disclosures, the descriptive findings indicate that the disclosed information about emission is housed in sections dealing with the organization/company profile, the CEO statement/letter to stakeholders, economic responsibility, environmental responsibility, or social responsibility sections. The climate change term is generally discussed in the sustainability approach, business relationship, company profile, letter to stakeholders, or key figures sections. Details about disclosures are presented in the Appendix.

MAIN RESULTS

Culture and Climate Change-Related Disclosures

According to Hofstede's (2001) cultural dimensions, France has the highest power distance score among the sample. Cultures with high power distance have great inequalities of power and wealth. In previous studies, it was found that power distance was negatively correlated with disclosed information. This implication was supported by this analysis. Disclosed information in the French company report was limited. Specifically, the company focused on emissions and GHG, and has targets to reduce GHG emissions by focusing on the energy performance of buildings and transportation. Carbon (footprint) is another term which is frequently disclosed in sustainable development, responsibility and environmental policy sections of sustainability reports. A sample quotation is shown below;

Reduce the carbon footprint of its operations by at least 30% (compared to 2010).

In 2017, Rexel also strengthened its efforts to shrink its global carbon footprint by assessing the carbon emissions of its entire value chain.

Uncertainty avoidance is high in Spain and France, and it seems to have a positive effect on disclosure practices. The total amount of information disclosed by the Spanish company is high. Climate change is the most used second climate change-related keyword in the Spanish company's sustainability report. A quotation:

This position was ratified in 2017 with our active presence at the Bonn Climate Summit, where it became clear that this is the time to move from words to action to progress in the energy transition towards a sustainable, safe and competitive model that replaces production from polluting sources with clean energy and intensifies the electrification of the world economy.

We observed a negative relationship between uncertainty avoidance and disclosure of information in the French company.

According to Hofstede's (2001) cultural dimensions, Italy's masculinity score is high. In general, the masculinity dimension has significant negative effect on

disclosure level. For the Italian company, the relationship between masculinity and the amount of disclosed information is not clear, compared with the rest of the sample. Carbon, Carbon management system, Carbon pricing and trading, Carbon certification and Emission trading keywords are more obviously disclosed in the company's sustainability report. A sample quotation is given below:

In March 2018 the Group presented its new business plan: a 5-year project that involves important developments in the renewable energy production sector, enabling us to further reduce the carbon intensity of our energy production, an index we have already managed to reduce by 89% in the last ten years.

For Turkey, there are mixed results when Hofstede's dimensions are compared to the sample. As is the case for France and Spain, uncertainty avoidance is high in Turkey. It reflects the society's level of tolerance for ambiguity; people experience high stress and need predictability in this environment. In the Turkish company's disclosures we found that it makes investments in renewable energy, strives to increase environmental awareness, adopts high-efficiency and low-emission targets in existing systems. Among the sampled companies, the Turkish company has the highest number of disclosures mentioning the CDP Climate Change and Water Program. It is stated that

Carbon Disclosure Project (CDP) Turkey 2017 Water Leadership Award granted to us as the result of the steps we have taken as Akenerji about water which holds an important place in the future of the world and our work in this area, has the first place as the greatest achievement we want to share with you.

In 2016, Akenerji continued being the one and only electricity generation company to participate in the CDP Turkey Water Program.

The study reveals that the German company appears to make climate change disclosures with the keywords emissions, greenhouse gases, carbon footprint, and energy conservation/consumption. The German company is a truly individualist one, there is a direct and participative communication style, and dominant values appear. For example, on energy conservation/consumption:

In 2017, we identified more than 170 projects worldwide that helped reduce our energy consumption and CO₂ emissions – for example, by using more efficient compressors and by exchanging valves.

Our energy consumption increased by around 8 percent in 2017 compared with 2016. The increase in our energy consumption over the past few years is mainly due to the expansion of our business operations.

Among the sampled companies, the UK has the highest individualism score. According to Hofstede, British people try to find out what their personal purpose in life is and how they uniquely can contribute to society. It is stated in UK companies' sustainability report that

We also recognise that balancing the need for energy and reducing greenhouse gas (GHG) emissions will require efficient use of energy and the full utilisation of both conventional and innovative sources of energy into the foreseeable future, particularly if energy is to remain affordable and accessible in developed and developing countries.

DISCUSSION

Climate change has become one of the most important risk factors for companies around the world. Many stakeholders now demand climate change related information and policies from the companies, and their number has been increasing in the recent years. In particular, the interest of large institutional investors in climate change-related risk has forced companies to provide wide-ranging climate-related information in their corporate reports. It is also important to bear in mind that national culture will affect companies' disclosure practices and stakeholders' information demands.

In this chapter, we have discussed climate change disclosures in different nations by analyzing sustainability reports. It makes contributions to the growing literature on climate change disclosure, and reveals that there are a number of implications for future studies. Firstly, the study assesses sustainability reports of companies from six different cultural values. Climate change disclosures enables companies to call attention to their environmental responsibility and take the support of key stakeholders. Secondly, the paper discusses the relationship between cultural dimensions and companies' climate-related disclosures.

This chapter reveals significant differences among countries in disclosing climate change. Based on Hofstede's study, the countries in the sample have different cultural values. Turkey has the lowest individualism score while Germany has the lowest power distance score. On the other hand, France has the highest power distance and uncertainty avoidance scores, UK has the highest individualism score and lowest uncertainty avoidance score, Italy has the highest masculinity score, and Spain and France jointly have the highest uncertainty avoidance score.

According to the content analysis, companies from two countries, namely Spain and Germany, display strong practice in disclosing information about climate change in their sustainability reports. The clear similarities between the two countries lies in the prominence of emissions related disclosures in their sustainability reports. On the other hand, the French company shows poor performance in this context. France is classified as a high power distance nation, and its disclosing practice is weaker than other nations in this sample. In the UK, individualism is high. While in some studies, individualism has been linked to a positive effect on disclosure practice, in other studies it has been associated with a negative effect on reporting. In this sample, the UK company disclosed limited information in its sustainability report.

This research has certain limitations. The study results are limited to a selected sample of only six nations, and analyzed large firms in the energy sector by looking at their sustainability reports. Therefore, result of the study cannot be generalized to other sectors and countries.

It might be suggested that companies can expand their set of communication tools to disclose more and increasingly detailed climate change-related and risk-related information. The role of other variables such as corporate governance, firms' characteristics, or financial indicators can shape and influence climate change-related disclosing practice in research models. Also, the effect of disclosing climate change on environmental impacts, corporate reputation, and well-being of society can be analyzed.

APPENDIX: RELATED SECTIONS AND EXAMPLES OF DISCLOSURES ON CLIMATE CHANGE

Table 34.4 Turkey and UK

Keywords	Ak Enerji (Turkey) Report section	Examples
Emission(s) GHG (Greenhouse gases)	Company profile Initiatives provided, Active participation, Responsibility in our value chain, Environmental responsiveness) Sustainability approach and management Environmental policy Sustainability performance and goals GRI-Index	Since 2011, we have been regularly reporting, on a voluntary basis, our climate change adaptation Strategies and greenhouse gas emission management within the framework of the most reputable and global environmental initiative of CDP Climate Change Program, which is an international corporate platform for companies to voluntarily disseminate their strategies towards climate change. Adopting high efficiency and low emission targets in power plants, modern and environmentally Friendly technologies are preferred in order to obtain the highest possible operational efficiency and innovations are made in existing systems.
Carbon footprint	Environmental responsiveness Responsibility in our value chain	Akenerji provides emission reduction certificates, by its renewable energy investments, accredited by internationally recognized institutions to customers with high environmental awareness who aim to minimize or end carbon-footprinting generated by electricity use and other reasons, and enables their electricity usage to be carbon-neutral.
Climate change	Company profile Dialog with Stakeholders Sustainability approach and management Environmental responsiveness Sustainability performance and goals GRI-Index	Annual reports within the scope of Akenerji Sustainability Report, CDP Climate Change and Water program are issued to the public. We reply to inquiries of the responsible investors on the performance and practices of Akenerji. Annual reports within the scope of the Akenerji sustainability report, CDP Climate Change and Water program are issued to the public.
Climate (change) management/ policies/ procedures Energy conservation/ consumption	Environmental responsiveness Environmental responsiveness GRI-Index	Being aware of the importance of climate change in the energy generation sector, Akenerji has created an environment and climate strategy within this scope and carries out its operations and investments within this strategy. In Akenerji, a large part of energy consumption includes also the conversion of natural gas to electricity.

(continued)

Table 34.4 (continued)

Carbon Carbon management system Carbon pricing and trading Carbon certification and emission trading	Sustainability approach and management Environmental responsiveness Sustainability performance and goals	To follow up, report and verify our greenhouse gas emissions with our Carbon Management System that we have set up. With this strategy, it has placed in the center of its operations and investments the use of modern and environmentally friendly technologies in energy generation, investing in renewable energy sources, carbon neutral electricity supply investments for customers who are aiming to reduce or neutralize its emissions.
CDP Climate Change and Water Program	Message from CEO Company profile 2017 in short Dialog with stakeholders Environmental responsiveness Sustainability performance and goals	Carbon Disclosure Project (CDP) Turkey 2017 Water Leadership Award granted to us as the result of the steps we have taken as Akenerji about water, which holds an important place in the future of the world and our work in this area, has the first place as the greatest achievement we want to share with you. In 2016, Akenerji continued being the one and only electricity generation company to participate in the CDP Turkey Water Program.
Keywords	Cairn (UK)	Examples
Emission(s) GHG (Greenhouse gases) Climate (change) risk	Report part CEO statement Approach Environment About this report Business relationship Environment	Following discussions with stakeholders, both internal and external, as well as our own risk management process, we identified the following material issues: ... Climate change, emissions and discharge. Climate change risk and reporting As such, the climate change risks pertaining to our assets in the UK and Norway, which include our non-operated development projects Kraken and Catcher, are well understood but changes will result from the next round of the scheme. For example, long-term innovation may take the form of low emissions technology and carbon capture. We do not use an internal cost of carbon on the basis that it is not material to our projects at this time but we continue to factor costs into our due diligence and investment proposal processes as necessary; it is an area we continue to monitor to ensure we understand trends and implications.
Carbon (footprint)	Environment	We strengthened the assessment of risks within our IPS during 2017 to include a standardised approach to the evaluation of modern slavery and climate change risks. In 2017, we reviewed the position taken by key investors on climate change to understand related risks to our business.
Climate change	CEO statement Approach Business relationship	The variety of topics is wide and in 2017 included company strategy, financial position, human rights, modern slavery and climate change.
Climate (change) management/ policies/ procedures	Approach Environment	

(continued)

Table 34.4 (continued)

Energy conservation/ consumption	Environment	The International Energy Agency (IEA) World Energy Outlook 2017 indicates that between 2015 and 2040 world energy consumption is likely to increase by 28%.
Carbon management system Carbon pricing and trading Carbon certification and emission trading	Environment	Potential strategic issues include emissions control restrictions (e.g. Trading and permitting, levies), potential for stranded assets, securing access to finance, licence to operate, and adaptation by countries and communities (e.g. due to rising sea levels or change in environmental conditions affecting communities) to the impact from climate changes.

Source: Authors' creation based on sustainability reports

Table 34.5 Italy and Spain

Keywords	ERG (Italy) Report part	Examples
Emission(s) GHG (Greenhouse gases)	ERG and sustainability Economic responsibility Environmental responsibility Social responsibility Data and indicators	The technology underlying the burners, also fuelled solely by methane, permits the achievement of high levels of efficiency and low emissions. [T]he Agreement formally came into force, committing signatories to adopt concrete plans to monitor and reduce
Kyoto	Environmental responsibility	Subsequently, the Kyoto agreements and the consequent commitments to renewable energies gave rise to an environmental approach concentrated on the systemic use of energy.
Climate (change) risk	Governance	The “climate change” risk was included in the Risk Catalogue and the associated risk profile Was analysed, assessing its impact on the medium/long term.
Carbon (footprint)	Letter to stakeholders ERG and sustainability Economic responsibility Environmental responsibility	In March 2018 the Group presented its new business plan: a 5-year project that involves important developments in the renewable energy production sector, enabling us to further reduce the carbon intensity of our energy production, an index we have already managed to reduce by 89% in the last ten years.
Climate change	Letter to stakeholders ERG and sustainability Economic Responsibility Environmental Responsibility	Our goal is to do business in a sustainable way, in line with the decarbonisation policies that the international community continues to adopt in order to combat the phenomenon of climate change. GOs are a very important certificate, not only for the producer but also for customers: companies that make environmental awareness and reduction of climate impact key points in their strategies can affirm that their production does not generate indirect emissions (so-called Scope 2), qualifying their product as even more sustainable.

(continued)

Table 34.5 (continued)

Climate (change) management/policies/procedures	Environmental responsibility	In fact, our business strategy, focused on the production of energy from renewable sources, in line with the indications of COP 21, views respect for the environment and transparency towards our stakeholders as key elements in combating climate change
Energy conservation/consumption	Economic responsibility Environmental responsibility Data and indicators	In 2017, we tested the service directly with one of our industrial customers in the food sector, which used the system to align its energy consumption to the productions of two ERG hydroelectric plants (Galletto and Salto) and two wind farms (Bisaccia and Ginestra).
Carbon management system Carbon (Emission) pricing and trading Carbon certification and emission trading CDP Climate Change and Water Program	Letter to stakeholders Economic responsibility Environmental responsibility ERG and sustainability Economic responsibility	In March 2018 the Group presented its new business plan: a 5-year project that involves important developments in the renewable energy production sector, enabling us to further reduce the carbon intensity of our energy production, an index we have already managed to reduce by 89% in the last ten years. ERG received A- rating from CDP (improving the B rating achieved in 2016). In 2016, the “Oscar di Bilancio” award (for the “detailed representation of the transformation process”) and the “Best Newcomer Italy” award from the CDP (Carbon Disclosure Project) for our reporting on the Measures and strategies adopted in the fight against Climate Change.
Keywords	Iberdrola (Spain)	Examples
Emission(s) GHG (Greenhouse Gases)	Report part Letter from Chairman & CEO Iberdrola’s contribution to the Sustainable Development Goals GRI Content Index Organizational profile Governance Stakeholder engagement Reporting practice Topic-specific disclosures: Economic dimension Topic-specific disclosures: Social dimension	We have thus increased our emission-free installed capacity to more than 32,000 MW, 67% of our total capacity. This has allowed us to avoid the emission of 63 million tonnes of CO ₂ over the last three years. ... Prevent pollution by gradually reducing the intensity of greenhouse gas emissions This is set out in the current Strategic Bonus 2017–2019 approved by shareholders at the General Shareholders’ Meeting of 31 March 2017, which makes the reduction of CO ₂ emissions a strategic goal.

(continued)

Table 34.5 (continued)

Carbon (footprint)	Iberdrola's contribution to the Sustainable Development Goals Organizational Profile Strategy Stakeholder engagement Topic-specific disclosures: Economic dimension Topic-specific disclosures: Environmental dimension	The company has set the following environmental goals: achieving a 50% reduction in the intensity of its CO ₂ emissions by 2030, as compared with the emissions of 2007; and reaching the goal of becoming carbon-neutral by 2050. Today, the group is perfectly positioned to take advantage of the following opportunities, among others, thanks to its leadership in renewable energy and its commitment to the transition towards a low-carbon economy:.
Climate change	Letter from Chairman & CEO	This position was ratified in 2017 with our active presence at the Bonn Climate Summit, where it became clear that this is the time to move from words to action to progress in the energy transition towards a sustainable, safe and competitive model that replaces production from polluting sources with clean energy and intensifies the electrification of the world economy
Climate (change) management/policies/procedures	Iberdrola's contribution to the Sustainable Development Goals Organizational profile Strategy Topic -specific disclosures: Economic dimension Topic-specific disclosures: Environmental dimension	Iberdrola has linked the SDGs to its business strategy and its <i>Sustainability Policy</i> as seen in the image below: In relation to climate change, the group recognizes the seriousness of the threat that global warming entails, which must be faced in a collective and coordinated manner by governments, multilateral agencies, the private sector and society as a whole. Along these lines, the company undertakes to assume a position of leadership in the fight against climate change and to develop the following principles of conduct, among others
Energy conservation/consumption	Iberdrola's contribution to the Sustainable Development Goals Topic Specific disclosures: Economic dimension Topic -secific disclosures: Environmental dimension Annexes	The company has a <i>Policy against Climate Change</i> , approved by the Board of Directors, in which the company commits to supporting international conventions to address this environmental problem, encouraging the development of efficient technologies from the standpoint of greenhouse gas emissions, boosting efficient energy use and increasing its customers' awareness of the importance of engaging in responsible energy consumption.
Carbon management system Carbon pricing and trading Carbon certification and emission trading	Organizational profile Topic-specific disclosures: Economic dimension Topic-specific disclosures: Environmental dimension	Once again, the company played a very important role with the <i>Moving for Climate NOW</i> initiative and with its participation in the main events and meetings of the organisations meeting in Bonn (UN Framework Convention for Climate Change, World Business Council for Sustainable Development, Carbon Pricing Leadership Coalition, UN Global Compact, etc.), energetically supporting the goals previously agreed to in Paris, which agreement entered into force in November 2016.

(continued)

Table 34.5 (continued)

CDP Climate Change and Water Program	Letter from Chairman & CEO Topic-specific disclosures: Economic dimension	This commitment to sustainability has resulted in our continuing to lead for yet another year prestigious indexes such as FTSE4Good, CDP Climate Change and the Dow Jones Sustainability Index, Iberdrola being the only European electricity company to be included in its 18 editions. Iberdrola commits to the transparency and communication of its climate change policies and is taking the steps needed to reduce emissions (category A within CDP Climate Change).
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Source: Authors' creation based on sustainability reports

Table 34.6 Germany and France

Keywords	Linde (Germany) Report part	Examples
Emission(s) GHG (Greenhouse gases)	Our business model Stories CEO statement Sustainability at Linde Safety (Transport) Environment Key Figures	28.4 m tonnes direct and indirect greenhouse gas emissions The best way for us to protect the climate is to ensure CO ₂ emissions are not generated in the first place. We will achieve significant reductions in emissions by the end of this decade as a result of efficiency measures in our own plants. We are working, for instance, on numerous projects designed to increase energy efficiency. To give an example from our own processes, we were able to reduce local CO ₂ emissions in 2017 by around 10,000 tonnes per year as a result of the overhaul of an air separation plant in China.
Kyoto	Environment (Energy & climate protection)	This includes greenhouse gases specified in the Kyoto Protocol: methane (CH ₄), nitrous oxide (laughing gas, N ₂ O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF ₆) and nitrogen trifluoride (NF ₃). In 2014, Linde has refined the determination method of the indicator for these GHGs to include additional emitters and emission sources. The reported figure for 2013 was recalculated based on this new method.
Climate (change) risk	Environment (Energy & climate protection) Key Figures (GRI & Global Compact Index)	Climate risks in the Group risk management Financial implications and other risks and opportunities due to climate change
Carbon (footprint)	Stories Sustainability at Linde (Sustainability management) Safety (Production)	Since February 2017, this plant has been operating at full capacity, demonstrating that the Large-scale deployment of carbon capture and utilisation (CCU) not only makes ecological sense but is also a attractive from an economic perspective.

(continued)

Table 34.6 (continued)

Climate change	Key Figures (GRI & Global Compact Index)	As a source for global warming potential, we use publications by the IPCC (Intergovernmental Panel on Climate Change).
Climate (change) management/policies/procedures	Sustainability at Linde (Sustainability management)	We combine long-term business success with ecological and social responsibility. Sustainability is therefore an important part of our Group strategy. That is why we constantly analyse the impact of our business operations on people and on the environment and incorporate sustainability topics in our core business. Our innovations and products enable us to make a contribution towards sustainable development and support our customers' efforts, for example, to increase their energy efficiency or reduce their emissions.
Energy conservation/consumption	Environment Environment (Energy & Climate Protection) Overview Key Figures (GRI & Global Compact Index) Further information	Target/goal: Identify projects with the potential to reduce energy consumption Optimal balance between energy consumption, cost effectiveness and environmental compatibility In 2017, we identified more than 170 projects worldwide that helped reduce our energy consumption and CO ₂ emissions – for example, by using more efficient compressors and by exchanging valves. Our energy consumption increased by around 8 percent in 2017 compared with 2016. The increase in our energy consumption over the past few years is mainly due to the expansion of our business operations.
Carbon management system Carbon (emission) pricing and trading Carbon certification and emission trading	Environment (Energy & Climate Protection) Further information	In 2017, we took part in the European Union's Emissions Trading System at ten of our hydrogen and synthesis gas production sites. There were around 1.2 million tonnes of CO ₂ emissions from these plants during the year. Our Group was allocated emissions allowances for around 0.9 million tonnes of CO ₂ . The remaining certificates were additionally procured.
Keywords	REXEL (France) Report part	Examples
Emission(s) GHG (Greenhouse Gases)	Landmarks (Highlights) Governance (Message from CEO) Commitments (Sustainable development) Performance (Environmental indicators) Responsibility (Our environmental policy)	In 2017, Rexel reduced its greenhouse gas emissions by 35.3% versus 2010 and thus surpassed its initial goal of –30% by 2020. In 2017, Rexel reached its 2020 goals in terms of reducing the greenhouse gas emissions of its operations (–35% vs. 2010) and selling energy efficient products and solutions (+100% vs. 2011). The objective of reducing the Group's carbon emissions by 30% (Scopes 1 and 2) was also achieved in 2017.

(continued)

Table 34.6 (continued)

Carbon (footprint)	Commitments (Sustainable Development) Responsibility (Our environmental policy)	Reduce the carbon footprint of its operations by at least 30% (compared to 2010). In 2017, Rexel also strengthened its efforts to shrink its global carbon footprint by assessing the carbon emissions of its entire value chain.
Climate change	Commitments (Sustainable development)	Energy management, a powerful lever for fighting climate change and protecting the environment, is a driver of economic growth and contributes to improving the comfort and safety of end-users.
Energy conservation/consumption	Commitments (Sustainable development) Performance (Environmental indicators)	The goal of doubling sales of energy efficient products and services was achieved in 2017. This significant growth was driven by Rexel's offering perfect match with one of its endmarkets structural trends: lower energy consumption

Source: Authors' creation based on sustainability reports

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Storytelling for Human Sensitivity, Compassion and Connection in Corporate Sustainability

Andrew Creed, Jane Ross, and Jack Ross

INTRODUCTION: SITUATING SENSITIVITY, COMPASSION AND CONNECTION

Our chapter will synthesize multiple strands of human knowledge from life as it has been lived in stories told by and gathered from 23 elder informants with immense experience and depth of knowledge, ranging from indigenous spiritual elders and leaders to elders highly positioned in the global science, medicine and political worlds. These stories are analyzed for their intersection with sustainability science and the human values of sensitivity, compassion and connection in the midst of environmental transformations (Lemoine et al. 2019). The key question is how can stories told of past organizational challenges enhance the human values of sensitivity, compassion and connection for current and future management? The current challenges of sustainability are tremendous in economic, social and environmental dimensions. Thus, the aim of the chapter is to present positive prospects for communication practice, reaching into the morals derived from elders' stories and finding ways to translate these to future business strategy. Presenting humanity through the ethnographic lenses of culture, creativity and place (Ross 2016), the chapter will

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generate an original matrix of storytelling morals passed along generations, combined with relevant dimensional analysis, for the benefit of present and future applications of sustainability.

Business, in its applied sense, is a constructive and creative trading mechanism for survival (Billsberry et al. 2018), expressing a system and a promise of hope about the capacity for people to attain the resources they need and want, while protecting and sustaining resources in the places of operation (Bansal 2019). Within ancient societies are similar expressions about exchange and growth through storytelling that communicate sensitivity, compassion and connection (Sharp 1952; Forth 2012; Zoogah et al. 2015; Neville and Coulthard 2019), thus providing moral direction for the people. For example, commerce and trade have long provided societies with need fulfilment (Akrong 2019) and it seems likely that innovative new goods and services will offer further solutions to difficult problems, albeit spawning new issues along the way. Toffler (1985) and Nelson (2015) are among futurists who arrive at realistically positive conclusions about humanity through continuous improvement of resource distribution methods, such as business, drawing from the foundations of wisdom built in the past. While the principles and activities of business clearly have environment implications (are anthropogenic), the causes and solutions for climate change have not always been appropriately attributed (Oreskes 2013; Rice 2013; Hall 2019) and it is, therefore, timely to explore particular aspects of studies of humanities for ways to augment the science of sustainability (Creed et al. 2014). Humans are both the causes of and the solutions for problems that have occurred before, and lessons from the past may be one of few hopes for sustaining ourselves through a significant crisis now and in the future.

Indicators from all periods of human lived experience in the stories we study will highlight positive ways to manage the crises that emerge for each generation. Our chapter will compile the most compelling story accounts from Ross (2016) and Clarke (2003) and augment this knowledge with wisdom and support from additional research. The analysis will occur through a unique conceptual framework built around dimensions of sustainability. We will conclude with a summation of the profound transformations in individuals, organizations and the environment and discussion of how best to adapt to accelerated changes, and manage organizations with a focus on a sustainable future informed by the lived, documented, analyzed and communicated experiences of our forebears.

WISDOM AS STORY KNOWLEDGE IN CULTURE, CREATIVITY AND PLACE

We need knowledge about how to address the current climate crisis and conduct business more sustainably (UNDP 2019). Knowledge can be a snapshot of data in a defined time, such as a statement of fact, or it may be represented as data in motion showing relational elements over a series of moments (Creed

et al. 2014). Science normally fits the snapshot kind of knowledge, while storytelling represents the relational kind of knowledge. In stories, we can derive morals and, indeed, elders and leaders in groups including families and organizations frequently utilize storytelling as a way of transferring and communicating wisdom and morality between the generations. The moral carrying capacity of a tale provides the storyteller with a vehicle to relay wisdom about relationships between people, artefacts, culture and processes, and it delivers to the listener some entertainment and engagement along the way. The organizational precedents for investigating and harnessing the power of storytelling are evident in research into human relations (Hansen and Kahnweiler 1993), digital innovation in cross-cultural contexts (Counted and Arawole 2015), leadership (Tucker 2013), career development (Mattila et al. 2019) and diversity (Sharaby 2019), among numerous fields.

In addition to the many narrative analysis techniques in literature (Mason and Simmons 2019), there are three structural dimensions that help for interpreting stories more effectively in business and sustainability, namely, culture, creativity and place. First utilized when scaffolding 22 rich and deep biographical accounts compiled by the social anthropologist (Cantab), Ross (2016), culture, creativity and place were the culminating variables from a combined ethnographic and hermeneutic methodology designed to draw essential experience from diverse elders, distilling their accounts into an artful and meaningful manuscript. These stories, framed through the three anthropologically refined dimensions, resonate with the sustainability elements of sensitivity, compassion and connection, as Fig. 35.1 and the subsequent methodological description reveal.

To expand the Ross (2016) concepts, culture is a woven cradle of assumptions, values and attitudes which symbolize and express the compassionate structure of groups and societies (Ross et al. 2013; Taggart 2016). Creativity is the expression of individual sensitivity imagined, interpreted and reimagined in ways that seek to extend and evolve (Zare and Zadeh 2013; Ross 2016; Jung 1964). Place is the essence of connection to space-time (Kaufmann 2014).

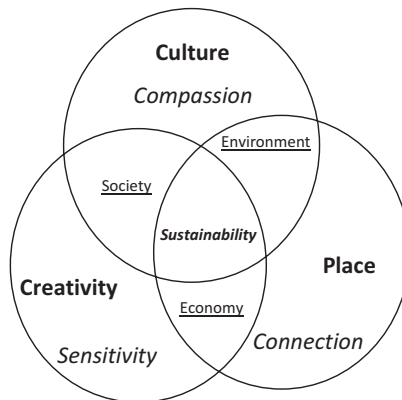


Fig. 35.1 The facets of sensitivity, compassion and connection in corporate sustainability. (Source: Authors' creation)

Each of these dimensions overlap and, in accordance with Fig. 35.1, we generated a conceptual framework upon which the story analysis in this chapter is developed. The purpose of the conceptual framework is to facilitate a constructive corroboration of the events and facts that are embedded in the stories for analysis.

The core of the conceptual framework in Fig. 35.1 is the Elkington (1997) construct of sustainability with its three petals representing economic, social and environmental elements. Around this we compose the unique dimensional alignment of creativity and sensitivity with place and connection to yield an overlap with economic sustainability. Likewise, creativity and sensitivity aligned with culture and compassion yield an overlap with social sustainability. Finally, place and connection aligned with culture and compassion yield an overlap with environmental sustainability. As a concept figure involving each element interacting with the other, none of these overlaps are intended to be mutually exclusive; however, they do illustrate weightings and leanings which guided our investigation. We proposed that natural tendencies and attractions would be more or less supported by the representations and it was from this conceptual framework that we were able to apply integrated story analysis as explained next.

THE METHODOLOGICAL MANUSCRIPT

Epistemologically, storytelling research is both interpretive and constructivist (Clandinin and Connelly 2010) requiring the participant researchers to reach, extrapolate, explore and build with patterned persistence from the emergent blends of facts and fictions. Ontologically, story interpretation as a research method is subjective, while still pivoting upon observations of facts. Notably, popular fictional stories remain strongly dependent upon believability of included facts, and it is only when facts are stretched too far in a story that it becomes unbelievable. The skillful extrapolation and embellishment of facts, so that they remain believable, is among the creative elements of storytelling, which is one of the vehicles by which knowledge becomes engaging and allows its import to transfer from teller to listener. It is useful to reiterate that stretching of facts, rather than leading to their destruction, is actually the essence of acclaimed stories. For instance, awarded movies such as *The Godfather*, *The Right Stuff* and *Dunkirk* are predominantly fictional in their drama but critically recognized for *tinged-with-truth* representations of emotions, ideas and actions emergent from those portrayed contexts. It is because of both the facts of the story and their dramatization that the transfer and communication of knowledge succeed. Furthermore, in stories that are essentially biographical, facts are an inherent part of the story design; thus we can rely with greater confidence on learning from such stories: hence the focus on biographical accounts in our research. It is appropriate to keep engaging with, or accepting if necessary, the biases built into good stories to attain the benefit of the truths that can be found hidden within the dramatic or performative mechanisms that accompany them.

In a research context, the method of reinterpreting stories involves an embrace of subjectivity to discern the seeds of objective facts in their context. Interpreting a story effectively therefore requires a framework of concepts for sense making to occur. Some research explores how a story is told and the resultant effects on the transfer of intention (Clarke et al. 2019). Our experience of stories used as research data in this chapter is that elders renowned for wisdom have often grown to be familiar with storytelling techniques that aid the subjective interpretation by listeners while maintaining integrity in their connection with observable facts. The challenge in our research lay, as always, with separating the drama from the core issues the stories were raising. The mechanism of a conceptual framework was essential in designing a methodology sufficient for discerning the intended messages of stories, especially in the scope of business and sustainability.

Narrative analysis (Lejano et al. 2019) and sense making through story analysis (Slovic et al. 2019) are prevalent and growing fields for corporate sustainability research. Stories are a cultural method designed to creatively capture knowledge and develop interpretations (Reissner 2011) which can then be passed between times, places and contexts (Mehta et al. 2013) as a knowledge transfer and communicative practice. Indeed, other kinds of technological systems that capture and carry forward lessons from the past have proven highly useful in various places and contexts. For example, the precedent case system of common law (McCall 2014), the building of computer coding since the first early programs (Berry 2006), the continuous improvement of automobile and aircraft design (Xia et al. 2016), and the evolution of organizational policies in bureaucracies (Chandler 1962) are among the systemic ways that lived experiences are captured and preserved for coming generations. Such examples are industrial and somewhat culturally bound ways that experience is captured and transferred so that the intended improvement and development occur. Storytelling might be perceived as having broader interpretive capacities (Łyszczarz 2014; Boje 2019). Good stories can be linked to particular cultures but their moral foundations often have wider appeal cross-culturally. Religious stories, for instance, have been embraced in global contexts and across many cultures for centuries. Epic tales from India and the Arab world, Greece, Africa, Polynesia, Japan, China and indigenous North America and Australia, among many others, have been very successfully translated over time and between places to convey core messages. Shakespeare also harnessed archetypal narratives to convey universal meaning, and poets in every generation aim to harness timeless structural patterns to transfer deep moral messages (Berry 2006; Ross 2019). Stories have a stabilizing effect in a social network, providing a focus of attention and acting as a platform and a boundary-spanner upon which experience can be recounted and serve as stepping stones for change.

Previous research has harnessed storytelling in fields of political and social change (Chatoo and Jenkins 2019) and there is a current trend continuing the exploration of post-modern and post-rational solutions in business fields through sense making theory (Weick et al. 2005; Crawford et al. 2019) and

related methodology (Denning 2006; Dawson and Sykes 2019; Bell et al. 2019; Sharma and Bansal 2019; Wiebe 2019). Big data analytics is also spawning an outgrowth of quantum storytelling by mining the patterns inherent in the ways multiple people represent their organizational stories (Boje and Sanchez 2018). Furthermore, the proliferation of documentary films, including media retellings of stories of experience, may be indicative of the innately recognized value many people put in understanding what experienced people have to offer. Some documentary series specifically focus upon elder stories (Koorie Heritage Trust 2019). Even documentaries with other themes at their core need to include stories of elders, such as politicians, states people, proven business leaders, hardship and trauma survivors, as a means for conveying authenticity to their audiences (Luhman 2019). People are interested in hearing stories about experienced business people, such as Oprah Winfrey, Bill Gates, Christine Lagarde, Warren Buffet and Ginni Rometty mainly because of the drama involved in their examples and the essence of how they have sustained themselves and their enterprises. In addition to written accounts, YouTube, Vimeo and other audio-visual platforms are assisting the global dissemination of documentaries that record the wisdom of experienced people (Vannini 2019; Harwood 2019). Experienced corporate elders have failures and traumas to discuss along with their longer-term achievements. To have survived lows and highs in business and in life brings inherent authenticity to their stories.

There is a trove of available stories in a variety of media. Anthropogenic knowledge resides in story data from ethnographic research, including *Beauty Everyday* (Ross 2016), where 22 deep and rich accounts of long lives with learned wisdom offer a wellspring of data. We also mined narrative insights from the seminal study of a unique Australian indigenous elder, *Wisdom Man* (Clarke 2003), which has been progressively translated into five languages. Appendix 1 contains selection rationales for the stories we chose to reach into with the deepest focus for the analysis in this section. These data sources were chosen, on the one hand, for relevance, since Ross (2019) had previously filtered the 22 accounts through the requisite categories of culture, creativity and place; and on the other hand, for sheer depth of anthropological insights available in each story. *Wisdom Man* (Clarke 2003), for example, is a uniquely insightful view of the life, thoughts and experiences of a respected Australian aboriginal elder who had identified environmental sustainability as core to his philosophy when he was alive and dealing with discrimination, loss and struggle in sport, business, social and environmental areas. The juxtaposition of the *Wisdom Man* story with the deep and inspirational stories of diverse elders in *Beauty Everyday* (Ross 2016) was a structural tool to enable the storytelling analysis to be cohesive and constructive for the theme of the chapter.

Our approach was to narrow the focus to the core research aim and select stories with pertinence to sustainability and with accounts and data that had clear relativity to the Fig. 35.1 conceptual framework. The method adhered to the requisite research ethics requirements for secondary data analysis. We chose

stories about people who are not necessarily famous, and yet who achieved at the highest levels in their own ways. Among the chosen stories were published contributions from an emeritus Harvard Faculty of Medicine Dean, farmer and brain scientist, a former *New York Times* journalist, a Nobel Peace Prize co-winner in the field of atmospheric science, a former Canadian diplomat and two highly respected indigenous elders from opposite ends of the earth. Theirs and others' stories were derived from long experience and enabled us to apply a rich and deep iterative approach to interpreting and reinterpreting their accounts through the conceptual framework. The next section reveals the key findings.

SOME DATA RECORDS OF HUMANITY

A sense of positive human intervention in events, resources guardianship and social development emerges from numerous biographical records compiled in these substantive anthologies. By the conceptual framework of Fig. 35.1, we applied iterative analysis through culture, creativity and place to distil the stories told by elders and position them among the dimensions of sensitivity, compassion and connection through the embedded petals of sustainability. We found that narrative text contains universal elements composing patterns with interpretability (Toolan 2016) and the following categorized, thematic quotes enabled the progressive story analyses that ensued.

A feature of Table 35.1 is the three fields with no distilled moral statements from the stories, instead containing the labels of sensitivity, compassion and connection. These facets in this matrix are the sustainability bridges to the dimensions that are conceptually distinctive, as per Fig. 35.1. For instance, culture and economic sustainability stand as their own clear fields, indicating that one will diminish or exclude the other, unless finding shared balance through the application of the dimension of compassion, often expressed through intersectionality (Watkins et al. 2019) and listening (Couzens 2014). Likewise, creativity and the environment are each their own distinctive domains because creativity will deplete resources from the environment unless a balance can be attained through the moderating function of sensitivity. This indicates the inherent struggle that business has with environmental sustainability, especially at the times when profit from creativity outweighs the other aspects of the triple bottom line. Furthermore, a strong sense of place can disrupt social sustainability by single-focus insularity unless the perspective-giving influence of connection can become a moderating influence.

The other fields of Table 35.1 are populated with moral statements from the stories we analyzed. Each distillation, derived from the deep pool of stories indicated by Appendix 1, was allotted into cross-referenced dimensions to enable a nuanced interpretation. The findings are at the level of principles or guiding influence. For example, the advice given to Nobel Laureate, Dr. Russell Schnell, by his grandmother (Schnell 2016a, p. 116) at B1 in Table 35.1 is analyzed as an economic principle expressive of both creativity and sensitivity

Table 35.1 Elder story morals embedded in a sustainability matrix

<i>Sustainability/ Stories</i>	<i>Economic</i>	<i>Social</i>	<i>Environmental</i>
A. Culture	<i>Compassion</i>	Burn falsehood, dishonesty, hatred of others and war (Louis 2016) The old people taught me how to live and how to share with others. I shared with the old people too (Clarke 2003)	“Complex changes can, perhaps, be understood as well by story as by science” (Schnell 2016a, p. 112) “The lake spoke to me about language and how the words of poetry can, like Nature, can be as close and beautiful as human touch” (Hewitt and Ross 2016, p. 290) <i>Sensitivity</i>
B. Creativity	“We must pick and choose among many competing but valid claims on ... our treasure” (Gaede 2016, p. 236) “You will go much further in life by using a little sugar rather than salt” (Schnell 2016a, p. 116) “Creativity is a divine gift, freely available to everyone. In the aeons of human existence, people have drawn inspiration from their landscape and each other” (Ross 2016, p. 324) “You don’t leave your spirit land in times of trouble” (Clarke 2003, p. 230) “While I think about the goings on there, I try to remain focused on here and the unique place this is” (Pattison 2016, p. 144) “If society breaks down, I am stranded with my family in the midst of 1.3 billion people who will soon be scrambling for food, water and the necessities of life” (Hladik 2016, p. 124) “I recognize how what my life became flowed from my early encounters with the land. Nature’s mysteries, its wildness and its bounty were ever present in my everyday existence” (Martin 2016, p. 311)	“Everyone has a story to tell. And many of us enjoy the opportunity of sharing ours” (Martin 2016, p. 311) “Everyone needs meaning in their lives and people to live for” (Blume and Ross 2016, p. 180) “Inspiration awaits us in myriad forms from the elements we may or may not see, overcomes adversity” (Ross 2016, p. 324)	
C. Place		<i>Connection</i>	Like the water in a coulee, the currents of life can connect and take us all around the world (Hladik 2016) “The forest belongs to nature and you have to be kind to her” (Clarke 2003, p. 241) “We never did much damage because we knew that if we hurt the land it would get sick and die, like a mother. She would no longer provide food for the people. We had to look on things that way because we were directly dependent on nature. No big commercial factories like today, with money everywhere. No people fighting over money and dying for it” (Clarke 2003, p. 188)

Source: Authors’ creation

with business parallels in marketing and selling techniques, where, of course, promoting the benefits is key. The intention of the advice is to encourage long-term sustainable actions, which also turn out to be central to the relational ethics inherent in trade and commerce. Finding the balance between sugar and salt is, of course, the art of striking a deal.

At A2 are positioned quotes from two significant first nations elders and leaders—Louis (2016) from Alberta, Canada, and Clarke (2003) from Victoria, Australia—recounting wisdom from their stories about how to attain social sustainability by carefully blending culture with compassion. Notice that one eschews war, and the other points us to the wisdom of elders and the spirit of sharing as a means for keeping the social energy in harmony. In corporate contexts, this principle makes sense for social sustainability in the formation of strategic plans, as well as during competitive conflicts and throughout periods of dispute and negotiation. The internal culture of an organization also needs social harmony informed by these stories built upon immense experience of human suffering and joy within the overlapping dimensions of culture and compassion.

The respected Cree leader and elder Roy Louis (2016, p. 34) further reflected upon his story about his great-great-grandfather, also a Cree chief and elder:

One hundred and fifty years after he died, Maskepetoon lives on in spirit. Although we face battles of other kinds: cultural disintegration and reintegration, technological imperatives having pre-eminence over centuries-old traditions, disputes about land and water, as well as the effects of chemical, gender and other abuse. I take courage from the fact that Maskepetoon was able to adjust to the times and even see beyond.

The quote communicates a strong sustainability lesson drawing on all three economic, social and environmental petals and settled on adaptability and innovation as the hope for a sustainable future. With culture, creativity and place enacted through compassion, sensitivity and connection, the vision is achievable in business, and in local and global communities.

The memorialized and respected Aboriginal leader and elder Banjo Clarke (2003, p. 191) expanded on the story in his Australian context:

I believe the solutions for all the different races of the world is to just understand one another and teach each other's cultures. Go up and speak to people! If you can't speak their lingo, don't turn away saying 'Ah, I don't understand him.' Go up and shake their hand and say, 'I am your friend. Speak to me about your culture; I'll speak to you about my culture and we'll be friends.' Don't fight or be angry. So just be happy!' That's the best way.

There are some significant sustainability dimensions embedded in this wisdom. Compassion, sensitivity and connection are all expressed in a way that implies

economic and social reparation can be achieved. However, it requires a big heart and a desire to continue learning and being open to possibility.

The distillation at B2 comes from Joseph Martin, Dean Emeritus, Faculty of Medicine, Harvard University, reflecting upon his autobiographical storytelling experience. His lesson comes in social sustainability, encouraging leaders and managers to act with sensitivity and be prepared to listen to people's concerns. The message in his story was captured in another way when he said, "In the end, what became a sustaining influence was the recognition of the great varieties of inter-human experience that characterize our lives and how lessons learned from these experiences determine our capacity for leadership potential" (Martin 2016, p. 312). In other storytelling, Martin (2011) offers more insights into human sensitivity as an indispensable awareness in leadership. Business in 2025 will need leaders who can work with the millennial generation and the subsequent strata of workers with their unique social and cross-cultural needs. Sensitivity will continue to be the necessary trait for ongoing leadership success.

At C3 in Table 35.1 is distilled wisdom from Maurice Hladik, former Canadian diplomat, in a personal narrative about the Tiananmen Square protests of 1989. It is a place-based start to his story drawing on environmental sustainability as a core theme, using a coulee metaphor, and bringing attention to the concept of connectedness. Later in the story, at C1 he describes the situation once he realized he was caught in the midst of the crowd during the military crackdown and terrible massacre. In raw terms, human connectedness was brought down to the prime economic sustainability aspects. Both sustainability and survival itself are affected by connectedness which can flow both constructively and destructively across the dimensions. One current problem is that people do not hear the same stories; they exist within social-media tribes and hear only stories tailored to their tribe. This equates to a challenge much like Hladik described when social order was fragmented in Tiananmen Square. In the same place-based fields of the matrix as Maurice Hladik's, Banjo Clarke's statements further illustrate the power of connectedness to bridge between the environment and the economy, and it is social sustainability which is the aspiration of connectedness in the midst of the tensions that arise from the struggles described.

While this chapter is written, further illustration of similar struggles between connectedness and sense of place are bubbling up with a challenge to social sustainability through the activism of Greta Thunberg at the United Nations Climate Action Summit in 2019 and the subsequent global climate strikes (Singer 2019). Wisdom from our story analysis involving Hladik and Clarke might assist some to gain a deeper perspective about the underpinning dimensions and, thus, the solutions to the Thunberg struggles moving forward. For instance, at C1 in Table 35.1, Clarke pointedly warns against leaving your place in times of crisis, which has played out for leaders many times. One recent example is in Australia during the immense Christmas 2019 bushfires when Prime Minister Morrison was noticed going on vacation to Hawaii while his

voters were left fighting the fires in their places. Even when returning from vacation earlier than planned, there were more delays with providing firefighting resources and Morrison's support as a leader ebbed (Tingle 2020). Parallels in business leadership emerge when modern, global corporations encourage leaders to live in a succession of countries. In their habits and decisions, such leaders can become less concerned about ties to place and the obligations that might involve. Clarke (2003) may sound his warning again and activists like Greta Thunberg may question this mobility for the disconnection it creates from the environment and from the people of the place.

A final word in this section of the analysis can go to Nobel Laureate and eminent climate scientist Dr. Russell Schnell, who identified in A3 that storytelling equates with science when the task at hand is to understand and convey complex concepts. As an experienced contributor at the forefront of discovering how urgent environmental sustainability initiatives have become (Schnell 2016b), his acknowledgment of the power of a story for creating both comprehension and action is worthy of notice. His wisdom sits within the dimension of compassion as it overlaps with the clash between science and culture in the current climate change debate.

All of the story morals distilled in Table 35.1 were the result of the same iterative analysis process applied in the research method. Furthermore, we found a wide range of stories can be treated similarly using the dimensions delineated in Fig. 35.1 and unfolded in the matrix of Table 35.1. The depth of our data is indicated in Appendix I where additional moral distillations were found beyond the full scope of this chapter. Additional implications of the work in this project, and for other corporate sustainability research pathways, are discussed next.

SUSTAINABILITY AND THE WISDOM OF ELDERS

Logical reasoning by philosophers, including David Hume, has previously contributed knowledge about inherent humanism in the commercial transactions of society (Creed et al. 2014; Coventry and Valls 2019). Stories generating moral outcomes as told by people with lived experience tend to communicate the humanist principles predicted by Hume and as categorized by the fields of Fig. 35.1 and the matrix of Table 35.1. However we grappled with the cultural intonation of what it means to say one is an elder (Liang et al. 2012) and to reconcile with the notion of experience and authenticity in storytelling. There are both demographic and psycho-social components (Zaniboni et al. 2019) to eldership. One can objectively be old or young according to time-based standards applied in laws and customs (Cheung et al. 2019). Notably, eldership is also connected with individual responses and behaviors emerging from significant events, such as the death of one's parents, the survival of major events and trauma, and the adoption and conduct of social leadership positions in difficult times (Yang and Warburton 2018). Someone with a number of years passed and showing a socially acceptable ability to manage, lead and thrive through

adverse circumstances is likely to be perceived, and probably respected, as an elder (Daleure 2019). Even chronologically young people are sometimes imbued with the label of being an ‘old soul’ by virtue of the psycho-social display of eldership qualities (Karunamuni and Weerasekera 2019). Eldership appears connected with a level of social respect earned through time by collecting experiences of hardship, perseverance and long-term success (Wiebe and Bevan 1986; Berry 2015; North 2019). Advanced age (and naïve youth, for that matter) on its own translates socially into a negative feature that often gives rise to discrimination and abuse, and yet eldership with its additional layers of experience, respect and wisdom is a frequently untapped source of positive leadership development.

We are in the midst of a major demographic divide with more than half of the world’s population being young and inexperienced, and a preponderance of youth in emerging nations (Czaja et al. 2019). Furthermore, in developed nations there is inexorable aging of the populations to the point of threatening economic stagnation (Ratten 2019) and environmental sustainability. It is the young people who hold most of the driving energy of the labor force in the world, while the elders are the crucibles of genuine experience in complex economies and, in a global sense, there is increasing demographic separation except in places where migration policies allow for equilibrium to occur. Young workers do not migrate to a place specifically to mingle with elders; however, where such opportunity arises there are potential advantages from systems and social structures in which elders can share their lived experiences and wisdom with younger people. It is by learning from the successes and mistakes made by one’s elders that the young can potentially navigate the best paths for themselves, especially as sustainable development goals remain important in the coming decades.

In essence, we found human morality comes out of the stories, along with evidence of ancient connection to the environment and a respect for the relationships between people. Compassion and sensitivity appear necessary in past and present relationships, and, if the future is going to be better for sustainability and business in general, then storytelling knowledge will need to play a significant part in condensing and communicating essential wisdom. The last insight on storytelling for improved sustainability awareness through sensitivity, compassion and connection goes to former *New York Times* journalist Irene Hewitt. Elder and convalescent, institutionalized with declining sensory abilities, motivated by discussion about business, management and the sustainability of society, she recounted a metaphor and posed a question using vocabulary and insights honed from decades of highly refined observational and emotional caché.

Ancient forests at my bedside, trees made strong by wind. Why don’t people think more of the trees and living things? Lay down memories while they can, when eyes can see and legs can walk. Find comfort in the permanence of universal, living things. (Hewitt and Ross 2016, p. 307)

CONCLUSION: EVER AFTER AND FURTHERMORE

Global and local businesses alike, along with aspects of climate change, have anthropogenic origins and thus require human intervention to ensure sustainable practices persist. Science is helping business to improve understanding of how to create a positive pathway into the future, but there are boundaries in this form of knowledge. Science normally fits the snapshot kind of knowledge, while storytelling represents the relational kind of knowledge. This chapter addressed the question of how stories told of past organizational challenges can enhance the human values of sensitivity, compassion and connection for current and future management of sustainability. The aim was to present positive prospects for corporations by reaching into the morals derived from elders' stories and finding ways to translate these to future business strategy. We synthesized in Fig. 35.1 a new conceptual framework using published story data applied through the ethnographic lenses of culture, creativity and place. An original matrix of storytelling morals was combined in Table 35.1 with relevant dimensional analysis, for the benefit of present and future applications of economic, social and environmental sustainability. The stories were drawn from a wellspring of anthologies (see Appendix 1) about people with exemplary experience and leadership quality, enabling us to apply a rich and deep iterative approach to interpreting and reinterpreting their accounts through the conceptual framework.

The findings and discussion lead us to recommendations regarding corporate sustainability. Business managers and entrepreneurs should make times and places to gather and reflect upon stories derived from authentic experience. Elders, or any leaders with genuine insights into related sustainability phenomena, can provide stories with relevance. In this context it is necessary to guard against potential age discrimination that might lead to ignoring important stories. Academia and educational institutions should take pause over qualitative and ethnographic research into storytelling, especially as an augmentation of the more widely accepted scientific methodologies around climate change. Human elements of and insights from storytelling may connect more meaningfully with the very real needs of the earth that science alone is not fully communicating to all cultures across the globe. Policymakers should ensure funding and regulations allowing enhanced opportunities for elders to give their knowledge of experience back to corporations and communities through storytelling media.

Overall, the conceptual framework and matrix for story analysis presented in this chapter provide an applied tool for engaging with storytelling in dimensions consistent with the needs of sustainability. The method is conducive to extracting applied knowledge for enhanced sustainability communication. If our research is accepted for the interpretive and constructive design that it is, corporations and experienced individuals are now equipped with an application that facilitates inter-generational solutions to current and compelling environmental problems. However, the subjective nature of the data and method

leaves room for further research into the conceptual framework that may include focusing on specific dimensions in the Table 35.1 matrix and seeking to validate elements of the distilled moral statements with the recorded experiences of organizations and managers engaged in similar experiences. Other future research may tap stories of ancient wisdom from indigenous communities, or those of very senior leaders from differentiated corporate or political spheres. The same broad dimensions of culture, creativity and place aligned with sensitivity, compassion and connection traverse the different times, places and contexts of humanity, which makes this chapter an exemplar of communicative practice.

APPENDICES

Appendix 1 Story Pool Indicating Excerpts for Analysis with Matrix Alignment

<i>Story title</i>	<i>Excerpts relevant to dimensions of culture, creativity and place</i>	<i>Table 35.1 inclusion</i>
<i>My Hat, My Cattle and Me</i>	“Everyone needs meaning in their lives and people to live for” (Blume and Ross 2016, p. 180)	Yes
<i>Lessons From Love and Life</i>	“God helped me in many ways, sometimes through people and nature, sometimes through dreams” (Benkie 2016, p. 196)	No
<i>The Judge’s Robe</i>	“If a shared humanity is to be restored there must be room enough inside that gown for the tools needed for the job; humility, integrity, empathy, knowledge, humor” (Buchanan 2016, p. 218)	No
<i>A Judge’s Journey</i>	“We must pick and choose among many competing but valid claims on our treasure” (Gaede 2016, p. 236)	Yes
<i>Journeys Never End</i>	“In this ‘sacred’ place it almost seems there is no past or immediate future, just a time to be full of thoughts that fall thick as the fluffy snow” (Bergum 2016, p. 208)	No
<i>Waiting For My Mother</i>	“Waiting for my mother, her death. Cradling between my palms a spruce” (Gould 2016, p. 238)	No
<i>Silver Eyes</i>	“‘Breathe in. Breathe out,’ I told myself. ‘Breathe in. Breathe out. Stay calm,’” (Skillen 2016, p. 242)	No
<i>The Art of Recovery</i>	“It also taught me that, as my life was broken into many pieces, I could pick up some of them in an effort to rebuild” (Mabbott 2016, p. 250)	No
<i>Life as a Quilt</i>	“It was awful to just sit or lie there day after day, knowing that the things I did earlier in my life contributed to the stroke” (David and Carlson 2016, p. 263)	No
<i>Somewhere Over the Rainbow</i>	“I never dreamed how hard I would have to work to stay alive” (Ulrich and Enns 2016, p. 272)	No
<i>Roses in December</i>	“The lake spoke to me about language and how the words of poetry can, like Nature, can be as close and beautiful as human touch” (Hewitt and Ross 2016, p. 290)	Yes

(continued)

(continued)

<i>Story title</i>	<i>Excerpts relevant to dimensions of culture, creativity and place</i>	<i>Table 35.1 inclusion</i>
<i>Afterword</i>	“I recognize how what my life became flowed from my early encounters with the land. Nature’s mysteries, its wilderness and its bounty were ever present in my everyday existence” (Martin 2016, p. 311)	Yes
<i>Heartland Heartfelt</i>	“Everyone has a story to tell. And many of us enjoy the opportunity of sharing ours” (Martin 2016, p. 311) “Once hailed tower of earthly riches. Collapsed. Castles to ashes. Boom to bust. Dreams to dust” (Stirling 2016, p. 55)	No
<i>Pages From Time</i>	“When our arms tired, someone else would take over, and then Mama would finish the butter” (Smith and Zimmerman 2016, p. 38)	No
<i>Bends in the River</i>	Burn falsehood, dishonesty, hatred of others, and war (Louis 2016) “One hundred and fifty years after he died, Maskepetoon lives on in spirit. Although we face battles of other kinds: cultural disintegration and reintegration, technological imperatives having pre-eminence over centuries-old traditions, disputes about land and water, as well as the effects of chemical, gender and other abuse. I take courage from the fact that Maskepetoon was able to adjust to the times and even see beyond” (Louis 2016, p. 34)	Yes
<i>Coulee Seasons</i>	“And like all who lived here before me and those who were yet to come, I would invest my energy in its soil, look to the sky, listen to the wind and live a significant portion of my life” (Jensen 2016, p. 56)	No
<i>Letters From Afar</i>	“While I think about the goings on there, I try to remain focused on here and the unique place this is” (Pattison 2016, p. 144)	Yes
<i>Tiananmen Diary</i>	“If society breaks down, I am stranded with my family in the midst of 1.3 billion people who will soon be scrambling for food, water and the necessities of life” (Hladik 2016, p. 124)	Yes
<i>The Power of Ideas</i>	Like the water in a coulee, the currents of life can connect and take us all around the world (Hladik 2016) “You will go much further in life by using a little sugar rather than salt” (Schnell 2016a, p. 116)	Yes
<i>Poppy Seeds and Prune Buns</i>	“complex changes can, perhaps, be understood as well by story as by science” (Schnell 2016a, p. 112) “I loved their [flowers] scent as it mingled with the scent of the church incense and I experienced a profound feeling in my mind and spirit that the garden and the church became one, each a perfectly safe haven for a little girl like me or for everyone in the whole world” (Zinter 2016, p. 75)	No

(continued)

(continued)

Story title	Excerpts relevant to dimensions of culture, creativity and place	Table 35.1 inclusion
<i>My Father Comes Back</i>	“Remembering his fatigue, massive and silent as God’s on the sixth night. Exhaustion that comes with building a new world, breaking hard land to feed the generations that will come” (Griebel 2016, p. 71)	No
<i>Back Matter</i>	“Creativity is a divine gift, freely available to everyone. In the aeons of human existence, people have drawn inspiration from their landscape and each other” (Ross 2016, p. 324)	Yes
<i>Wisdom Man</i>	<p>“Inspiration awaits us in myriad forms from the elements we may or may not see, overcomes adversity” (Ross 2016, p. 324)</p> <p>“We never did much damage because we knew that if we hurt the land it would get sick and die, like a mother. She would no longer provide food for the people. We had to look on things that way because we were directly dependent on nature. No big commercial factories like today, with money everywhere. No people fighting over money and dying for it” (Clarke 2003, p. 188)</p> <p>“The forest belongs to nature and you have to be kind to her”</p> <p>“You don’t leave your spirit land in times of trouble” (Clarke 2003, p. 230)</p> <p>The old people taught me how to live and how to share with others. I shared with the old people too (Clarke 2003)</p> <p>“I believe the solutions for all the different races of the world is to just understand one another and teach each other’s cultures. Go up and speak to people! If you can’t speak their lingo, don’t turn away saying ‘Ah, I don’t understand him.’ Go up and shake their hand and say, ‘I am your friend. Speak to me about your culture; I’ll speak to you about my culture and we’ll be friends.’ Don’t fight or be angry. So just be happy!’ That’s the best way” (Clarke 2003, p. 191)</p>	Yes

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Developing Gender Equality Marketing Beyond 2025: A Systematic Literature Review

Nicole Böhmer and Kai Michael Griese

INTRODUCTION

The discussion in the literature about how marketing activities influence society is quite diverse and sometimes even polarizing. Some studies support the hypothesis that the perpetuation of gender inequality is enmeshed with marketing activities (Bettany et al. 2010). The study “AdReaction: Getting Gender Right” (Kantar 2019) concludes that stereotypes are still dominate in advertising. At the same time, research indicates that gender differences in customers’ preferences will increase with increasing standards of living and gender equality (Falk and Hermle 2018). In recent decades, digitalization, especially that related to the internet and social media, has influenced not only marketing practices but also user-generated content in maintaining gender roles in society (Brandao et al. 2019).

A meta-analysis of gender roles indicates that, for example, “gender stereotyping in advertising depends on gender-related developments and value changes in society rather than the other way around” (Eisend 2010, p. 418). These results support the idea that gender roles in marketing are used as they currently appear rather than actively shaped. Therefore, the “mirror argument over the mold argument in the long-standing debate about advertising’s consequences for society” (Eisend 2010, p. 418) is confirmed.

The mere biological distinction between males and females that assumes biological differences from birth can be found in many marketing studies

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(Schertzer et al. 2008). For a comprehensive view on gender issues in marketing, this distinction is not sufficient because it leaves out culturally endorsed identities that impact the social construction of masculinity and femininity. These constructions manifest in gendered preferences, such as gender-specific consumer behaviour. Gendered preferences, interests, and living conditions imply that gender equality is not reached by only providing the same conditions for all genders. Moreover, the surrounding structures and institutions that reproduce inequality need to be questioned. In this article, the focus on gender production, such as marketers engraving gender in products and services (Peñaloza 1994), and gender consumption, which refers to the way in which people enact gender in their daily life, in marketing strategies and practices aims at improving the understanding of different perspectives.

On this basis, this chapter focuses on the general marketing frame and questions the actual and possible future contributions of marketing to gender equality and consequently to societal sustainability. Leach et al. commented that “[m]ost sustainability issues involve multiple, contested framings and narratives” (Leach et al. 2016, p. 5). Therefore, the aim of this research is to identify different strands of development in the marketing field to (1) advance the knowledge of gender challenges in marketing management and to (2) develop proposals for the development of gender equality marketing (GEM) beyond 2025.

This chapter comprises four steps. First, four possible pathways of sustainable development towards gender equality are introduced to define the context and background and to deduce a definition of “gender equality marketing”. Second, this research identifies and analyses the most influential marketing literature of the past three decades along these pathways by applying design-oriented research synthesis. Third, according to the findings from the literature review, orientation to companies is provided based on the challenges they face with regard to their sustainable marketing management beyond 2025. These challenges can be illustrated by the complex relationship between gender consumption and gender production. Another example is the balancing act between having and using gender knowledge. Fourth, at the end of the chapter, different pathways to gender equality marketing are discussed, and propositions for practitioners are developed.

Overall, this chapter seeks to discuss the challenges and transformations required to deliver sustainable business based on gender equality marketing. Consequently, it provides relevant marketing insights at the intersection of business, society, environment, and technology.

THEORETICAL BACKGROUND: PATHWAYS FROM SUSTAINABLE DEVELOPMENT TO GENDER EQUALITY MARKETING

At the heart of this gender research is the concept of “gender equality”. Equality implies the quality of being equal. Considering that (1) gender includes the social construction of masculinity and femininity and that (2) gender-specific differences in preferences exist, this quality is hard to specify

practically. Consequently, gender equality does not mean providing the same conditions for men and women but rather providing suitable conditions for perceiving equality and justice. Justice in this article is defined as the maintenance of what is socially just and free from bias. Hereinafter, the term “gender equality” is used to discuss the marketing literature in a sustainable way. Therefore, at the outset, gender equality is reflected by the concept of sustainable development. More specifically, if gender equality is sustainable, then equality is a given, or, as Leach et al. (2016) have stated, “In this conceptualization, gender equality is therefore integral to how sustainable development is defined and pursued” (Leach et al. 2016, p. 4). The following four pathways dominate the current discussion about sustainable development (Bansal 2005; Chabowski et al. 2011; UN 2015) and/or gender equality.

1. The Brundtland Report (“Our Common Future”)

One pathway to define sustainable development was described in the Brundtland Report (1987). Sustainable development was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987, p. 41). Based on this understanding, gender equality is given in marketing, so far as the gender equality needs of the present generation are fulfilled without compromising the gender equality needs of future generations. Using this approach, gender equality needs are separated into intergenerational and intragenerational justice.¹ Intragenerational justice includes fair equality within a generation, for example, by avoiding different wages (Drengner and Griese 2016) for males and females in marketing departments. Intergenerational justice means that today’s marketing should ensure that future generations are able to meet their own gender equality needs as well, for example, by not creating advertising content that hinders the empowerment of women and girls in the future.

2. The Triple Bottom Line Concept

Another pathway to define sustainable development is based on the concept of the triple bottom line (TBL) developed by Elkington (op 1998). This model includes environmental, social, and economic dimensions that should be considered simultaneously and equally. In this pathway, gender equality can be seen at the interface of environmental, social, and economic dimensions.

The environmental dimension concerns the protection of natural resources as a basis for living. In this context, gender equality means using natural resources only to the extent that they can be regenerated. Spheres of marketing activities include, for example, less gender production by reducing CO₂

¹Extensive discussion about intergenerational justice and intragenerational justice is available e.g. in Tremmel (2006).

emissions due to a standardization of products for males and females (e.g., the same toys in toyshops instead of separately gendered colours). The aim of the social dimension is to ensure social justice. Spheres of marketing activities include, for example, avoiding discrimination against or the stereotyping of men and women in advertising. The economic dimension includes the macro and micro levels (Sheth et al. 2011, p. 24). The micro level concerns the protection of the permanent economic success of a company. Considering this level, gender equality also includes activities to ensure economic success. Spheres of marketing activities include, for example, understanding and integrating the target groups of products. The macro level refers to the economic responsibility of external stakeholders, especially to create a sufficient standard of living. Accordingly, gender equality includes the responsibility of other stakeholders. Spheres of marketing activities include, for example, producing products (e.g., chocolate) in developing countries and ensuring that farmers obtain enough income for a sufficient living standard.

3. Sustainable Development Goals (SDGs)

The third pathway of sustainable development to gender equality is based on the United Nations 17 Sustainable Development Goals:

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. The Goals interconnect and in order to leave no one behind, it is important that we achieve each Goal and target by 2030. (United Nations 2015, n.p.)

Goal 5 especially refers to the topic of gender quality: “Achieve gender equality and empower all women and girls.” Table 36.1 lists the detailed targets of Goal 5. Based on Goal 5, gender equality includes different targets that should be fulfilled by 2030. The spheres of marketing activities include, for example, terminating discrimination of women in advertisements (5.1) and giving women equal opportunities for leadership in marketing departments (5.5). Regard to the digital age, Goal 5 connects women’s empowerment with increasing use of (information and communication) technology (5B).

4. Specific Gender Policies in Business and Government Policies

The fourth pathway includes different business and government initiatives that reflect special policies rather than gender equality as a fundamental concept of sustainability. Table 36.1 specifies examples. Spheres of marketing activities include, for example, creating advertisements with a due sense of social responsibility (EASA 2019) (Table 36.2).

Table 36.1 Targets of SDG 5: Gender equality

<i>Part</i>	<i>Detailed targets</i>
5.1	End all forms of discrimination against all women and girls everywhere
5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
5.3	Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation
5.4	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
5.5	Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
5.6	Ensure universal access to sexual and reproductive health and reproductive rights, as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences
5A	Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
5B	Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women
5C	Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

Source: United Nations Sustainable Development Goals

Table 36.2 Gender policies in business and government policies

	<i>Organization</i>	<i>Examples</i>
1	Council of the European Union, European Pact for Gender Equality, 2011	Eliminate gender stereotypes, ensure equal pay for equal work and promote the equal participation of women in decision-making.
2	European advertising standards Alliance (EASA) 2019	Ads are prepared with a due sense of social responsibility.
3	German Advertising Standards Council, 2014	Code of conduct against vilification and discrimination.
4	Global environment facility (GEF), 2017	This policy sets out the guiding principles and mandatory requirements for mainstreaming gender across the GEF's governance and operations with a view to promoting gender equality and the empowerment of women and girls in support of the GEF's mandate to achieve global environmental benefits.

Source: Authors' creation

Overall, the four pathways demonstrate different approaches to conceptualizing sustainable development and therefore fostering gender equality. Depending on the way in which gender equality is conceptualized, it can result in different focuses and a different discussion of gender equality in marketing. For example, based on the Brundtland Report, a long-term debate is included,

while the triple bottom line concept supports a discussion about conflicts of social, environmental, and economic values. The SDGs include objectives to be reached by 2030, while business and government policies suggest a marketing view in terms of gender equality. Allowing a broad interpretation of the existing marketing literature, we use all pathways for the analysis in the next sections of our chapter.

All pathways are linked to gender as a basic structuring principle for individuals, groups, and societies (Hearn and Hein 2015). Future and equality-oriented gender consumption and production can help to transform not only individuals but also organizational and societal culture. Therefore, organizations that pursue GEM can accelerate the changes towards more equal opportunities of women and men and consequently more sustainability beyond 2025. As a result of the interconnections explained thus far, we define GEM management as building and maintaining sustainable relationships with customers, the social environment, and the natural environment through gender-sensitive attitudes and activities in all areas of marketing management. In this framework, GEM management contributes to the wellbeing of women and men in affected communities. Consequently, GEM comprises gender-sensitive patterns of planned or emerging marketing strategies and practices intended to enable organizational goal achievement while simultaneously and permanently reproducing the customer base and while controlling for self-induced side and feedback effects of marketing practices on society or nature and thus on the evolution of the target markets.

To develop implications for GEM beyond 2025, it is pivotal to understand the scholarly discussion thus far and to capture the status quo of GEM. Therefore, we conducted a systematic literature review that helps to identify trends in marketing research regarding social, demographic, technological, and managerial issues (Pickering et al. 2015).

GENDER ISSUES IN MARKETING LITERATURE

Methodology: Systematic Literature Review

Studying the most influential marketing literature contributes to understanding the current conception of marketing, gender, and equality in the scholarly discussion that influences further research and marketers' practices. Therefore, we undertook a systematic literature review (Booth et al. 2016) of the scholarly discussion on gender in high-ranking academic peer-reviewed marketing journals.

The critical and feminist marketing literature largely refers to Judith Butler's publication *Gender Trouble* (Butler 1989). In 1992, the European Advertising Standards Alliance (EASA) was established. Since then, there has been an ongoing public debate concerning the stereotypical portrayal of women and men in advertisements. Therefore, the scholarly discussion from 1990 to 2018 is analysed. To provide a credible guarantee of quality for this study, it is based

on the SJR. The analysis was carried out in a multistage approach. First, in a scoping study, the top 49 journals were probed for the word “gender” in the title, abstract or key words (Tranfield et al. 2003). The *Journal of Social Marketing* (rank 63) was additionally taken into the sample because of its aims being in close connection to the research objectives. Taking all available papers as a starting point, the risk of bias was reduced (Booth et al. 2016). A total of 1004 articles were found and saved in the reference management and knowledge organization database, CITAVI.

The first analysis of the articles showed a high proportion that focuses on issues of public or human resource management. This is due to the broad scope of some highly ranked marketing journals. Therefore, the exhaustive accumulation of all the articles did not fit this study’s purposes. Consequently, we excluded all papers with the term “public” or “federal” in the abstract to extract the scholarly discussion on profit organizations. By doing so, the sample was narrowed down to companies that commonly strive for profit as a primary objective, while organizations mainly aiming at social goals were not analysed any further (Prynko and Chudzian 2017). To increase the accuracy of the sample for further analysis, Boolean operators were applied in CIVAVI. After trying several other filtering combinations, the sample was focused on the marketing discussion by filtering articles that included the term “marketing” in the title, key words, or abstract. To further analyse issues of equity and equality, all articles that contained the term “equal” were included. Subsequently to the next comprehensive sighting we eliminated research on voter, politician, and fan behaviour that was not connected to marketing in for-profit organizations. Abstracts and research questions or hypotheses were exported to MS Excel for in-depth analyses. Both authors coded the papers and discussed the discrepancies. In this process, some papers were eliminated from the sample because the research aim and research results did not include gender aspects. Therefore, the final synthesis was carried out with 82 articles. The complete list can be requested from the corresponding author.

The remaining articles included qualitative, quantitative, mixed methods, and conceptional approaches. Faced with this fragmented sample of marketing management articles and the aim of developing solutions beyond 2025, design-oriented research synthesis was adapted to the research. Marketing is a part of the management discipline and therefore a design science that focuses on the quest for improving people’s reality by finding solutions for practical problems (Denyer et al. 2008). “Design-oriented research synthesis uses the entire, diverse knowledge base on a given class of field problems to produce deep understanding of interventions that, in given contexts, produce intended outcomes by invoking certain generative mechanisms” (Denyer et al. 2008, p. 408). Rather than the quest for the truth resulting in predictions similar to those in natural science, this research aims at prescriptions in a technological manner. In a certain context, a marketing intervention might lead to more (or less) gender equality as an outcome by triggering more (or less) gender-specific behaviours as a mechanism. Consequently, there seems to be a logical sequence of Context



Fig. 36.1 Design-oriented CIMO logic with four components. (Source: Author's creation based on Denyer et al. 2008)

influencing Interventions, triggering Mechanisms, and resulting in Outcomes (CIMO, see Fig. 36.1) that goes beyond the simple intervention-output (IO) logic frequently found in management literature (Denyer et al. 2008).

Although CIMO logic has not been applied in marketing research before, it fits well with the research aims because it shows parallels to marketers' real-world planning processes. Moreover, this logic suits the analysis of gender issues in marketing studies because it considers the specific contexts (e.g., culture-specific gender stereotypes) in which a certain intervention type is applied (e.g., language use in claims) to produce intended outcomes (e.g., more profit) that are realized through certain mechanisms (e.g., attracting more female buyers). Therefore, CIMO logic was used to characterize the processing of gender issues in the marketing literature and to generate a systematic map. While analysing the articles, we generated categories in an inductive-deductive manner.

Based on the first step of using the CIMO logic as a suitable structure, in a second step, the intersection of the CIMO logic with the four pathways of sustainability was compiled. For this purpose, we reviewed the full text of the articles according to the important keywords of the pathways. The following words were used: pathway 1 ("Brundtland", "report"), pathway 2 ("triple", "bottom", "line", "environmental", "social", "economic"), pathway 3 ("sustainable", "development", "goals", "SDG") and pathway 4 ("policies").

Any issues of uncertain classifications in the respective analyses were discussed between the authors to reduce the likelihood of error. Last, the analysis is the product of our shared interpretation and therefore prone to errors and bias.

Results

Bibliometric Analysis

Regarding the three decades of analysis, a growing frequency of published articles can be noted (Fig. 36.2). This trend is partly due to the year 2013, which has 11 publications. Afterwards, the number of articles slightly abates. Since 1990, the most vivid discussions have occurred in the *Journal of Marketing Management* (rank 43), the *Journal of Retailing and Consumer Services* (rank 27), the *European Journal of Marketing* (rank 40), and the *Journal of Business Research* (rank 25) (Table 36.3). Only three articles made it into the top-ten marketing journals within the last three decades. From the articles used in the

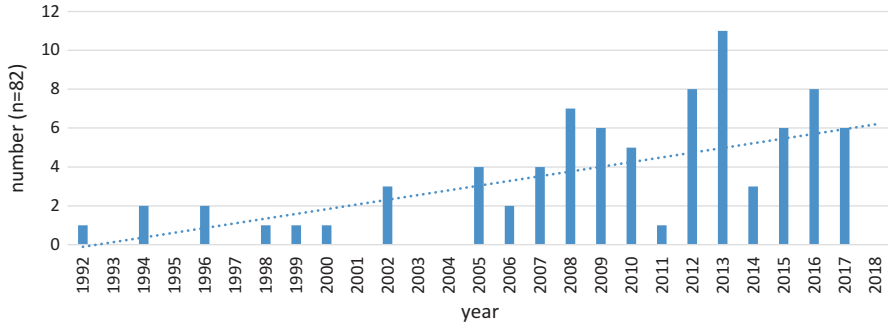


Fig. 36.2 Articles at the overlap of marketing, gender, and inequality (number per year). (Source: Authors’ creation)

Table 36.3 Articles at the overlap of marketing, gender, and equality (number per journal and year of first publication)

Rank	Journal title	Number of articles	First article (year)
1	<i>Journal of Marketing</i>	2	2009
5	<i>Journal of Consumer Research</i>	1	2016
15	<i>International Journal of Research in Marketing</i>	3	1994
16	<i>Journal of Advertising</i>	1	2010
22	<i>Journal of Public Policy and Marketing</i>	1	2013
23	<i>International Journal of Advertising</i>	5	1992
25	<i>Journal of Business Research</i>	7	1995
27	<i>Journal of Retailing and Consumer Services</i>	8	2005
28	<i>Marketing Theory</i>	2	2010
29	<i>Journal of Hospitality Marketing and Management</i>	1	2007
31	<i>Marketing Letters</i>	2	2006
33	<i>Journal of Marketing Communications</i>	4	2005
34	<i>Journal of Marketing Theory and Practice</i>	4	2007
35	<i>Journal of Services Marketing</i>	6	2000
38	<i>Journal of Product and Brand Management</i>	6	1999
39	<i>Journal of Consumer Culture</i>	1	2008
40	<i>European Journal of Marketing</i>	8	2001
41	<i>Journal of Travel and Tourism Marketing</i>	1	1996
43	<i>Journal of Marketing Management</i>	8	2002
44	<i>International Marketing Review</i>	4	1996
46	<i>Electronic Markets</i>	1	2012
49	<i>International Journal of Retail and Distribution Management</i>	3	2008
63	<i>Journal of Social Marketing</i>	4	2013

Source: Authors’ creation

content analysis, 35 mention the term “gender” in the headline. Almost all of the analysed articles mention gender in their research aim. Another result is that in many marketing research designs found in our analysis, gender was added as one of several variables that might or might not lead to significant results. While quantitative research dominates marketing research, increasingly qualitative, mixed-method, and conceptional articles add to the picture.

Figure 36.2 shows the growing number of publications in the narrow field of journals since 1990. Based on the statistics, it is interesting to note that there is an ongoing but not lively discussion and research on gender and equality in the leading marketing journals.

Categories of the Design-oriented Research Synthesis

Following the CIMO logic of design-oriented research synthesis, we identified between two and four categories in each component. Table 36.4 gives an overview of the categories with a short category explanation and the categories’ most pertinent example articles.

Context

The component context focuses on the way the behaviour of humans is influenced by the social system in which they act (Denyer et al. 2008). This means that in a specific setting, gender roles and expectations lead to reactions such as buying a product or liking a brand.

The first context category of “culture” includes articles that either focus on one specific cultural setting or on country differences. Examples are comparative studies such as that of Jayawardhena et al. (2009), which investigates aspects that impact consumers’ permission to send advertisements to mobile phones (Jayawardhena et al. 2009), or that of Kayal et al. (2017), which examines gender differences in consumer guilt (Kayal et al. 2017). The findings in this category frequently include cultural dimensions (e.g., Hofstede dimensions) and elaborate on diverse countries. For example, Kayal et al. (2017) found that consumer guilt is felt more in individualistic than collectivist cultures.

Second, the category “digital” includes papers that focus on the context of the internet, online communication, and social media. This category mirrors the growing importance of digitalization for the reproduction of gender roles. This category is illustrated by the study of Andrews et al. (2007) on male and female purchasers and the consumption values that influence the consumer choice to buy online (Andrews et al. 2007). The authors conclude with practical implications for on- and offline-marketing campaigns to promote online purchases. The research of Campbell et al. (2014) focuses on social network marketing and how consumers engage. In their research, gender is regarded as one of several variables (Campbell et al. 2014). Within this chapter, a user typology is developed, and marketing knowledge on how to reach a larger market share in the social media context is provided.

Third, the intersection of diversity aspects in the analysed article is especially shown at the juncture of gender and age as well as generation. This intersection

Table 36.4 Categories identified in selected marketing literature along the CIMO logic

<i>CIMO-logic</i>	<i>Category</i>	<i>Explanation</i>	<i>Examples</i>
Context	Culture	Cultures of countries are influencing gender equality: Differentiation of cultures	Karande, Kiran; Rao, C. P.; Singhapakdi, Anusorn (2002), Tan, Thomas Tsu Wee; Ling, Lee Boon; Theng, Eleanor Phua Cheay (2002), Ogeden, Denise T. (2005), Hamlett, Jane; Bailey, Adrian R.; Alexander, Andrew; Shaw, Gareth (2008), Leonidou, Leonidas C.; Leonidou, Constantinos N.; Kvasova, Olga (2013), Lieven, Theo; Hildebrand, Christian (2016), Lindridge, Andrew; Peñaloza, Lisa; Worlu, Onipreye (2016), Kayal, Ghadeer G.; Simintiras, Antonis C.; Rana, Nripendra P. (2017) Lindridge, Andrew; Peñaloza, Lisa; Worlu, Onipreye (2016) Maddox, L. (1999), Andrews, Lynda; Kiel, Geoffrey; Drennan, Judy; Boyle, Maree V.; Weerawardena, Jay Kiel, G.C. (2007), Roster, Catherine A.; Rogers, Robert D.; Hozier, George C.; Baker, Kenneth G.; Albaum, Gerald (2007), Zhang, Xiaoni; Prybutok, Victor R.; Strutton, David (2007), Dabholkar, Pratibha A.; Sheng, Xiaojing (2009), Barber, Nelson A. (2013), Campbell, Colin; Ferraro, Carla; Sands, Sean (2014), Dabholkar, Pratibha A.; Sheng, Xiaojing (2009), Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Maddox, Lynda M. (1999), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008), Robinson, Jill L.; LeCompte-Hinely, Jenna R. (2012), Porter, Constance Elise; Donthu, Navcen; Baker, Andrew (2012), Natarajan, Thamaraiselvan; Balasubramanian, Senthil Arasu; Kasilingam, Dharun Lingam (2017), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008)
	Digital	Digital media influences decisions/behaviour	Capella, Michael L.; Hill, Ronald Paul; Rapp, Justine M.; Kees, Jeremy (2010), Sharma, Piyushi; Chen, Ivy S.N.; Luk, Sherriff T.K. (2012), Barber, Nelson A. (2013), Melancon, Joanna Phillips; Forbes, Lukas P.; Fugate, Douglas (2015)
	Age	Different age groups influence outcomes	Raajpoot, Nisser A.; Sharma, Arun; Chebat, Jean-Charles (2008), Kumpel Nørgaard, Maria; Nørgaard Hansen, Kathrine; Grunert, Klaus G. (2013), Yannopoulou, Natalia; Elliott, Richard (2008), Josiassen, Alexander; Asaf, A. George; Kampen, Ingo O. (2011), Garretson Folse, Judith Anne; Guidry Moulard, Julie; Raggio, Randle D. (2012), Gentina, Elodie; Bonsu, Samuel K. (2013), Gopaldas, A. (2013), Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Sheng, Xiaojing; Zolfagharian, Mohammadali (2014) Lewis, Michael; Mitra, Debanjan; Yoon, Yeujun (2013), Hutton, Martina (2015), Meyners, Jannik; Barrot, Christian; Becker, Jan U.; Goldenberg, Jacob (2017)
	Social group	Different social groups influence outcomes	

(continued)

Table 36.4 (continued)

<i>CIMO-logic</i>	<i>Category</i>	<i>Explanation</i>	<i>Examples</i>
Intervention	Instruments	Instruments to get gender insights	Jeng, Jiann-Min; Fesenmaier, Daniel R. (1996), Han, Heesup; Ryu, Kisang (2007), Azar, Salim L. (2013), Schertzer, Susan M.B.; Laufer, Daniel; Silveira, David H.; Brad McBride, J. (2008), Folse, Judith A. G.; Moulard, Juli G.; Raggio, Randle D. (2012), Michaelidou, Nina (2012), Mortimer, Gary (2012), Azar, Salim L. (2013), Gonçalves, Helena Milagre Martins (2013), Han, Heesup; Ryu, Kisang (2007), Leonidou, Leonidas C.; Leonidou, Constantinos N.; Kvasova, Olga (2013), Campbell, Colin; Ferraro, Carla; Sands, Sean (2014), Vilela, Alexandra M.; Nelson, Michelle R. (2016)
	Gendered products/brands	Gendering of products and brands influences outcomes	Shani, David; Sandler, Dennis M.; Long, Mary M. (1992), Kempf, DeAnna S.; Laczniak, Russell N.; Smith, Robert E. (2006), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008), Kyun Choi, Yung; Kim, Juran; McMillan, Sally J. (2009), Azar, Salim L. (2013), Brace-Govan, Jan (2010), Guevremont, Amelie; Grohmann, Bianca (2015), McLancon, Joanna Phillips; Forbes, Lukas P.; Fugate, Douglas (2015) Grohmann, Bianca (2016), Lick, Erhard; König, Bettina; Krossa, Monyédodo Régis; Buller, Violetta (2017), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008) Milner, Laura M.; Fodness, Dale (1996), Maddox, Lynda M. (1999), Sundstrom, Beth (2013)
	Problem solving	Marketers providing solutions for customers' problems	
Mechanism	Employee-customer interaction Feminism	Front end staff interaction influences outcomes Feminism insights allow companies to create innovative marketing activities to develop a new and effective understanding of gender equality marketing Marketing activities include gender equality aspects	Baumann, Chris; Timming, Andrew R.; Gollan, Paul J. (2016), Karatepe, Osman M.; Yavas, Ugur; Babakus, Emin; Avci, Turgay (2006), Touzani, Mourad; Hirschman, Elizabeth C.; Hechiche Salah, Lamia (2016) Joy, Annamma; Venkatesh, Alladi (1994), Beetles, Andrea; Crane, Andrew (2005), Bettany, Shona; Dobscha, Susan; O'Malley, Lisa; Prothero, Andrea (2010), Stevens, Lorna; Kearney, Matthew; Maclaran, Pauline (2013), Sundstrom, Beth (2013) Hearn, Jeff; Hein, Wendy (2015) Valtonen, Anu; Närvänen, Elina (2015)
	Gender equality		Karande, Kiran; Rao, C. P.; Singhapakdi, Anusorn (2002), Tan, Thomas Tsu Wee; Ling, Lee Boon; Theng, Eleanor Phua Cheay (2002), Ogdén, Denise T. (2005), Hamlett, Jane; Bailey, Adrian R.; Alexander, Andrew; Shaw, Garth (2008), Leonidou, Leonidas C.; Leonidou, Constantinos N.; Kvasova, Olga (2013), Lieven, Theo; Hildebrand, Christian (2016), Lindridge, Andrew; Peñaloza, Lisa; Worlu, Onipreye (2016), Kayal, Ghadeer G.; Simintiras, Antonis C.; Rana, Nripendra P. (2017) Lindridge, Andrew; Peñaloza, Lisa; Worlu, Onipreye (2016)

Outcome	Economic value	Gender insights allow companies to optimize marketing activities to generate economic value	Maddox, L. (1999), Andrews, Lynda; Kiel, Geoffrey; Drennan, Judy; Boyle, Maree V.; Weerawardena, Jay Kiel, G.C. (2007), Roster, Catherine A.; Rogers, Robert D.; Hoziet, George C.; Baker, Kenneth G.; Albaum, Gerald (2007), Zhang, Xiaoni; Prybutok, Victor R.; Strutton, David (2007), Dabholkar, Pratibha A.; Sheng, Xiaojing (2009), Barber, Nelson A. (2013), Campbell, Colin; Ferraro, Carla; Sands, Sean (2014), Dabholkar, Pratibha A.; Sheng, Xiaojing (2009), Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Maddox, Lynda M. (1999), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008), Robinson, Jill L.; LeComte-Himely, Jenna R. (2012), Porter, Constance Elise; Donthu, Naveen; Baker, Andrew (2012), Natarajan, Thamaraiselvan; Balasubramanian, Senthil Arasu; Kasilingam, Dharun Lingam (2017), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008)
	Social value	Gender insights allow companies to create social value/keep ethical standards	Capella, Michael L.; Hill, Ronald Paul; Rapp, Justine M.; Kees, Jeremy (2010), Sharma, Piyush; Chen, Ivy S.N.; Luk, Sherriff T.K. (2012), Barber, Nelson A. (2013), Melancon, Joanna Phillips; Forbes, Lukas P.; Fugate, Douglas (2015)
	Ecological value	Gender insights allow companies to create ecological value	Raaijpoot, Nusser A.; Sharma, Arun; Chebat, Jean-Charles (2008), Kümpel Nørgaard, Maria; Nørgaard Hansen, Kathrine; Grunert, Klaus G. (2013), Yannopoulou, Natalia; Elliott, Richard (2008), Josiassen, Alexander; Assaf, A. George; Karpen, Ingo O. (2011), Garretson Folse, Judith Anne; Guidry Moulard, Julie; Raggio, Randle D. (2012), Gentina, Elodie; Bonsu, Samuel K. (2013), Gopaladas, A. (2013), Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Sheng, Xiaojing; Zolfagharian, Mohammadali (2014) Lewis, Michael; Mitra, Debanjan; Yoon, Yeujun (2013), Hutton, Martina (2015), Meyners, Jannik; Barrot, Christian; Becker, Jan U.; Goldenberg, Jacob (2017)

Source: Authors' creation

led to the category of “age”, which is exemplified in the study of Barber (2013), in which the influence of the internet on the gender-specific socialization of Generations X and Y is reflected upon (Barber et al. 2010). This research leads to the conclusion that marketers might pay more attention to the internet as an agent of socialization.

The fourth category of “social groups” pools articles that focus on the intersection of gender with other social groups. This category is evident in the study of Kümpel Nørgaard et al. (2013), which examines the influence of peer groups on snacking behaviour (Kümpel Nørgaard et al., 2013). This study might be used for social marketing campaigns and the promotion of healthy eating and therefore fosters marketers’ reflections on health and social wellbeing.

From the point of view of marketing practitioners, more gendered knowledge on diverse behaviour in different contexts is provided by the articles’ findings. Mostly, the knowledge might be used for gender consumption. Although the context component offers plentiful opportunities to approach research in a gender-sensitive manner, the analysis did not unveil GEM considerations.

Intervention

The nature of interventions as well as their implementation is analysed in the component interventions. Usually, the decision to apply a certain marketing intervention is based on the (unverified) hypothesis about its intended positive outcomes, for example, in brand recognition (Denyer et al. 2008).

In the analysis, the category of “instruments” was assigned to articles that study gendered reactions to a marketing activity. This is exemplified in the study of Leonidou et al. (2013), who question the role of cultural characteristics (Hofstede dimensions) on consumers’ ethical perceptions from the perspective of the individual (Leonidou et al. 2013). They aim to design and test a model about the consequences of unethical measures taking place across all elements of the marketing mix. Perceived unethical marketing behaviour decreases consumer trust. Among other results, they find that the connection between idealism and perceived marketing unethicality is stronger among men and older individuals.

Articles elaborating on the gendering of a brand or product as being male, female, or neutral led the category of “gendered products/brands”. For example, Guevremont and Grohmann (2015) examine the use of consonants in brand names and their influence on consumers’ perception as male or female brands (Guevremont and Grohmann 2015). With their study, they provide gender knowledge for gender production and economically optimizing brand perception. Furthermore, Azar (2013) investigates brand masculine patterns and aims at the development of a scale. Again, the study’s production of gender knowledge can lead to more profit (Azar 2013).

A further intervention was found in the studies that look into approaches to support customers in solving specific problems. The category of “problem solving” can be seen in the research of Milner and Fodness (1996), who investigate how cues regarding the gender of products can help or hinder Chinese

costumers in identifying the gender images of products (Milner and Fodness 1996).

The interventions in all analysed categories are based on the hypothesis that gendered reactions and behaviours are surveyed to discover more about divergent gender roles and possibilities to effectively use them. None of the interventions focused on the aims or hypotheses derived from GEM.

Mechanism

The component mechanism is strongly determined by the intervention. For example, if a marketing campaign promotes stronger consumer rights, this intervention might lead to a changing perception of consumer possibilities and therefore change long-term consumer behaviour. Men and women might show different reactions, and therefore, there might be gender-diverging mechanisms. Based on our literature review, we identified three different categories that belong to the component mechanism.

The first category, “employee-customer-interaction”, includes mechanisms shaping front-end staff interactions. For example, Bauman et al. (2016) analyse the mechanism of visibly tattooed front-line staff in two different job positions (surgeons and automobile mechanics). The results show that “consumers have a negative reaction to body art, but perceptions of tattoos on male and female front-line staff differ significantly” (Baumann et al. 2016, p. 31). Consumers “do not appear to care whether the woman mechanic has a tattoo or not; they simply do not want a woman working on their car” (Baumann et al. 2016, p. 37). From a marketing management point of view, it seems that it is challenging to balance the interests of rights. On the one hand, marketing management is interested in meeting consumers’ expectations regarding the appearance of front-end staff. On the other hand, marketing management should ensure that employees’ individual rights to self-expression are given (Baumann et al. 2016, pp. 37–38).

The second category, “feminism”, describes feminist insights that allow companies to create innovative marketing activities to develop a new and effective understanding of GEM. For example, Bettany et al. (2010) state that gender remains a “substantive opportunity for further development, where gender and feminist research can offer new insights, critiques, theories and approaches” (Bettany et al. 2010, p. 3). One example the authors discuss is a study by Kjeldgaard and Storgaard (2008) (Kjeldgaard and Nielsen 2010). They analyse the consumption of teenage females to understand how cultural meanings are handled. The results highlight “the shift in gender studies towards how gender discourses, including what it is to rebel or conform as a woman, become something akin to actors within highly complex negotiations of identity construction, circulating within a simultaneously global and local cultural terrain” (Bettany et al. 2010, p. 5).

The third category, “gender equality”, shows marketing activities that already examine gender equality aspects as mechanisms or discuss non-gender equality marketing and propose how to improve existing activities. For

example, Capella et al. (2010) analyse the impact “of portrayals of violence and abuse by advertising media, especially when directed at women” (Capella et al. 2010, p. 37) because they identify an increasing acceptance of what they call “cross-gender aggression and rape within society as a result of sexualized violence” (Capella et al. 2010, p. 37). As a result of the research, the authors can support the hypothesis that sexualized violence does not influence a “consumer’s attitude towards the firm or behavioural intentions” (Capella et al. 2010, p. 46). Overall, sexualized violence impacts only some advertising variables but with limited marketing success in general (Capella et al. 2010, p. 37).

The analysed articles in this component provide a great deal of gender knowledge. However, by themselves, the mechanisms are not linked to the outcomes; therefore, the articles leave it to practitioners to determine whether they implement the knowledge for GEM.

Outcome

The outcome component includes “various aspects, such as performance improvement, cost reduction or low error rates” (Denyer et al. 2008, p. 397) of the intervention. Overall, most of the analysed articles added to this component. Based on our literature review, we identified three different categories that belong to this component.

The first category, “effectivity and economic outcome”, includes gender knowledge that allows companies to invest money in an effective kind of way. For example, Bruwer et al. (2012) identify insights into gender-related wine preferences (Bruwer et al. 2012, p. 45). There are differences “in the wine consumption behaviour and wine type preferences of males and females and between generational cohorts, specifically millennial and older consumers. Whereas females and males do not differ much in quantity consumed and money spent on wine, they do differ greatly in wine type consumption, with females drinking significantly more white wine and males drinking more red wine” (Bruwer et al. 2012, p. 45). The results have different practical implications. For example, “it was established that the high usage (and probably high involvement) by a wine consumer can be directly reached at the winery tasting room retail channel. This provides the ideal opportunity for direct marketing to them and establishing a long-term relationship with the brand” (Bruwer et al. 2012, p. 57).

The second category, “social value”, describes the relation of gender and the creation of social value. For example, Hyllegard et al. (2010) analyse the influence of gender on cause-related marketing. Notably, they identify an influencing effect of Generation Y consumers regarding their interest and involvement in a social cause. Based on the results, the authors suggest that Generation Y consumers “are more likely to form positive attitudes towards an apparel brand when the amount of charitable support is clearly communicated. Gender did not influence attitude towards brands but did predict purchase intentions” (Hyllegard et al. 2010, p. 100). Future activities driven by customer relationship marketing “should consider Generation Y’s involvement in a social cause

(e.g., volunteerism) rather than their stated interest in the given cause, and they would be well advised to state precisely (in advertisements) the amount of monetary contribution made to charitable causes” (Hyllegard et al. 2010, p. 100).

The third category, “ecological value”, consists of gender insights that allow companies to create ecological value. For example, Noble et al. (2014) analyse the moderating effect of gender on frequently used measures regarding ad effectiveness (e.g., behavioural intention) in the context of pro-environmental social advertising in Australia, the UK and the US. The results show “that females respond more strongly to negative emotional appeals than males, while there is no significant difference in how males and females responded to positive emotional or rational ad appeals” (Noble et al. 2014, p. 4). Overall, the results of the research lead to “insights for advertising managers and others commissioned to develop and manage pro-environmental advertising campaigns” (Noble et al. 2014, p. 16).

The outcome component shows a weak connection to the TBL concept in the three deduced categories. Other approaches, such as the question of justice or policies, were not found. GEM management in the sense of building and maintaining sustainable relationships with customers, the social environment, and the natural environment through gender-sensitive attitudes, activities, and patterns of planned or emerging marketing strategies is missing thus far. Due to this lack, in the next section of the chapter, the intersection of the scholarly discussion with the four pathways is taken into specific focus.

CIMO Logic and Existing Sustainable Pathways to Gender Equality Marketing

Table 36.5 gives an overview of our literature analysis regarding the interface of CIMO and sustainable pathways.

In general, the results show that most of the articles focus on pathway 2. These articles especially consider the context (33) and the outcome (20). Pathways 1, 3, and 4 were hardly examined. The findings suggest that important potential parts of GEM were not previously taken into consideration. For example, a long-term perspective, such as the long-term impacts of advertising on women as part of the Brundtland Report, is not available in the scholarly discussion.

The column “Pathway 2” includes articles that consider at least one dimension of the TBL concept (e.g., social dimension) or more. Most of the articles in column 2 examine economic aspects. We did not find an article that followed the TBL pathway of attempting to balance the economic, social, and ecological sphere.

Furthermore, the fifth SDG has not been considered regarding understanding the interdependence between marketing activities and the opportunity to influence the different parts of Goal 5. One important reason is that the SDGs were announced in 2015, and many articles were written before that year. Nevertheless, even after 2015, there is no article that considers the SDG.

Table 36.5 CIMO category system and the four sustainable pathways

CIMO-logic	#	Pathway 1: <i>Brundtland Report</i>	Pathway 2: <i>TBL Concept (incl. Environmental, social, and economic dimension)</i>	Pathway 3: SDG	Pathway 4: <i>Specific Policies</i>
Context	33		Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Maddox, Lynda M. (1999), Maddox, L. (1999), Palmer, Adrian; Beggs, Rosalind; Keown-McMullan, Caroline (2000), Karande, Kiran; Rao, C. P.; Singhapakdi, Anusorn (2002), Tan, Thomas Tsu Wee; Ling, Lee Boon; Theng, Eleanor Phua Cheay (2002), Melancon, Joanna Phillips; Forbes, Lukas P.; Fugate, Douglas (2015), Ogden, Denise T. (2005), Andrews, Lynda; Kiel, Geoffrey; Drennan, Judy; Boyle, Maree V.; Weerawardena, Jay Kiel, G.C. (2007), Roster, Catherine A.; Rogers, Robert D.; Hozier, George C.; Baker, Kenneth G.; Albaum, Gerald (2007), Zhang, Xiaoni; Prybutok, Victor R.; Strutton, David (2007), Hamlett, Jane; Bailey, Adrian R.; Alexander, Andrew; Shaw, Gareth (2008), Moss, G. A.; Gunn, R. W.; Kubacki, K. (2008), Yannopoulou, Natalia; Elliott, Richard (2008), Dabholkar, Pratibha A.; Sheng, Xiaojing (2009), Josiassen, Alexander; Assaf, A. George; Karpen, Ingo O. (2011), Porter, Constance Elise; Donthu, Naveen; Baker, Andrew (2012), Robinson, Jill L.; LeComte-Himely, Jenna R. (2012), Sharma, Piyush; Chen, Ivy S.N.; Luik, Sherriff T.K. (2012), Barber, Nelson A. (2013), Kumpel Nørgaard, Maria; Nørgaard Hansen, Kathrine; Grunert, Klaus G. (2013), Gentina, Elodie; Bonsu, Samuel K. (2013), Gopaldas, A. (2013), Leonidou, Leonidas C.; Leonidou, Constantinos N.; Kvasova, Olga (2013), Lewis, Michael; Mitra, Debanjan; Yoon, Yeujuun (2013), Campbell, Colin; Ferraro, Carla; Sands, Sean (2014), Sheng, Xiaojing; Zolfagharian, Mohammadali (2014), Hutton, Martina (2015), Lindridge, Andrew; Peñaloza, Lisa; Worlu, Onipreye (2016), Lieven, Theo; Hildebrand, Christian (2016), Kayal, Ghadeer G.; Simintiras, Antonis C.; Rana, Nripendra P. (2017), Meyners, Jannik; Barrot, Christian; Becker, Jan U.; Goldenberg, Jacob (2017), Natarajan, Thamaraiselvan; Balasubramanian, Senthil Arasu; Kasilingam, Dharun Lingam (2017)		van Hellemont, Corine; van den Bulck, Hilde (2012)

Intervention	19	Shani, David; Sandler, Dennis M.; Long, Mary M. (1992), Jeng, Jiann-Min; Fescnmaier, Daniel R. (1996), Milner, Laura M.; Fodness, Dale (1996), Kempf, DeAnna S.; Laczniak, Russell N.; Smith, Robert E. (2006), Moss, G. A.; Gunn, R. W.; Kubaeki, K. (2008), Schertzer, Susan M.B.; Laufer, Daniel; Silvera, David H.; Brad McBride, J. (2008), Kyun Choi, Yung; Kim, Juran; McMillan, Sally J. (2009), Brace-Govan, Jan (2010), Folse, Judith A.G.; Moulard, Juli G.; Raggio, Randle D. (2012), Michaelidou, Nina (2012), Mortimer, Gary (2012), Azar, Salim L. (2013), Gonçalves, Helena Milágre Martins (2013), Sundstrom, Beth (2013), Guevremont, Amélie; Grohmann, Bianca (2015), Melancon, Joanna Phillips; Forbes, Lukas P.; Fugate, Douglas (2015), Valtonen, Anu; Närvänen, Elina (2015), Grohmann, Bianca (2016), Vilela, Alexandra M.; Nelson, Michelle R. (2016), Lick, Erhard; König, Bettina; Kpessa, Monyédodo Régis; Buller, Violetta (2017) Joy, Annamma; Venkatesh, Alladi (1994), Peñaloza, Lisa (1994), Beetles, Andrea; Crane, Andrew (2005), Karatepe, Osman M.; Yavas, Ugur; Babakus, Emin; Avci, Turgay (2006), Nairn, Agnes; Griffin, Christine; Gaya Wicks, Patricia (2008), Maclaran, Pauline; Miller, Caroline; Parsons, Elizabeth; Surman, Emma (2009), Bettany, Shona; Dobscha, Susan; O'Malley, Lisa; Prothero, Andrea (2010), Capella, Michael L.; Hill, Ronald Paul; Rapp, Justine M.; Kees, Jeremy (2010), Hearn, Jeff; Hein, Wendy (2015), Stevens, Lorna; Kearney, Matthew; Maclaran, Pauline (2013), Hearn, Jeff; Hein, Wendy (2015), Baumann, Chris; Timming, Andrew R.; Gollan, Paul J. (2016), Touzani, Mourad; Hirschman, Elizabeth C.; Hechiche Salah, Lamia (2016)
Mechanism	13	Dubé, Laurette; Morgan, Michael, S. (1998), Bailey, Ainsworth Anthony (2005), Elliott, Richard; Elliott, Christine (2005), Han, Heesup; Ryu, Kisang (2007), Inman, J. Jeffrey; Winer, Russell S.; Ferraro, Rosellina (2009), Jayawardhena, Chanaka; Kuckertz, Andreas; Karjaluoto, Heikki; Kautonen, Teemu (2009), Carpenter, Jason M. (2008), Rickwood, Catherine; White, Lesley (2009), Chung-Herrera, Beth G., Gonzalez, Gabriel R., Hoffman, K. Douglas (2010), Hyllegard, Karen H.; Yan, Ruoh-Nan; Ogle, Jennifer Paff; Attmann, Julianne (2010), Bruwer, Johan; Lesschaeve, Isabelle; Campbell, Benjamin L. (2012), Robinson, Jill L.; LeComte-Hinely, Jenna R. (2012), Tifferet, Sigal; Herstein, Ram (2012), Jeong, Hyun Ju; Paek, Hye-Jin; Lee, Mira (2013), Noble, Gary; Pomeroy, Alan; W. Johnson, Lester (2014), Bhaduri, Gargi; Ha-Brookshire, Jung (2015); Brough, Aaron, R., Wilkie, James E.B., Ma, JingJing, Isaac, Matthew S., Gal, David (2016), Luceri, Beatrice; Latusi, Sabrina (2016), Cambra-Fierro, Jesús; Pérez, Lourdes; Grott, Emily (2017), Walsh, Gianfranco; Schaarschmidt, Mario; Ivens, Stefan (2017)
Outcome	20	

One article examines the context in terms of specific policies (Van Hellemont et al., 2012). In the conclusion, the authors describe the result as fruitful for policy makers, “as it addresses restrictive and non-restrictive solutions to unfriendly gender portrayals in advertising adhered to by different cultures, interest groups or sectors in society” (p. 651).

Overall, the literature analysis using the CIMO logic indicates that only a small portion of the possibilities the four pathways offer for the analysis of GEM issues has been used so far in the scholarly discussion.

Discussion

Taking the current public discussion on gender issues in media and marketing as a starting point, we determined how little the scholarly discussion in the most relevant marketing journals of the last three decades differs from pursuing mere effectivity and profitability thinking. Analysing all four components of the CIMO logic led to the result that the discussion of the outcomes of marketing activities and strategies beyond economic factors has remained a fringe phenomenon. Following the design-oriented approach of this chapter, CIMO logic is used as a structure in the following discussion.

Context

The literature analysis clearly indicates that gender knowledge regarding context can more easily help foster traditional role stereotypes than help promote gender equality. This challenge can be seen in the discussion on green moms (Atkinson 2014). The concept itself seems current and a positive contribution to eco-friendliness. However, during pregnancy, women receive the advertising message that “by sacrificing her own agency, by removing herself from the frame, women can exchange their autonomy for a healthy, picture-perfect baby” (Atkinson 2014, pp. 567–568). Marketers’ gender production leads to strengthening the ideal of a dependent, stay-at-home mom instead of empowering women and encouraging the more equal sharing of child-raising duties amongst parents. Therefore, regarding the TBL pathway to GEM, it appears not to be sufficient to look at the environmental component without parallelly focusing on social impact factors. Consequently, gender knowledge on the context dimension could be applied in various ways, and the balancing act of GEM becomes obvious in this component.

Intervention

The decision to apply an intervention is based on an (unverified) hypothesis about its outcomes (Denyer et al. 2008). If the hypothesis includes the assumption that an intervention delivers a relevant outcome (e.g., a more positive perception of a brand), the company will probably realize the activity. Based on our literature analysis, it seems that the considered hypotheses are usually driven by economic reasons (e.g., masculine brand patterns; Azar 2013). Hypotheses about social outcomes such as influencing gender equality are not

part of the hypothesis development. However, if the decision makers would consider social outcomes and sustainable perspectives (e.g., the fifth SDG), the (unverified) hypothesis of applying an intervention (e.g., using stereotypes in advertising) would be modified. The component intervention might be seen as a very important component from the GEM perspective. The interventions in the analysed articles open up possibilities to identify mechanisms and to influence gendered perceptions of brands and products. Therefore, (un)equality can be promoted by applying gendered marketing interventions. Consequently, the interventions themselves imply whether the marketing strategy and activities support GEM or maximize profits in disregard of gender equality.

Mechanism

The mechanisms are triggered by the interventions. If the interventions do not refer to gender equality, for example, launching a new product that strengthens stereotypes in society, then the mechanism can hardly be part of a sustainable pathway. Moreover, if the intervention aims at gender equality, as the fifth SDG defines, the deriving mechanism can be either sustainable or not. An illustrative example from the literature can be seen in the intended and unintended mechanisms triggered by the intervention of employing visibly tattooed front-line staff (Baumann et al. 2016). Even if a woman works on customers' cars and realizes her individual rights to self-expression by showing a tattoo, the unintended gender-based discrimination found by Baumann et al. (2016) outweighs the tattoo-based discrimination because customers do not want a woman repairing their car.

The literature also highlights creative opportunities for new mechanisms triggered by feminist insights. In this context, "gender is to be considered as a two-sided coin, as constructions of masculinity, and what it is to be male, inevitably generate and constitute constructions of femininity, and what it is to be female" (Bettany et al. 2010, p. 16). The emphasis on completely new mechanisms may offer marketing approaches beyond our existing understanding of gender equality.

Overall, the literature review reveals several studies (e.g., Capella et al. 2010) that already analyse opportunities to avoid non-gender equality marketing by showing general limited marketing economic success due to the identified mechanisms. Less economic success due to unintended mechanisms might be one way of convincing marketing management to use GEM.

Outcome

The increasing research activity in the field of gender and marketing shows the field to be fruitful, and the increase in marketable gender knowledge is rich. In contrast, considering the possibilities of combining gender equality, namely, the possible positive effects on society and the natural environment, with profitability, the literature analysis results are poor. Even in studies that include aspects such as corporate social responsibility, the overall aims are market shares and profits (Jeong et al. 2013).

Considering the three dimensions of the TBL concept, most analysed articles add to the economic dimension. From this point of view, most articles focus on one of the four sustainable paths because their purpose is to achieve improved performance or cost reductions (Denyer et al. 2008, p. 397). However, the TBL concept includes environmental, social, and economic dimensions that should be considered simultaneously and equally. Existing research primarily focuses on the economic dimension and therefore is not balanced.

Practical Implications Beyond 2025

Our synthesis shows a wealth of marketing management knowledge, underlining that this knowledge has been used to optimize existing marketing activities over the last three decades. Nevertheless, it remains challenging to include pathways 1, 3, and 4. An increase in GEM seems attainable in this sense. If marketing management wants to obtain responses and outcomes that not only display more efficiency but also use further pathways of sustainable development to develop GEM beyond 2025, the following section provides propositions for companies to become advocates of GEM.

Pathway 1

Being aware of GEM's balancing act between mirroring and molding, marketing management might find new approaches to design and use marketing objects, for example, media, products, and brands. Based on their strategies, they might strive for equality-oriented gender production. The field of gender remains blurred in many aspects, starting with its definition (Hearn and Hein 2015), and mechanisms are not always clear. Therefore, monitoring gendered mechanisms triggered by marketing interventions and being aware of long-term impacts (e.g. Brundtland Report) will be of scholarly and practical value and includes manifold research avenues. This linkage is of special relevance on the internet, where GEM can set a contra-point to self-provided user content that frequently shows very conservative ways of gender consumption (traditional role stereotypes).

Proposition 1 If gender-sensitive patterns of marketing management are to promote gender equality, then they require a monitoring of the gendered mechanisms and an inter- and intragenerational understanding of impacts triggered by the interventions and mechanisms.

Pathway 2

Considering the TBL concept as a pathway to marketing managements' contribution to the equal wellbeing of women and men, the economic, social, and ecological dimensions might lead to the implementation of policies for the promotion of gender equality. One result would be gender-sensitive patterns of planned or emerging marketing strategies that trigger matching marketing

practices. These strategies and practices might foster positive environmental and societal outcomes without ignoring the necessity of economic success. Therefore, strategy development is also closely linked to the TBL pathway.

Proposition 2 If gender-sensitive marketing management is to promote gender equality, then it requires an attitude that balances aiming at positive economic outcomes with societal and environmental aspects.

Pathways 3 and 4

Being aware of gender issues and structural discrimination in native and other cultural settings is obligatory for implementing GEM. However, this is accomplished by informing and developing rules or policies. Organizational inertia is one reason why the implementation of GEM requires time and training. Similar to ethical trainings that affect sales staff attitudes (Taek Yi et al. 2012), gender-sensitive attitudes and actions in marketers might be developed. To perform GEM successfully in different cultural settings, marketers can not only make use of the plethora of high-quality research at the intersection of marketing and gender but also derive tested models and instruments. Moreover, they can move along the pathway of the specific gender policies established by several private and public organizations or the SDG that support their change process towards GEM.

Proposition 3 If gender-sensitive patterns of marketing management are to promote gender equality, then they require a good understanding of specific gender policies or the SDG in the relevant contexts to create suitable interventions with resulting mechanisms.

CONCLUSIONS

Gender is already an important matter in marketing. With the focus on GEM, new possibilities for research and practice beyond 2025 emerge. Our literature analysis indicates that previous studies have only partially discussed GEM in the context of sustainable pathways. The scholarly discussion on the context, the interventions, the mechanisms, or the outcomes is not carried by gender-sensitive approaches. Strategies or practices that balance the economy, ecology, and social needs to sustain future consumer markets are not yet available. Consequently, to establish new sustainable pathways regarding long-term perspectives according to the Brundtland Report, the TBL concept, the SDG and business policies beyond 2025, marketing management still has several opportunities. Based on the accumulated marketing-relevant gender knowledge and equipped with the propositions given earlier, the future of GEM management is promising.

The main contribution of this study to the research stream on gender equality in marketing lies in developing a conceptional framework of what GEM might look like. Based on these considerations, GEM and its specific context

are in the process of building a new self-conception. If the idea of justice especially includes that different people are not treated in an equal way but that equality and justice derive from different treatments of different persons or social groups to provide equal opportunities, then the development of GEM includes a range of value decisions. These decisions can only be made by marketers with high levels of gender sensitivity and high standards of ethics.

By using the CIMO logic in the literature analysis, an approach is applied that resembles marketers' planning processes. Therefore, this research provides support for marketing management in terms of structure and different strands of development in the marketing field. Moreover, our results provide a definition of GEM and propositions for companies to keep the balance between fostering societal inertia (as many automotive companies do today) and strategically initiating societal change (as some first movers, e.g., those in feminine hygiene products, have already started).

The study has certain limitations that require further research activities. For example, there is a need for the empirical validation of the categories. Furthermore, literature reviews in the field of gender and marketing are rare. Among the 1004 papers, literature reviews were mentioned in only five abstracts. A comprehensive internet search in Google Scholar underlined that this review is new in its aim and scope, and there are hardly any published recent (Palan 2001) or thematically connected (Hearn and Hein 2015) literature reviews.

At the beginning of this chapter, the methodology of this literature review is stated as an attempt to provide clarity, auditability, replicability, and transparency (Booth et al. 2016). However, the aspect of replicability is especially difficult to attain because many points discussed in the synthesis are subject to personal interpretations. Moreover, the highly ranked journals focus on the sector of scholarly discussions that primarily publishes research results from Western, Anglo-Saxon scholars, which leads to an English language bias. Other relevant regions and contexts may be underrepresented.

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The Female Way to Happiness at Work: Happiness for Women and Organisations

Irene Campos-García

INTRODUCTION

In recent years, the topic of workplace happiness has gained popularity among academics and professionals, leading to abundant research (e.g. Fisher 2010; Simmons 2014; Tasnim 2016; Warr 2011; Wesarat et al. 2015). Happiness management in the workplace has become an increasingly widespread practice in the field of human resources; different scales have appeared (e.g. Andrew 2011; Singh and Aggarwal 2018) and chief happiness officer or happiness managers are everywhere in demand.

A review of the previous literature has shown that ‘happiness at work’ and ‘job satisfaction’ are terms that have often been used interchangeably. These constructs both refer to pleasant judgments (positive attitudes) or pleasant experiences (positive feelings, moods, emotions, flow states) at work (Fisher 2010: 385). Measuring happiness as job satisfaction is, however, unnecessarily limiting (Wright and Cropanzano 2007): happiness at work includes, but is far more than, job satisfaction. Tasnim (2016) has suggested that the most significant cause for individual workplace happiness is job satisfaction, but happiness at work also requires work engagement and affective organisational commitment (Fisher 2010), so these factors may be its main background (e.g. Fisher 2010; Stairs and Galpin 2010).

The Great Place to Work Institute has shown that job satisfaction, work engagement and affective organisational commitment increase among

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employees—who are therefore happier at work—when they trust the people for whom they work, have pride in what they do and enjoy the people with whom they work. In a similar vein, Warr (2011) has argued that valued social position, availability of money, equity, career outlook and contact with others are the main determinants of happiness at work. Wesarat et al. (2015) have also suggested that employee happiness is influenced by employment status, income, work activities and friendship. Grouping many of those determinants, Sirota and Klein (2013) have pointed out that there are three key factors that condition employee happiness, morale and enthusiasm: equity, achievement and interactions. Equity has both financial components, such as fair salary, and non-financial components, such as safe working conditions, respectful and dignified treatment and equal employment opportunities. Achievement is positively linked to the meaning of the work and an inspiring organisational purpose: that is, the way in which the work is carried out and the moral character of the organisation (e.g. the appearance of greater or lesser ethical practices), as well as participative management styles that foster a sense of achievement and challenge that positively impact workers' enthusiasm. Finally, positive interactions and relationships with teammates lead to a more pleasant working environment and greater well-being and happiness at work.

The examination of all these factors proposed by previous research raises certain questions about women's happiness at work. The gender pay gap, inequality in employment opportunities, the glass ceiling and unethical practices or lack of visibility, inclusion and empowerment are the main factors that can dilute and reduce female happiness at work (e.g. Fairygodboss 2018; McKinsey 2018; Payscale 2019). What really makes women happy in the workplace is related to working conditions (such as safety and the flexibility to reconcile work and family life), and gender equality in terms of daily work experiences, career development and promotion possibilities (Fairygodboss 2018). In a similar vein, Milhouse (2005) has also revealed that lack of quality of work-life or work-life balance and high levels of job dissatisfaction caused by work-related dimensions such as pay, promotion, feeling accepted, equity and equality are the main conditions that impede women's happiness in the workplace.

This chapter therefore seeks to understand workplace happiness through the advancement and leadership of women. Two research questions are raised: Can organisations increase women's happiness in the workplace? From leadership positions, can women contribute to the happiness of organisations? Paying greater attention and implementing policies or practices to include and empower women, enhance female talent, increase career opportunities and close existing gender gaps could contribute to increase women's happiness at work. Previous research has stressed the many benefits of happiness at work: it increases creativity and proactivity and reduces the possibilities of conflict, anxiety and depression (e.g. Fisher 2010; Gupta 2012). Thus, an emphasis on increasing the degree of happiness of a good part of the workforce can lead to an increase in global productivity and organisational competitiveness. Many

researchers have, however, underlined that the potential of female virtues and traits—women are generally more empathetic, cooperative, unselfish, concerned with others and emotionally expressive (Eagly and Wood 2011)—makes women particularly valuable, especially in leadership positions (e.g. Adams and Ferreira 2009; Khan and Vieito 2013; Konrad et al. 2008; Strøm et al. 2014; Lückcrath-Rovers 2013). Women leaders can have a positive impact on socially responsible behaviour and corporate sustainability (e.g. Galbreath 2011; Glass and Cook 2018; Hyun et al. 2016), which can contribute to creating healthier and happier work environments. To answer both research questions, an exploratory and descriptive analysis as carried out in a set of Spanish and Latin American multinational companies based on the information contained in their annual and sustainability reports and company websites. Qualitative and quantitative techniques are combined.

This study contributes to the field by adding evidence for how the advancement and leadership of women can favour more fair and equitable workplaces and more sustainable organisations—a link previously unexplored. More happiness for women and for organisations ultimately helps women's social progress and business competitiveness. Important practical implications are derived for the management of human resources and female talent.

The remainder of this chapter is organised as follows: the second section highlights the main factors that can condition women's happiness in the workplace and offers an overview of gender inequities in the labour market that can undermine such happiness. The third section shows what initiatives or practices carried out by companies can contribute to increasing women's happiness in the workplace, while also assessing the impact that women leaders can have on the happiness of organisations. Finally, discussion and conclusions are presented.

WOMEN IN THE WORKPLACES: CONTEXT AND BACKGROUND

Previous research about women's job satisfaction and happiness at work has revealed that women generally report higher levels of job satisfaction than men because their job expectations are lower; women also tend to show their happiness and positive emotions more frequently at work than men (Clark 1997; Sloan 2012). Other gender differences have also been underlined: Clark (1997) concluded that female workers valued workplace social relations more highly than men, while Helliwell and Huang (2011) noted that female employees rated trust in management at their workplaces as more important than men, and Fortin (2005) revealed that women are more likely to value jobs that have more flexible working conditions.

In a similar vein, recent reports on happiness at work have revealed that women consider it essential (in a notably greater proportion than men) that companies have equal opportunity policies (Adecco Group 2017). Women are also more demanding: they highly value interactions and the relational component of work and champion the demands for equality and conciliation (IE Business School 2018). Women thus exhibit lower levels of happiness and

affective well-being when the work setting is more masculinised (i.e. where there is greater inequality) (Qian and Fan 2019) and are less committed than their male counterparts and have lower rates of recommendation as a result of actions that are detrimental to their happiness (IE Business School 2018).

The traditional gendered division of labour and occupational gender segregation, as well as discriminatory and unethical practices, have favoured significant gender inequities in women's treatment and interactions, employment opportunities, career development and promotion, which can undermine women's happiness at work. With respect to women's treatment and/or interactions, social role theory and stereotyping theory have explained why individuals or groups of 'low status'—such as women—are linked to different negative stereotypes that place them below the dominant or 'high status' groups—such as men (e.g. Eagly and Steffen 1984; Eagly and Wood 2011). In fact, several reports have warned that 'gender harassment' in the workplace—hostile behaviours that are devoid of sexual interest and can include sexually crude terminology or displays and sexist comments—remains a persistent problem (EEOC 2016). In a survey of harassment in the workplace, Ilies et al. (2003) revealed that 58% of women reported having experienced potentially harassing behaviours.

Regarding employment opportunities and career development, although female representation in the labour market has increased markedly in recent decades in most regions of the world, there are still large differences between men and women—in 2018, the global female employment rate was 45.3% compared to a male rate of 71.4% (ILO 2019). In addition, women are generally the ones most likely to request full-time leave or temporary reductions in working hours or refuse training programmes outside working hours, overtime hours or the possibility of geographical mobility due to the difficulty of reconciling work with family and domestic obligations (OECD 2014; World Bank 2019). These disadvantages largely justify the gender pay gap: about a quarter of the wage gap comes as a result of mothers taking part-time work (IFS 2019). In 2019, the median salary for men was roughly 21% higher than the median salary for women. Once all of the compensable factors such as experience, industry and job level are accounted for, a woman doing the same job as a man, with the exact same qualifications as a man, is still paid 2% less (Payscale 2019).

Closely linked to gender roles and the 'double burden' of work for women, there are also imbalances in terms of promotion. The differences in female representation are even more pronounced in leadership positions (e.g. Deloitte 2017; World Bank 2018). Women occupy 24% of management positions worldwide (Catalyst 2019) and are an even smaller minority as organisational leaders—only 33 companies in the Fortune 500 list are led by women (Forbes 2019). The slow progress of women contrasts with the rapid increase of women's educational levels and experience, leading to the criticism that female talent remains unrecognised, under-valued and underutilised (Tatli et al. 2013).

Business success has traditionally been linked to male traits and abilities—men are generally more agentic, that is, assertive, competitive and dominant (Eagly and Wood 2011)—as has been recognised in the well-known ‘think manager – think male’ paradigm (e.g. Schein et al. 1996). For men, their own gender role and managerial (or leadership) roles are similar in content, but for women these roles are dissimilar—the ‘think follower – think female’ perspective indicates that the role of the ‘ideal’ follower is strongly associated with the female gender, so that women ‘fit’ better as followers than as leaders (Braun et al. 2017).

Women possess a communal orientation and complex interpersonal skills—such skills include, for example, building relationships, communication and consensus building (Trinidad and Normore 2005), so they are generally considered more friendly, unselfish, concerned with others and emotionally expressive (Eagly and Wood 2011). The female gender role incongruity results in prejudice against women as potential and real leaders (Eagly and Karau 2002). Nevertheless, numerous studies have shown that some female traits can provide women with a leadership advantage in certain leadership roles (Eagly 2007; Eagly et al. 1995)—hence the emergence of the ‘think manager – think female’ perspective (e.g. Eagly and Carli 2003; Helgesen 1995; Rosener 2011). Some researchers have categorised female leadership practices as focusing on interactive, participatory, non-hierarchical, flexible and group-oriented practices (e.g. Burke and Collins 2001; Eagly and Carli 2003; Eagly and Johannesen-Schmidt 2001), and abundant research has underlined the positive impact of female leadership. In a recent meta-analysis of 146 studies conducted in 33 different countries, Jeong and Harrison (2017) have shown that the relationship between leader gender and long-term organisational performance is statistically significant. Post and Byron (2015), combining the results from 140 studies, have revealed that female board or management team representation is positively related to firm performance. Moreover, based on a sample of 87 studies, Byron and Post (2016) also found a positive link between female board or management team representation and social performance.

In summary, the gender imbalances that persist in the workplace negatively affect the factors that condition women’s happiness at work and prevent companies from enjoying the advantages of fully and effectively utilising all their human resources (e.g. Swailes et al. 2014; Tatli et al. 2013).

HAPPINESS AT WORK IN A FEMALE WAY

Methodology, Data Collection and Variables

Many companies publish annual sustainability reports—or even specific diversity and inclusion reports—that offer detailed information on gender issues. The reports published by large companies that, in recent years, have led the rankings of most popular employers were reviewed (e.g. Fortune 100 Best Companies to Work For, World’s Most Attractive Employers, Top Employers

or Merco). Checking the reports of American companies (e.g. Google, Facebook, Microsoft, Apple, Deloitte, SAP America, Accenture, KPMG, IBM, Kimberly Clark, and P&G), Asian companies (e.g. Samsung, Sony or Toyota) and European companies (e.g. Siemens, BMW, Daimler, Nestlé or Danone) revealed little information regarding gender. More information was provided in the reports of Latin American and Spanish multinational firms.

The largest Spanish and Latin American multinationals were chosen, eliminating those that offered less information (e.g. Latam Airlines, Femsa, Pemex, Iberia or Inditex). Six Latin American companies and six Spanish companies were ultimately selected from the most represented sectors—telecommunications, banking and energy: América Móvil, Banco do Brasil, Bancolombia, Ecopetrol, Petrobras, Grupo Energía Bogotá, Telefónica, Santander, BBVA, Repsol, Iberdrola and Naturgy.

Information was collected from material published in the most recent annual and sustainability reports (data from the end of 2018) and company websites related to initiatives to promote female talent, diversity and reconciliation of family and personal life, the presence of women in different hierarchical positions (CEOs, boards of directors, leadership positions and total workforce), types of labour contracts and working hours, health and work climate indicators (occupational diseases, accidents, absenteeism and turnover) and indicators of opportunities and equality (training and gender gap). Many of these measures can be used as *proxies* to approximate the organisation's level of happiness and evaluate the quality of relationships in the work environment. Lack of health, absenteeism, turnover, salary differences, gaps in professional development opportunities and the absence of legislation or good corporate governance are indicative of unhealthy, unpleasant and unhappy workplaces.¹

Like the methodology used by other researchers (e.g. Gill et al. 2008; Jose and Lee 2007; Langer 2006), a qualitative comparative analysis was carried out through content analysis of the reports and websites of companies with different initiatives that could contribute to women's happiness at work. Quantitative analysis with the variables previously considered was also performed to evaluate the effect that greater female representation in leadership positions can have on organisational happiness.

¹ Some data were not available and some measures found were not comparable—much reporting remains idiosyncratic and largely non-comparable (Grosser and Moon 2008; Langer 2006). For example, variables related to illness or accidents were measured by some companies as rates, frequency indexes or number of cases. The measures referring to occupational diseases or accidents were thus eliminated from the analysis. Some companies showed their general turnover rate and others only the voluntary turnover rate. Regarding salaries, some companies also published the difference in the remuneration of men and women who perform the same function and are in the same position (as percentages), while other companies offered the ratio of women's to men's remuneration. To standardise the information, data were transformed to show the pay gap as a percentage for all companies.

*Happiness for Women: Can Organisations Increase Women's
Happiness in the Workplace?*

Using a qualitative comparative analysis, Table 37.1 shows the practices or initiatives of each company. These initiatives have been classified according to their main purpose.² Qualitative research findings reveal that almost all companies show their concerns about gender issues and recognise in their reports to be attached to the *UN Women's Empowerment Principles* to contribute to *Sustainable Development Goals 5* and *8* and to have gender equality objectives, but not all companies carry out actions in this regard.

América Móvil has launched the *We Care for Mexico* campaign with the aim of promoting more women to study and work in the fields of science and technology and incorporating the gender perspective at the highest leadership levels across the telecommunications industry; however, it does not have specific programmes for training and promoting female talent. It also does not show any conciliation practice that benefits women, but in order to promote diversity and inclusion, the company has recently created the *Ethics Executive Committee* and the *Sustainability Executive Committee*—both chaired by women.

Banco do Brasil participates in the *Gender and Race Pro-Equality Program* of the Brazilian Federal Government and has implemented gender-affirmative actions through the programme *BB Ações Equidade*. Specifically, the *Women's Leadership Program* aims to promote the development of leaders and broaden the participation of women in the *Professional Growth Programs*. The company has also included the *Gender Equity Indicator* in the *Units' Work Agreements*.

Bancolombia is a member of different institutions that claim gender parity—for example, the *Gender Parity Council in Labor and Education* and the *Red Emprende Igualdad*—but has no specific programmes to develop female leadership or favour family and work reconciliation. Its CSR report names its *Diversity and Inclusion Policy* but does not include any initiative in this regard.

Ecopetrol has a *Diversity and Inclusion Program* aimed at increasing the participation of women in Ecopetrol's workforce, promoting fair work practices, greater representation in leadership positions, development of high-performance women and working conditions that facilitate their entry into the industry.

Petrobras also participates in the *Gender and Race Pro-Equality Program* of the Brazilian Federal Government and has been recognised with the *Gender and Race Pro-Equality Seal* five times. Although it has not implemented any

²On the one hand, training programmes and promotion of female talent are aimed at increasing the presence and representation of women in certain positions, favouring women's access and promotion—for example, through objectives and quotas—and reducing the gender pay gap. On the other hand, practises related to work flexibility and the reconciliation of family and work life may contribute to improving the quality of life of women and reducing their absenteeism rates. Finally, diversity and inclusion practices also affect female empowerment and the cohesion of work teams, which can improve the work environment and reduce voluntary turnover rates.

Table 37.1 Initiatives to increase women’s happiness at work

	<i>América Móvil</i>	<i>Banco do Brasil</i>	<i>Bancolombia</i>	<i>Ecopetrol</i>	<i>Petrobras</i>	<i>Empresa de Energía Bogotá</i>	<i>Banco Santander</i>	<i>Telefónica</i>	<i>Iberdrola</i>	<i>BBVA</i>	<i>Repsol</i>	<i>Natungy</i>
Promotion of female talent		X					X	X		X	X	X
Flexibility and reconciliation					X		X	X	X	X	X	X
Diversity and inclusion	X	X	X	X		X	X	X	X	X	X	X

Source: Author’s creation based on CSR reports

specific programme, its gender equity objectives are aimed at stimulating the allocation of women in operational areas and increasing women's participation in management positions, based on meritocracy principles. The company also has an *Administrative System of Flexible Hours* for home office work from which certain employees can benefit.

Grupo Energía Bogotá claims to promote good practices in favour of greater work and social equality for women. It develops programmes to empower women in the territories in which it operates. For example, two firm groups have been awarded the *Safe Company Free from Violence and Discrimination against Women* seal and the *Labor Inclusion Award* for their practices and policies on the inclusion of women in the electricity sector.

Santander has set the goal of increasing female presence on its board to 40–60% by 2021 and in executive management positions to 30% by 2025 in order to reduce gender inequality, and has actions aimed at supporting the growth of women through mentoring and development programmes. The company leads the *Bloomberg Gender-Equality Index*—a ranking that includes the 104 global companies with the best practices in gender diversity—but continues to add new principles to drive its diversity and inclusion strategy. Additionally, it has launched online training on diversity and inclusion to contribute to the change of mentality and develop new skills. Santander also encourages more flexible ways of working with a flexiworking policy that contemplates the alternative configuration of schedules and teleworking.

Telefónica has a *Global Diversity and Inclusion Policy* that aims to enhance the presence of women in the selection processes and has set a goal of reaching 30% of women as executive managers in 2020. It has also created different global acceleration career programmes, such as *Women in Leadership*. Other programmes to improve the prospects for female promotion are *Women & Leaders* in Colombia, *Talentia* in Spain, *Female Talent* in Mexico and *Woman Network* in Peru. Regarding the reconciliation of family and work life, Telefónica has different measures to improve this balance—for example, teleworking and *Agile Ways of Working* methodology.

Iberdrola has a *Diversity and Equal Opportunities and Conciliation Policy*. It claims to have numerous actions to increase diversity and promote female presence in its labour force—for example, in the United States, the *CMP Lineworker Program* is aimed at training professionals and prioritising the inclusion of women in the energy sector—and shows its commitment to increase the number of women in management positions. Intensive days, flexible hours, teleworking and extended maternity leave are the main initiatives in the field of conciliation. Currently, the company is the only Spanish energy company included in the *Bloomberg Gender-Equality Index*.

BBVA has different initiatives to promote female talent—for example, the implementation of the *Rooney rule* that requires 50% of candidates for management positions to be women and coaching programmes for women of high potential. Its different actions included in the *Equal Treatment and Opportunities Plan* have led it to be part of the *Bloomberg Gender-Equality*

Index and the *Equileap Global Report on Gender Equality* which selects the 200 best global companies in gender equality. It has also been included in the *D2019 Variable Report* that includes the 30 companies in Spain with the best practices in diversity and inclusion. Finally, BBVA also favours work and family reconciliation with measures such as setting deadlines for leaving work, respecting the digital disconnection time and implementing teleworking.

Repsol has designed maps of female talent with the intention of achieving 30% of women on its board of directors by 2020. It also has an *Equal Opportunity Plan* to improve the employment position of women in relation to their professional career. The *Diversity and Conciliation Committee* also ensures a balance between personal and professional life, with its teleworking programme having the greatest acceptance.

Naturgy has launched three programmes in order to promote and empower women: *Take the Lead*, *Hazte Visible* and *Mentoring*. Its *Integral Diversity Plan* includes gender-specific initiatives—for example, online training with programmes such as *Women Empowerment*, *Inclusive Leadership* and *Diversity Management*. It also has reconciliation measures and support for the personal environment, such as the flexible day.

As can be seen, almost all the companies analysed have different plans or policies to manage gender diversity—and other variables such as age, race or disability. However, the number of companies that show the existence of different flexibility policies aimed at facilitating family and labour reconciliation, as well as specific programmes of female leadership or quotas whose objective is to increase the number of women in management positions is reduced. Table 37.1 also shows that Latin American companies are lagging behind in promoting gender equality as compared to Spanish companies³—in fact, four of the Spanish companies are included in the worldwide list of the *2019 Bloomberg Gender-Equality Index*. Therefore, Spanish companies have a wider set of initiatives that can contribute to a greater extent to the women's happiness at work.

Happiness for Organisations: Can Women Leaders Contribute to the Happiness of Organisations?

Previous studies have revealed that the happiest workplaces are characterised by high involvement and high commitment approaches and have lower rates of staff turnover, absenteeism or work leave (e.g. Fisher 2010; Simmons 2014). This section analyses the effect that women leaders can have on measures that

³This may be due to the adoption or not of some initiatives or public policies related to gender equality. In Spain, there are gender quotas and/or corporate governance codes that include several gender recommendations for management and supervisory functions within companies to combat the still insufficient presence of women (see, for example, the *Good Governance Code of Listed Companies* approved by the Board of the Comisión Nacional del Mercado de Valores). Latin American countries like Argentina, Brazil, Chile, Mexico and Peru have not adopted any legislation in this regard; Colombia has, but only for state-owned enterprises (Deloitte 2017).

can be used to approximate the level of happiness of organisations. Specifically, the analysis is carried out based on data on female presence in different hierarchical positions and indicators of work environment and work opportunities.

The information collected from all Latin American companies is shown in Table 37.2.

América Móvil is a Mexican company dedicated to telecommunications. It is run by a man and has only one woman on its 16-member board of directors. The average percentage of women in management positions is 23.97%: 18.49%, 23.32%, 25.27% and 35.33% female presence in executive positions, first- and second-level manager and management positions with a commercial role, respectively. Of the total workforce, 38.74% are women. The turnover rate stands at 12.90%, and each permanent employee received an average of 30 h of training, with women taking advantage of 32.8% of the total hours of training.

Banco do Brasil has a woman on its seven-member board of directors. The percentage of women in senior management positions is 8.62%, and 40.24% of the total workforce are women. Regarding absenteeism, the lost day rate—days lost/days planned—was 0.2% for both men and women, and the total absenteeism due to health reasons was 2.98%, with 0.19% and 2.78% due to occupational and non-occupational health and safety issues, respectively. This absenteeism rate was 2.5% for men and 3.7% for women. The voluntary turnover rate stands at 2.2% (0.8% for female employees and 1.4% for male employees). Moreover, in an organisational climate and engagement survey conducted by Banco do Brasil in 2018, 77.3% of women and 77.8% of men were evaluated as engaged employees, and the percentage of satisfied employees was 83.6%. As for training by gender and role, the average hours per employee was 116.2—126 and 108.12 h for management men and women, and 108.13 and 122.10 h for non-management men and women (the high number of activities and training hours is due to the availability of new training initiatives and educational programmes, as well as new technological innovation releases from *UniBB*).

Bancolombia has no women on its board of directors—the seven members are men. The percentage of women with the role of boss (of the total heads) is 57% and the figure for women in high management positions is 36%. However, the company has a feminised workforce, since 62% of the total employees are women. With respect to work environment, the company claims to have numerous activities for employee health and human security, and is investing a lot in *Quality of Life* programmes. The absenteeism rate is 1.99%, and employee turnover by withdrawals is 11%, of which 56.1% are for women and 43.9% for men. On the other hand, the average training hours per employee is 44 for non-managers and 35 for managers—in total, women received on-site and virtual training of 52 h, while men were trained 75 h. Concerning the salary compensation by gender, women are 6.5% below men in strategic positions.

Ecopetrol is a Colombian oil company that has 10% of women on its board of directors. It also has 12% of women as senior executives and 20% of women in middle management. The percentage of women in the total workforce is 22%. The labour absenteeism rate is 3.7% (2.7% for men and 6.9% for women).

Table 37.2 Female presence in different hierarchical positions: Latin American companies' data

<i>Company</i>	<i>Woman CEO</i>	<i>Women on board of directors</i>	<i>Women in management positions</i>	<i>Women in the total workforce</i>	<i>Work environment</i>		<i>Opportunities and equality</i>	
					<i>Absenteeism</i>	<i>Turnover</i>	<i>Training</i>	<i>Pay gap</i>
<i>América Móvil Telecommunications</i>	No	6.25%	23.97% Executive positions: 18.49%	38.74%	n/a	12.90%	30 hours/ employee	n/a
<i>Banco do Brasil Bank</i>	No	14.28%	n/a Senior management positions: 8.62%	40.24%	2.98%	2.20% (voluntary)	116.2 hours/ employee	n/a
<i>Bancolombia Bank</i>	No	0%	57.00% High management positions: 36%	62.00%	1.99%	11.00%	44 h (non- manager); 35 h (manager)	6.5%
<i>Ecopetrol Oil</i>	No	10.00%	20.00% Senior management:	22.00%	3.70%	3.50%	65.7 hours/ employee	6.00%
<i>Petrobras Oil</i>	No	30.00%	12.00% 18.00% Executive managers:	16.33%	2.13%	n/a	52.54 hours/ employee	6.00%
<i>Grupo Energía Bogotá Energy</i>	Astrid Alvarez	33.00%	14.00% 32.00% Senior management:	30.10%	0.90%	28.00% (8.00% voluntary)	54.66 hours/ employee	5.00%

Source: Author's creation from CSR reports

Additionally, the rate of days lost to absenteeism due to work-related illness is 13.9 (14.7 for men and 13.7 for women). The voluntary worker turnover rate is 3.5%. Regarding opportunities and equality, the average training hours per employee is 65.7 (69.6 h for men and 52.1 h for women). The equal pay gap is, on average, 5%.

Petrobras is a Brazilian oil company that has 30% of women on its board, 18% of women in leadership positions—specifically, 13% as directors and 14% as executive managers—and 16.33% of female employees. Regarding the work environment, the lost labour time or absenteeism rate is 2.13%. Concerning opportunities and equality, employees received an average of 52.74 h of training, 54.38 h for male employees and 44.33 h for female employees. The ratio of salary and compensation between women and men is 6% for the highest positions.

Grupo Energía Bogotá is a Colombian electricity company that is chaired by a woman and has three women on its nine-member board of directors. It has about 32% of women in management positions and a workforce composed of 30.1% female employees. The absenteeism rate is 0.9%, the employee turnover rate is 28% (41% for women and 59% for men) and voluntary employee turnover rate is 8%. The total number of hours dedicated to training in 2018 was 54.66, and the pay gap is 5% for senior management.

Table 37.3 shows the information collected from all Spanish companies.

Santander is chaired by a woman and has 33.3% of women on its board of directors. The percentage of women in management positions is 37.3%, with 35.5% in Continental Europe and 39.8% in Latin America; the figure for executive management is 20.5%, with 22.2% in Continental Europe and 16.1% in Latin America. Women occupy 54.5% of the total workforce. Regarding the work environment, the absenteeism rate is 3.61% (4.4% for women and 2.64% for men) and the employee turnover rate is 15.4% (15.10% for women and 15.70% for men). With respect to opportunities and equality, each employee received an average of 33.8 h of training (54.4% of the women were trained and they received on average of 33.37 h versus 34.27 h for men) and the equal pay gap is 3%.

Telefónica is a telecommunications company. It has 17.6% of women on its board of directors, 30.7% in mid-level management positions, 23.3% as executive directors—25% in Spain, 19% in Brazil, 21% in Colombia and 21% in Mexico—and 37.7% in the total workforce. The absenteeism rate in Spain is 0.05% (0.04% for men and 0.06% for women) and the voluntary employee turnover rate is 7.9%. In matters of opportunities and equality, the average hours of training per employee is 28 (20 h for women directors, 30 h for women managers and 30 h for women employees versus 16, 29 and 27 h for men directors, managers and employees, respectively). Finally, the gender gap is 3.4%.

Iberdrola is an energy company. It has 36% of women on its board of directors (five women among the 14 members), 31.8% in mid-level management positions, 20.2% in executive management positions and 23.3% in the total

Table 37.3 Female presence in different hierarchical positions: Spanish data

	Woman CEO	Women on Board of Directors	Women in management positions	Women in the total workforce	Work environment		Opportunities & equality	
					Absenteeism	Turnover	Training	Pay gap
Santander <i>Bank</i>	Ana Patricia Botin	33.30%	37.30% Executive management: 20.5%	54.50%	3.61%	15.40%	33.8 hours/ employee	3.00%
Telefónica <i>Telecommunications</i>	No	17.60%	30.70% Executive management: 23.30%	37.70%	0.05%	7.90% (voluntary)	28 hours/ employee	3.40%
Iberdrola <i>Energy</i>	No	36.00%	31.80% Executive management: 20.20%	23.30%	2.30%	10.53%	41.58 hours/ employee	2.70%
BBVA <i>Bank</i>	No	26.60%	49.20% Executive management: 22.10%	54.00%	1.20%	7.6% (voluntary)	47.3 hours/ employee	3.20%
Repsol <i>Oil</i>	No	20.00%	29.20%	28.70%	n/a	23.00%	45 hours/ employee	5.00%
Naturgy <i>Energy</i>	No	8.30%	28.30%	31.00%	2.68%	17.40%	49.9 hours/ employee	9.60%

Source: Author's creation from CSR reports

workforce. Regarding the work environment, the absenteeism rate is 4.6% and the employee turnover is 10.53% (10.25% for women and 10.82% for men). As for equal opportunity and equality, the average training hours per employee is 41.58 (34.78 h for women and 48.38 h for men) and the gender pay gap is 2.7%.

BBVA has four women on its 15-member board of directors. The percentage of women in management positions is 49.2%, in executive management is 22.1% and in the total workforce is 54%. The bank company has an absenteeism rate of 1.2% (0.9 for men and 1.5 for women) and the voluntary employee turnover rate is 7.6%. Employees are trained an average of 47.3 h, and the gender pay gap is 3.2% in leadership positions.

Repsol has three women on its 15-member board of directors. The oil company has 20% of women on the board of directors, 29.2% in management positions and 28.7% in the workforce. Its turnover rate is 23%, with a voluntary employee turnover rate of 6%. Concerning opportunities and equality, each employee received an average of 45 h of training—36 h for women and 50 h for men—and the gender pay gap is 5%.

Naturgy has only one woman on its 12-member board of directors. The percentage of women in management positions is 28.3% and 31% of the total workforce are women. The absenteeism rate is 2.68% and the turnover rate is 17.4%, with a voluntary employee turnover rate of 2.5%. The average hours of training per employee are 49.9, and the total gender pay gap is 9.6%.

An initial analysis of the different *CSR* reports reveals that only two of the 12 companies analysed have a woman as CEO. There are notable differences in female representation in the labour force according to the sector—the energy sector is very masculinised and the gender gap is larger in this sector. In general, women have higher absenteeism rates: this is a reflection in most cases of the imbalance between men and women in family and household responsibilities, since it is also found that women also have the highest percentages of part-time working hours. Women also generally receive fewer hours of training than men, evidencing a gender bias in terms of employment opportunities and professional development. In most cases, the voluntary turnover rate is higher for men, who are more likely to change jobs.

Secondly, the *Bivariate Pearson Correlation* shows different significant relationships between the variables included. Quantitative research findings reveal that there is a strong positive linear correlation between female representation in executive positions and in middle management positions ($r = 0.878^{**}$). Similarly, a greater proportion of women in the workforce is also positively related to a greater female presence in middle management positions ($r = 0.872^{**}$). That is, in workplaces where there is greater female representation in the workforce, more women are likely to occupy leadership positions. On the other hand, female representation on the boards of directors relates significantly and negatively to the gender pay gap ($r = -0.622^*$); in other words, the pay gap is reduced as the presence of women on the boards increases. Regarding training, it is found that the difference in hours between men and women is

reduced as women increase in leadership positions; therefore, there is greater equality when there is greater diversity at different hierarchical levels. However, there is no evidence of a relationship between female leaders and absenteeism rates or turnover rates.⁴

DISCUSSION AND CONCLUSIONS

Different studies have underlined that the background of happiness in the workplaces—at both employee and organisation levels—is mainly related to working conditions and climate and, more specifically, to factors related to the existence of fair and ethical conditions, inclusion and equality of opportunities and healthy work environments (e.g. Sirota and Klein 2013; Warr 2011; Wesarat et al. 2015). Analysis of the labour market for gender reveals the imbalances that exist between men and women and finds certain inequities in treatment, training and career development, compensation and promotion practices that place women at a disadvantage (e.g. McKinsey 2018). It is clear, therefore, that gender imbalances and inequities generate failures that reduce women's happiness at work and affect the happiness of organisations.

This chapter seeks to address happiness in the workplace from a female perspective. The ways in which organisations can contribute to and increase women's happiness at work and the effect of female leadership on the happiness of organisations have been explored. The findings suggest that organisations can increase and manage women's happiness at work more efficiently through the design and implementation of good practices or initiatives to reduce existing gender gaps. It was also found that women leaders could have an impact on issues that are indicative of happier organisations. These results are shown in Fig. 37.1.

Regarding happiness for women, the qualitative analysis revealed that most Latin American and Spanish companies were concerned about gender issues—although not all of them acted on those concerns. Diversity and inclusion

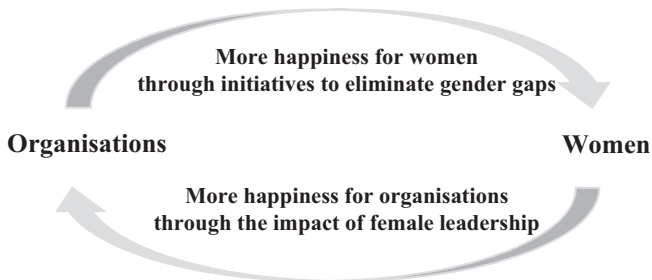


Fig. 37.1 Targeting organisational happiness by supporting women. (Source: Author's creation)

⁴This may be due to the fact that the general turnover rates and the voluntary turnover rate cannot be compared, and the idiosyncrasy of each sector depends on their dynamism and employment opportunities.

policies abounded, followed by flexibility and personal and work reconciliation initiatives. Such initiatives and policies could contribute to reducing gender imbalances in women's treatment and interactions, recruitment and/or professional opportunities. However, the commitments and actions aimed at increasing women's power, talent and presence in positions of maximum responsibility were scarcer, so more effort and stronger policies in this direction are required. The institutional context also plays an important role: Latin American companies lag behind in promoting gender equality compared to Spanish companies, which have a wider set of initiatives that could contribute to women's happiness at work.

Regarding happiness for organisations, the results of the correlational study suggest that women leaders contribute to creating healthier and more equitable workplaces from measures that can be used as proxies for corporate happiness levels. Specifically, companies with more diverse workforces generally exhibited greater diversity in their leadership positions and boards of directors, and women leaders contributed more to the promotion of other women towards management positions, perhaps due to solidarity behaviour between women in management leading to the formation of alliances, gender awareness and commitment to changing social structures for women (Korabik & Abbondanza, 2004). In general, companies with more women in leadership positions exhibited higher rates of female job satisfaction, and women were more likely to remain in their current companies if a greater number of them were promoted to leadership positions (e.g. Fairygodboss 2018; Lee et al. 2015; McKinsey 2011, 2018).

The results also suggest that companies with a higher proportion of women on their boards of directors enjoy smaller gender pay gaps, and that a greater female presence in different leadership positions contributes to the reduction of differences in the amount of training and, therefore, improves women's job opportunities. Although it has not been possible to clarify the direction of the relationship between female presence in leadership positions and the working environment indicators used here, this study suggests that women leaders can create more inclusive, diverse and equitable workplaces. There is some doubt, however, as to whether women need to occupy certain hierarchical positions to have a significant impact on staff turnover, absenteeism or work leave. That is, their impact may not be significant because they are still a minority in the highest positions and a greater critical mass is required (e.g. Joecks et al. 2013; Konrad et al. 2008).

Important practical implications can be derived from these findings. First, happiness at work affects behaviours and has a positive impact on levels of job satisfaction, commitment and productivity. While unhappiness can lead to a lack of mental concentration (Killingsworth and Gilbert 2010), happiness allows employees to devote more attention and effort to solving problems at work (Oswald et al. 2015). Making subjects happy seems to encourage them to put in more effort (SMF and CAGE 2015). Pursuing an increase in women's happiness at work through practices that promote inclusion and equal

opportunities has two positive effects: the elimination of the gender gap that harms women and an increase in global labour productivity. That is, the importance of increasing women's happiness in workplaces is justified not only for ethical and equality reasons, but also for reasons of economic efficiency.

Organisational and workplace culture, organisational networking and organisational practices have a significant impact on women's advancement (Jauhar and Lau 2018). Directors, HR managers and/or happiness managers should also strive to ensure that gender goals and initiatives are a vehicle to achieve greater equality and diversity and a more inclusive and hospitable culture for women. The scope of such initiatives must be more than good intentions, a form of advertising or an effort to avoid penalties. As Grosser and Moon (2008) have affirmed, most companies communicate their policies and programmes but make little reference to their impacts; it is therefore important to evaluate and quantify the success of these initiatives and their impact on happiness levels. Women are also encouraged to continue to show their disagreement with unethical or unfair practices and demand more attention and proactivity from their employers in actions that contribute to their happiness. This greater attention and proper management of diversity could in fact encourage the attraction and retention of female talent (e.g. Ng and Burke 2005). Lastly, governments and public policy makers—especially in the most lagging countries in terms of gender—are also called to design and implement codes or laws that contribute to the promotion and achievement of real and effective gender equality within organisations and, thereby, women's happiness at work.

Second, happier organisations increase their chances of success because they are more competitive—with greater productivity and lower personnel costs—and have a higher social reputation (e.g. Simmons 2014), and female leadership can have a positive impact on that happiness level. In line with social role theory, women have a greater orientation towards moral principles—in large part because women have better internalised ethical and community values through their roles (Eagly and Carli 2003)—and show more disinterested, altruistic or transparent behaviours (Rosener 2011). Women also show more complex moral reasoning, which essentially involves making fairer decisions and demonstrating greater sensitivity and justice in ethical and social aspects (Bart and McQueen 2013). Women are better at understanding complex relationships as they develop, particularly in a global economy (Werhane 2019). Therefore, women in executive or managerial positions contribute to more socially responsible organisational practices and behaviours, and relying on female talent could favour the long-term sustainability of organisations. External and organisational barriers—women often lack mentors, role models, sponsorship or access to appropriate networks (Linehan and Scullion 2008)—must therefore be removed to better prepare women to fill leadership positions (McLean et al. 2016). In addition, getting rid of internal barriers is critical to gaining power: women hold themselves back by lacking self-confidence and by pulling back when they should be leaning in, thus lowering their own expectation of what they can achieve and compromising their career goals (Sandberg 2015).

Finally, the findings obtained must be interpreted in light of some limitations. The absence of standard reporting practices renders direct comparison of companies impossible (Grosser and Moon 2008: 194), so some indicators that would have enriched the analysis have not been considered. The number of companies in the study sample was also small. Happiness in the workplace is also far from static (Simmons 2014), and this study only focused on a specific moment in time. A possible future line of research would be to expand the study sample and conduct a longitudinal analysis to verify the effect of the relationships presented here.

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Assessment of the Level of Sustainable Development Based on Agenda 2030

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INTRODUCTION

The evolution of the knowledge about management given by the consequent development and improvement of theories and the successful experiences has been contributed to the amelioration of the municipal management, and results of research and studies contribute to the improvement of methods, processes, and controls. Public organizations need to be aware of the needs of people, the expectations of populations and consumers, and, more recently, the appeals and demands of environmental guidelines. In municipalities, where the public management is closer to the population, demands for actions that are more incisive to discussions about good management, sustainability, and sustainable development arise. Despite the notable theoretical advance realized by the publications and examples of good management practices, perceived in some municipalities, it is noted that there are still several difficulties in advancing consistently. According to Gonzalez-Perez and Leonard (2015), while the concept of sustainability incorporates the concept of social advancement towards a more egalitarian and prosperous planet, at the enterprise level the implementation and implications of responsible management are predominantly pragmatic. Responsible management implies changes in corporate

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strategies and objectives, and these changes often transcend existing financial considerations or corporate social responsibility initiatives.

The Agenda 2030, developed by the UN, is an action plan for people, companies, municipalities, federative units, countries, for the planet in order to preserve and to thrive. It seeks to strengthen universal peace and the eradication of poverty in all its forms and dimensions, including extreme poverty. It is an ambitious set of actions that establishes 17 goals, with 169 targets, in order to provide the sustainable development (UN 2016). Achieving the millennium goals means the action of a collective and integrated effort among nations (UN 2016); however, it cannot be considered a responsibility only of central governments; they have the duty to create and induce policies and strategies that force all levels of government and society working in the same direction. Gonzalez (2016) presents a study on climate change and the 2030 corporate agenda for sustainable development. The author states that the signing of COP21 means that governments and companies understand that the future viability of businesses and societies (sustainability and competitiveness) depends on this universal agreement. Achieving the established goals requires a long term, as well as the commitment of companies, governments, and societies. Identifying what must be prioritized and how to contribute to the specific interests and needs of each nation is needed.

Uddin (2017) also presents a study on climate change and global environmental policy. In general, poorer and less developed regions contribute little to environmental degradation compared to more developed and highly industrialized regions. By contrast, the poorest regions are those with the greatest vulnerability to impact on environmental degradation. The political economic perspective sees vulnerability as the creation of political, social, and economic policies aiming at the conditions of society and does not consider the environment.

Thus, good practices for sustainable urban development should be identified, supported, and reinforced. This requires relevant methods and tools for testing and designing behavioral and changing scenarios in a socio-ecological system in support of sustainable development of cities. The sustainable city has been a global concern in recent years, involving natural sciences and social science research. However, few studies have attempted to map global sustainable city research. While developing a tool for city control and monitoring, focusing on sustainability, the relationship between social and ecological systems should be considered, as a basis for improving planning and management of urban development (Kalentari et al. 2019; Wang et al. 2019).

Sustainable development and municipal management are central and quite relevant for the study; however, they cannot deviate from their essence, which is the need to contribute to a better supply of services, since the services provided by the same government must come in return for the taxes and fees collected. Services such as public health, transportation, security, education, among others, are constant targets of criticism and discontent of the Brazilian population, and these services to the population, essence of the existence of

this sector, should be a basic premise in the public power, and work as basis for managers in their decision making.

There is a lack of municipal management assessment tools that portray the managerial scenario and provide essential data for the formulation of public policies. It is becoming more apparent that these assessment tools should include sustainable development. The objective of this study is to propose an assessment tool for the sustainable development of municipalities based on the UN Agenda 2030. This chapter presents the development of this tool, so that it is simple to apply and understand, contextualizing public management, its historical limits, evolution, and the relationship with sustainable development. Therefore, the main contribution of this tool is to present the public manager with a simple methodology, which allows identifying how the municipalities position themselves in terms of sustainable development, which areas of their responsibility are aligned with the objectives of the UN Agenda 2030 and which indicators can be improved.

PUBLIC MANAGEMENT AND ITS RELATIONSHIP WITH SUSTAINABLE DEVELOPMENT

It is necessary to consider that the resources to be managed by the public power come from the contributions of the population through taxes and fees that should return as services provided. Although the principles of public management are based on the constitutional legal dictates of efficiency and effectiveness in the application of these resources (Brasil 1988), the return through services such as security, health and education, is not always perceived.

The emergence of public administration in the nineteenth century has shifted the focus away from the centrality of politics to seek a greater understanding of how governments are managed. The great classical ideas of the good state created and defended by the philosophers Aristotle to Rousseau, whose management was more political, have been losing ground since the emergence of the science of administration, that is, over time, have gradually lost ground to the idea of an efficient state and more specialized and professional management (Wilson 1887; Denhardt and Denhardt 2015; Andion 2012).

In 2008, based on the United Nations Millennium Development Goals (UN 2005), Bresser Pereira stated that public administration reform in developing countries would contribute to economic development and the achievement of goals. The author describes a model of public management reform and calls it the structural model of public management. The goal was to try to make the state more capable and more efficient by adopting a particular structure of division of labor among the state organization itself (Bresser Pereira 2008; Andion 2012).

Advances in public management can be observed in more developed countries. Importing models from these locations and adapting them to developing

countries can be a viable alternative to contribute to development. Hence, it is necessary to have the ability to import or rebuild models to take advantage of more modern management practices, seeking sustainable development (Bresser Pereira 2008; UN 2016).

According to Braun and Mueller (2014), it is inefficient and ineffective to treat public administration as a private administration; however, one can build immensely for the other. Public administration should not be distanced from its social function and the role of listing priorities, focusing only on management focused on community interest. It is essential, as well as in the private sector, that managers work to achieve assessment rates that record quantitative results.

THE MODELS OF PUBLIC MANAGEMENT AND THE RELATION WITH THE DEVELOPMENT

After the constitutional and legal aspects that dictate the rules in the public management, we can resume the presentation of the public management models, deepening of theoretical references and, thus, clarifying the fundamental principles of these models. The state-centric current places public administration as a legal and administrative science. It is one of the most influential currents in the field of public administration in Brazil. Its predominance extends from the beginning of the discipline until its consolidation, a period that corresponds from the late nineteenth century to the late 1970s (Keinert 2000; De Paula 2005; Taufick and Alves 2010; Andion 2012; Donner Abreu et al. 2013). It leads to a unified view of the state, which is the only responsible for planning, operating, and evaluating public policies, in a decentralized way, from top to bottom. In this model, power emanates from norms, formal institutions, and not from the charismatic profile or tradition (Secchi 2009). Concern with organizational efficiency is central to the bureaucratic model, with the rational allocation of resources and obedience, leading to formalization (Secchi 2009; Bresser Pereira 2008; Donner Abreu et al. 2013). Public administrators are seen as officials responsible for implementing policies and programs, ensuring the practice of bureaucratic principles and scientific administration, an administration thought from the inside (Gaetani 1999; Taufick and Alves 2010; Andion 2012).

In the pluralism, whose management of public administration points solely and exclusively to the political field, the state is no longer seen only as a synonym of government apparatus and is interpreted as a space of dispute between different social classes or different groups (Taufick and Alves 2010; Andion 2012; Donner Abreu et al. 2013). On one hand, De Paula (2005) mentions that the main merit of the pluralism was to bring to light the importance of civil society as a political actor; On the other hand, Nogueira (2005) and Andion (2012) warn that radical pluralism can lead to an anti-institutional stance, that is, civil society could be seen as the quintessential space of politics, weakening the state itself and representative democracy.

Managerial public administration or managerialism (MPA), public governance (PG), and entrepreneurial government (EG) are organizational models that incorporate prescriptions for improving the effectiveness of public organization management and conceptually bring it closer to theories applied to private enterprise (Secchi 2009). These models share the values of productivity, service orientation, decentralization, service efficiency, marketization,¹ and accountability² (Kettl 2012). MPA, PG, and EG are often referred to as managerialism, and the latter two are often considered synonymous.

Other authors point to these models as the new public administration (NPA), and this new proposition is divided into Neo-institutionalism, Managerialism and Good Governance; however, they understand that NPA is not limited to a set of techniques. As demonstrated by Ferlie et al. (1999), NPA is composed of a series of values and administrative principles that configure different management models focused on efficiency, decentralization, and excellence of the public service.

Andion (2012) points out that recent studies in the field of public governance have shown the emergence of these new forms of management (NPA), including proposals in which traditional models of socioeconomic regulation, characterized by the centrality of the state or the market, coexist with other conduction modes of collective action (community governance or partnership). There is a shift from traditional ways of governing to shared governance models. The same author argues that NPA focuses on unifying the discussion of the currents (MPA, PG and EG) mentioned above, and deals with the science of management, bringing the public administration closer in a professional manner, seeking pragmatic results and efficiency, in example of private initiative, but respecting the public legal and political precepts. NPA arises from constant management crises over the years, being a set of approaches, which aims at applying market principles and business logic in the sphere of public administration in several countries of the world (Andion 2012; Denhard & Denhard 2015).

METHODOLOGY

The first stage of this study comprises the development of the municipal analysis tool. The UN Sustainable Development Goals (SDGs) consist of 17 goals and 169 targets. These goals were interpretatively analyzed and those related to the municipalities were selected, considering as criteria for choosing the goals that can be managed and have interference by the municipal managers. The result was the selection of 56 marks, which were grouped into 40 sets, defined as the indicators for the final tool. To define the indicators, open public data were used, which is a prerequisite for the tool to be used by more municipalities, associations, and universities. In this context of transparency and condition of access, it is possible to exercise a control of society over the management of municipalities. These sources are presented in Appendix 1. The tool can be applied to any municipality, that is, the precept is that the tool is universal. It

was conceived and structured in a closed way, that is, the indicators, formulas, assigned weights, decision criteria, and analysis will be pre-defined and cannot be changed by the municipalities, thus keeping the reliability and comparability factors always present.

With the objectives and indicators defined, the indicators were classified according to the conceptual criteria of the economic, social, and environmental dimensions, in order to understand if the proposed tool meets the criteria defined by the UN when defining the concept of sustainable development. In the adopted classification method, each indicator was evaluated based on the dimension that is linked, establishing the syllable “EN” for environmental, letter “E” for economic and “S” for social, thus creating a matrix called ESEN (Economic, Social and Environmental).

To define the weights and values of each objective, the adopted criterion considered that each of the objectives has a maximum weight of 1 (one); thus, the maximum total result of the index will have a maximum value of 17 points. Therefore, considering that each objective has a weight of 1 (one) and can consist of more than one indicator.

After this step, it was adopted the criterion of dividing the total sum of indicators of each objective in a way that each one reaches the value of 1, for example: (a) Goal number 2 has one goal and only one indicator, so this indicator has weight = 1, it represents the goal itself; (b) Goal 3 has eight goals and only four indicators, so each indicator has a weight of 0.25, totaling 1 for the goal, equal to the others.

For the assembly of the mathematical model and consequently creation of the index, it is necessary to define relative weights for the indicators that reach or not the goal. Thus, the following intervals were defined as parameters: 1—When the indicator reaches the goal; 0.8—When the indicator is within 10% of the target; 0.5—When the indicator is within 11–20% of the target; and, 0—When the indicator is at a distance bigger than 20% below the target. To define as a parameter of achievement of the indicators, it was established that comparisons should be based on national indicators, that is, it compares the indicator of the municipality with the national indicator or else the average result of the municipalities of the country.

Considering that it is essential to define ranges to fit the evaluations, the criterion established in the bibliography was adopted, where, according to Magalhães and Lima (2013). Generally, assessment ranges with the same amplitude must be taken. However, bands of uneven size may be convenient for representing values at the end of the scale. In this sense, it was considered that values below 80% would be disregarded, assuming that the municipality that reaches an index below 80% will have a low contribution to sustainability.

To calculate the score of the objectives (Score), presented in Table 38.1, the following were considered: the weight of the indicator (second column); the national reference index (third column); and the calculated municipal data (fourth column). We consider that the ideal criterion for the municipal indicator should be less than or equal to 100% of the national reference indicator, depending on each case. With the defined municipal indicator, it was decided to apply the formula (dividing the municipal indicator by the national indicator

Table 38.1 SDG calculation structure

Municipal Index of Sustainable Development									
Goal	SDG number	Weight	National Indicator	Municipal Indicator	IDEAL Parameter	Goal Percentage	Contribution Interval	Contribution Reference	Score
1 – Poverty Eradication	1	1	26%	26,50%	< =100%	101%	>90%<100%	0,8	0,8
2 – Zero hunger and Sustainable Agriculture	2	1	6%	2,90%	< = 100%	46%	>=100%	1	1

Source: Authors' creation

times 100), reaching the percentage of the goal achieved, represented in column 6 of Table 38.1, always taking into consideration that the national indicator is 100% and, therefore, the minimum reference to be reached. This percentage was compared to the criteria set out in item 6 above, establishing the values in column 7. Before defining the score, based on column 7, the weight was assigned and column 8 was filled, which also complies with the criteria mentioned in item 6 above; the score was calculated by dividing the contribution reference, column 8, by the weight, represented in column 2; and, the contribution of each objective, which is the sum of the score of the indicators of each objective.

It is important to highlight that, by adopting these criteria, an indicator may represent a percentage greater than 100%. We can cite as an example Goal 1 in which the ideal reference defined for the goal is less than or equal to 100%. If the indicator is above the goal, it means that the conditions of the municipality are worse; in this example case, that poverty is higher in the municipality than the country average. For the elaboration of the tool, different weights were not considered for the selected indicators. The option for not weighing the indicators is because it is based on the UN Agenda 2030, which does not assign weights to the listed indicators.

With all the calculations of the tables set, it is possible to define the condition of the municipality regarding sustainable development compared to the conditions of the country; thus, to arrive at the calculation of the Index, in relation to Agenda 2030, the value of all indicators is added comparing them to the maximum value of 17, considering as the basis of interpretation the following conditions:

- (a) reaching 17 points, it is understood that the municipality has excellent condition of sustainable development in relation to the country to which it belongs;
- (b) a value between 13 and less than 15 points, the municipality would be in an average condition of development;
- (c) below 13 points, the municipality would be at a low level of development.

In order to validate the tool, this one was employed to analyze the municipality of Novo Hamburgo, Brazil, as shown below.

SUSTAINABILITY INDEX BASED ON UN AGENDA 2030: A CASE STUDY

To be able to test the application of the tool, a few data collected in the municipality of Novo Hamburgo and the country were used, comparing them in a longitudinal space interval with data from 2010 to 2018, always using the most updated information obtained of each indicator, where the data collection survey result is December 2018 (Table 38.2).

To consolidate the present methodology, the indicators must be reliable, representative, and from reliable sources. Therefore, it is worth mentioning that Table 38.2 was prepared based on information obtained from the sources presented in Appendix 1.

The result presented in Table 38.2 shows an index of 12.38 points for the municipality of Novo Hamburgo. Considering the criteria employed for the results analysis, the municipality of Novo Hamburgo presents a low level of development and a low contribution in relation to the country. By analyzing each indicator, we are not proposing to the municipal manager the conception of actions, but offering a tool with instruments of analysis, so that, applied by the municipal managers, they can be an instrument to improve the sustainable development condition of the municipality through effective programs, laws, actions, and other possible instruments. A more detailed analysis of each indicator is presented in Table 38.3.

As we evaluate the indicators, we get a clearer view of the context that impacts the goals. As the proposed analysis considers what represents full compliance by municipal management at the sustainable development level, the ideal scenario is that all indicators could reach 100%, but 9 indicators are below 80% of the reference goal. Two of the remaining three indicators are close to reaching the target, that is, they are above 90% and one a little further from the margin, between 80% and 90%. Thus, 12 out of 40 indicators deserve more specific attention from public management.

We have 28 objectives, of the 40 indicators that can be related and that make up the tool, that are indicators that have reached 100% or more of the goal established by the national standard. These indicators make up the majority and are rated at an excellent level of development. At first sight, because they are a majority, one can make the mistake that this parameter, by itself, brings a good development condition to the municipality, but as the proposed tool is composed of more precise and comprehensive criteria, it is necessary to evaluate the whole scenario and individually. From the remaining 12 indicators, 9 are rated at the low contribution level to sustainable development in the municipality, while 2 are rated high and only 1 is rated as an average contribution. Thus, it is necessary to understand the impact of the other 12 indicators on the result before stating anything more definitive about the condition of sustainable development of the municipality.

Eight of the 17 objectives have reached a satisfactory level of development and can be qualified with an excellent contribution to development, namely:

Table 38.3 Analysis and interpretation of the result of municipal indicators compared to the national data

Analysis by Indicator (Excellent, High, Medium and Low)			
Indicator Number	Indicator	National Indicator	Municipal Indicator
1	% of inhabitants of the municipality with income of less than ½ the minimum wage	26%	26,5%
This municipal indicator compared to its national reference shows that the municipality does not reach the established target, that is, the number of inhabitants residing in the municipality with income less than 1/2 minimum wage is higher than the national average, so this indicator does not have the expected level of development and needs the manager attention to be improved.			
2	% of population in extreme poverty (up to \$ 1.90 a day)	6%	2,9%
This indicator, which represents the portion of the municipal population that lives in conditions of extreme poverty, the municipality presents a reality quite different from the previous one, it is quite far, considering the percentage references from that we found in the country, which raises the municipality to an excellent condition in this comparison.			
3	Infant Mortality	14,90	9,36
Considering that the infant mortality reference needs to be evaluated the lower the better, at this point also the municipality is in excellent condition compared to the national numbers.			
4	Number of fatal accidents	23,00	7,60
Fatal victims in traffic always represent a significant loss and portray the conditions of roads, signaling, enforcement and traffic education. In this indicator, the municipality has excellent numbers compared to the country, the indicator presented by the municipality is approximately 1/3 of what the country presents, which raises the municipality to a prominent condition.			
5	% of municipal budget invested in health	15%	17,4%
Investment indicators, in any area, are always a bottleneck for municipalities, managers always list priorities according to their beliefs, even if they often excite specific laws of resource application. In addition, resource constraints are evident, although this context always presents itself with the health investment indicator in the municipality of Novo Hamburgo proportionally higher than that invested by the central government, which raises the municipality to a position comfortable with Sustainable Development.			
6	% of investments in teacher training	0,075%	0,051%
The investment context characteristic of this indicator occurs in the same scenario of resource limits of indicators, however, in this case, the municipality has a lower performance proportionally than the country applies, which puts it in a condition of low development according to criteria established in the methodology.			
7	% School Attendance Rate	96%	81,7%
The investment context characteristic of this indicator occurs in the same scenario of resource limits of indicator 5, however, in this case, the municipality has a lower performance proportionally than the country applies, which puts it in a condition of medium development, according to the criteria established in the methodology.			
8	% School-age children without access to education	9%	10,9%
The municipality's responsibility is also to keep school-age children in schools. The municipal indicator, compared to the national indicator, underperforms when compared to the Development condition in this case, assessing that the margin is less than 10%, puts the municipality in a low condition.			
9	Basic Education Development Index	5,50	5,60
This Index is calculated based on the students learning on Portuguese and Math (Brasil Test) and in the scholar approval index. The indicator learning varies from 0 to 10 and the higher, the better. It is important to highlight that a 10 would mean that every student obtained maximum expected performance.			
10	% of budget invested in education	16,20%	16,8%
The investment context characteristic of this indicator is in the same scenario of resource limits of indicator 5, however, in this case, the municipality performs better proportionally than the country applies, which puts it in an excellent condition of development, according to the criteria established in the methodology.			
11	% of women in leadership position in municipal public agencies	29%	10,0%
The municipality of Novo Hamburgo has a low contribution in terms of valuing women by putting them in management positions, while nationally we have 29% of the positions of female leaders, in the municipality we only have 10%.			
12	12% of women in city council	14%	7,1%
The reality of indicator 12 is no different from indicator 11, that is, the representation of women in the city council is almost half of what we find in the average of city councils in the country, leaving the municipality in a low condition of development.			
13	Women's empowerment programs in the municipality	1,00	1,00
This indicator represents the municipality's concern and effectiveness in maintaining programs that contribute to gender equality and women's empowerment. It measures whether the municipality maintains such programs, considering that the research has shown that the municipality is in excellent condition of development.			
14	% Urban and rural population served by water supply	83,3%	83,6%
The municipal indicator that indicates the population served by water supply is practically equal to the national average, in this condition, the municipality has a high development.			
15	% Urban and rural population served by sewage collection	52%	6,9%
The population served by sewage collection in Novo Hamburgo is much lower than the national average, which leaves the municipality, in the evaluation of this indicator, with a low contribution. At this point it is necessary that the municipality advances significantly to get close to the national average reality.			
16	% treated sewage in relation to collected sewage volume	75%	100,0%
Even though the result of indicator 15 was of low contribution, this indicator (16), which considers the ratio of treated sewage volume in relation to the collected ones, that is, a cut of the previous indicator, is excellent because all the collection that is made is being treated. Raising the threshold in this indicator of the municipality for an excellent contribution to development.			
17	% Utilization of treated water	63%	58,0%
By wasting water that has already been treated, the municipality has significant losses in all areas, whether economic, social or environmental. The indicator shows an average development condition considering that the loss is higher than the country average, however, it is very close, being 63% in the country and 58% in the municipality.			
18	% population without access to energy	2,20%	0,4%
The municipality presents excellent level of development when evaluated the population that is served by energy. While the country has an average of 2.2% of people without access to energy, the municipality has only 0.4%.			
19	Municipal laws encouraging the implementation of renewable energy programs	1,00	1,00
Like the indicator 13, this indicator is represented by yes or no, in this case, the municipality has laws that encourage the deployment of renewable energy, which puts it in excellent condition for development.			
20	Entrepreneurship incentive projects and programs	1,00	1,00
Like the indicator 19 this indicator is represented by yes or no, in this case the municipality has programs that encourage entrepreneurship, which puts the municipality in excellent condition of development.			
21	Local tourism incentive projects and programs	1,00	1,00
Like the indicator 19, this indicator is represented by yes or no, in this case, the municipality has projects and programs to encourage tourism, which puts it in excellent condition of development.			
22	% of young people without jobs	21%	15,3%
The condition of the municipality in indicator 22, which deals with the percentage of young people without jobs, represents that it performs significantly better than the national average in practically 6 percentage points, which makes the city in an excellent condition of Sustainable Development.			
23	Industrialization Level (% Share of Industry in Municipality Added Value)	12%	21,0%
The level of industrialization, which is measured by the added value of industry to the municipality of Novo Hamburgo, puts it in excellent condition for sustainable development, that is, while the country's average is 12%, the municipality has 21%.			
24	Innovation and development support programs	1,00	1,00
This indicator also points to the existence or not of innovation programs that contribute to development. The municipality has this type of program, which puts it in an excellent condition of Sustainable Development.			
25	Income inequality ratio in the municipality	55%	53,8%

(continued)

Table 38.3 (continued)

The income inequality ratio should always be downward, that is, the lower the percentage, the better the equality condition. In this indicator, the municipality of Novo Hamburgo has a better condition than the country's average, thus placing it at an excellent level of development.			
26	% Productive inclusion	100%	66,7%
This indicator, considering that it is at 66.7%, when the ideal should be 100%, leaves the municipality at a low level of development, as well as another, it points to an imminent need for actions by the municipality to change this reality.			
27	Safe housing levels (% of unsafe housing)	41%	31,1%
The indicator measures how many percent of the population lives in unsafe housing conditions. It is noticed that the municipality presents a better indicator than the national average. While this is 41%, in the municipality we have 31.1%, which gives the municipality an excellent level of development.			
28	% of population with access to public transport	65%	75,0%
Effective public transport improves environmental, economic and social conditions. Novo Hamburgo has an excellent performance in this indicator, reaching 75% of the people served, while the national average is 65%.			
29	% Recycled waste index	5%	100,0%
Of the recyclable waste, the indicator indicates that Novo Hamburgo presents an excellent performance condition, that is, all collected waste is sent to recycling. It is noteworthy that the indicator points, as previously specified, to the ratio of collected waste that can be recycled (selective collection) and not the total waste.			
30	Index % of population served at least once a week with waste collection	77%	80,0%
Currently, in Novo Hamburgo, the rate of population that is served by garbage collection reaches 80%, while the national average reaches 77%. Although the percentage difference does not have a significant margin, it shows that the municipality has an excellent Sustainable Development condition.			
31	Existence of contingency plans and natural disaster prevention	1,00	1,00
The existence or not of contingency plans for the prevention of natural disasters is an important condition for the effectiveness of the population. In this case, the municipality has a structured plan.			
32	Existence of sustainable purchasing program for the municipality	1,00	0,00
Sustainable purchasing contributes to the improvement of the municipality's economic conditions, but also to the universalization of opportunity for those who want to be a municipality's supplier. The research pointed to the non-existence of a sustainable purchasing program, which places the municipality at a low level of development in this indicator.			
33	Waste reduction awareness and incentive programs	1,00	1,00
The Public Management keeps active a program to encourage awareness for waste reduction, giving the municipality an excellent condition for sustainable development.			
34	% of waste recycled or reused	3%	5,0%
While indicator 29 showed the condition of waste collected and recycled in relation to those collected and possible to be recycled, this indicator represents the percentage amount of waste recycled or reused in relation to the total waste produced by the municipality, considering that Novo Hamburgo recycles more than the national average (5% for the municipality and 3% nationally), places the municipality in excellent condition for development.			
35	Municipal councils of environment	1,00	1,00
The existence of municipal development councils, in addition to complying with the law, points to a concern of the municipality with the environment. The survey found that Novo Hamburgo maintains a board, which puts it at an excellent level of development.			
36	Support and incentive program for artisanal fishing	1,00	0,00
The lack of a support program for artisanal fishing points to a low contribution to Sustainable Development in this indicator.			
37	% Properties registered and controlled in a rural environmental register	100%	100,0%
Registering rural properties in the Rural Environmental Registry shows a concern with environmental issues, in addition to complying with federal laws. In this indicator, when reaching 100% of registered properties, the municipality fully meets and puts it in an excellent condition of development.			
38	Homicides in the municipality	29,27	23,80
Although the municipality of Novo Hamburgo has common sense as a violent place, the indicator that compares the local numbers in relation to the national reality represents that the municipality is below average, that is, in excellent condition of development according to the criteria settled down.			
39	Homicides against minors (under 19)	18,10	11,50
As in indicator 38, indicator 39 provides better results when compared to municipal and federal levels, that is, this point also has an excellent contribution to development.			
40	% Representation of exports in municipal GDP	13%	5,5%
Finally, indicator 40, which represents the exploitation of the municipality in relation to GDP, indicates that the municipality has a low participation, that is, exports less than the national average and places the municipality in this indicator, with low level of development.			

Source: Authors' creation

Another group of seven indicators are poverty eradication; health and welfare; qualified education; gender equality; drinking water and sanitation; reduction of inequality; and responsible consumption and production, although they have a low level of development, the indicators, somehow, have a contribution to sustainable development. These indicators require greater attention from the public manager, because they point to a difficulty in properly managing public resources and, consequently, fulfill the demands of the population. It is necessary that the municipality, through its managers, thinks of viable alternatives in order to transform this reality, it is necessary to debate, develop programs, projects and actions, and allocate resources of all kinds to change this reality.

The total objectives and the contribution of each objective were defined according to the following criteria: 1 ($\geq 100\%$); 0.8 ($> 90\%$; $<100\%$); 0.5 ($> 80\%$; $<90\%$); and 0 ($<80\%$). This analysis, with the attribution of weights at each level, can point to a more objective path for the definition of strategies and actions of the manager, considering that the worse the level and the contribution of the objective, the higher the priority of the actions.

From the point of view of the criteria proposed in the general framework, they are classified as excellent, high, medium, and low level of sustainable development. The analysis table does not change much compared to those exposed in the previous analysis. We observed that 8 of the 17 objectives analyzed for the municipality reach the level of excellence in development, which represents an index equal to or above 100% of the national reference. Another 8 objectives are classified as low contribution to the established development goal, with an indicator below 80% of the national reference. This limit is the minimum tolerable for the municipality to contribute to sustainable development. Only one goal is at the high contribution level and none at the medium contribution level. There is no doubt that the results reflect the reality of low level of development and low contribution of the municipality analyzed.

As an analysis, considering that the context of sustainable development needs to be assessed from all angles, it is necessary to have a vision not only of the indicators and goals together or in isolation, but what they represent for sustainable development. In this sense, assessing the contribution from the perspective of the economic, social, and environmental area, which forms the development tripod, is fundamental. Based on the concepts established above, it was possible to identify which of the three areas most contribute to the improvement of the index. We also identified whether there is no distortion in the actions proposed by the public administration, as shown in Fig. 38.1.

The parameterization of the analysis is based on comparing the possible sustainable development contributions that the municipality reaches in each of the dimensions, represented by the blue columns, and what level the municipality reaches, represented by the red columns, supported by a comparative line of percentages.

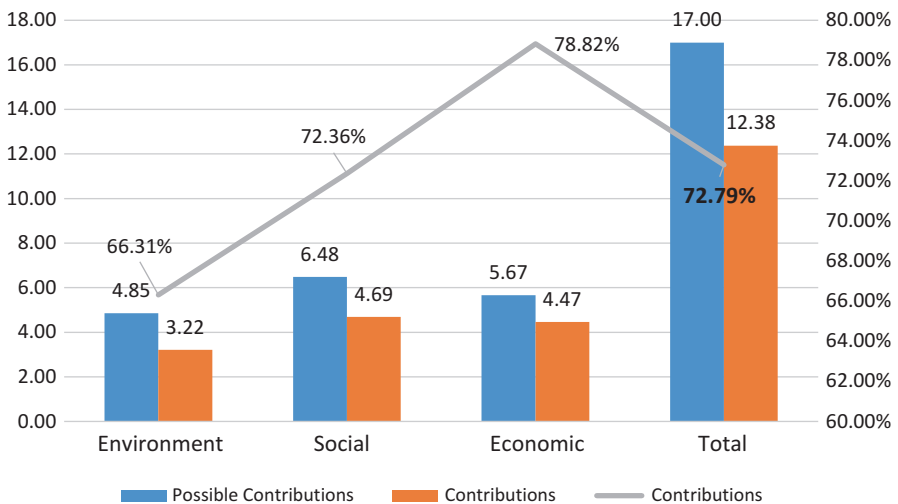


Fig. 38.1 Participation of the indicators evaluated by the ESEN matrix. (Source: Authors' creation)

As already mentioned, the total score reached 12.38 points out of 17 possible, representing 72.79%, less than the minimum established to consider that the municipality has an acceptable level of sustainable development, established as criteria for this tool. By stratifying these data from the perspective of the three dimensions, it is clear that economic issues, with 4.47 points out of 5.67 possible points, contribute 78.82%, which means the best contribution among the three points. Social issues, with 4.69 out of 6.48 possible points, represent a contribution of 72.36%. While environmental issues, with 3.22 of the 4.85 possible points, representing a contribution of 66.31%, are the worst of the three dimensions analyzed.

In the context of the data used to test the proposed model, it can be implied that the municipality must pay special attention to the topic of sustainable development. The UN cites that “The roadmap will also be a useful resource for national public policymakers, international organizations, civil society organizations, universities and anyone involved in the implementation and monitoring of the SDGs” (UN 2015). At this point, the proposed tool proves to be structured, applicable, and efficient since tested in different ways and angles; it is always consistent with the results presented. It is worth noting that this is a diagnostic tool, and according to Paredo and Chrisman (2004), theoretical models that separate social, political, and environmental factors from the economic dimensions of entrepreneurship may, in certain situations, not explain failed experiences in development businesses among impoverished populations.

This analysis brings, in the light of the theoretical and development context, two essential responses to this research, and its contribution. The first is that analyzing the set of results presented, it is possible to state that the municipality of Novo Hamburgo has a low level of sustainable development. Although some indicators show excellent conditions for development, the general context presented leaves the municipality in a situation of poor performance in terms of sustainability. A second finding is the validation and application of the tool, where it is possible for public managers, public policymakers, and resource allocators to be able to make more certain decisions and improve the condition of citizens. As a result of these actions, we can list the increased development and the preservation of the environment according to the precepts established by the UN.

CONCLUSION

The 2030 Agenda starts in its preamble, stating that: “This Agenda is a plan of action for people, the planet and prosperity,” complementing further that everyone should seek to strengthen universal peace with greater freedom, and the eradication of poverty in all its forms and dimensions, including extreme poverty.

It was thinking in this context that the research was developed, what would be the role of each pointed in this basic direction? This question can be answered if we consider that the statement is broad and needs to be cut out. The approach proposed by this research seeks to point to the role that municipalities have in this context.

With the objective of creating a simple application and easy understanding tool to assess the level of sustainable development of municipalities based on the UN Agenda 2030, it was possible to reach results that identified and defined a set of indicators that form a tool to evaluate, quickly, the level of sustainable development of municipalities in Brazil, as well as for the elaboration of an index that points this development. The results described were obtained from a sequence of studies that guided and substantiated the discussions and served to apply and test the tool.

The new public administration current, in the public governance model, can relate more clearly to a proposition of more structured tools that aim to increase the efficiency and effectiveness of the application of public resources, such as the tool proposed by this thesis. In addition, this current can provide a broader view of natural resource issues and, from the evidence of the needs, raise the level of sustainable development, a proposition given by this thesis and thus placed as the focus.

In 2015, with the 2030 Agenda, a result of the Sustainable Development Summit in New York, for the first time the UN makes clear what are the countries' determinations and responsibilities. This report builds on more conceptual principles and findings for more accurate, structured reporting with defined goals and actions. The subjects that were orientations became paths to be followed and goals to be achieved.

It is necessary for municipal managers to change their view of development, to work towards a significant increase in investments to overcome the existing gaps in all areas, generating fair and decent work opportunities through entrepreneurship, innovation, and industrialization without pollution, exports, reduction in income inequalities and, consequently, the reduction in poverty and extreme poverty. It also highlights the need to reduce pollution and consequently reduce global warming levels, strengthen and support institutions in relation to gender equality and women's empowerment at the global, regional and national levels. We must also invest in a way to avoid all forms of discrimination and violence against women, girls and children, accident deaths, murders, political persecution, drugs, smuggling, and especially corruption. Only by acting in this context the municipalities can contribute to the improvement in people's quality of life.

The perceptibly purposeful change of the UN creates conditions for countries, as well as states and municipalities, to understand their real role in sustainable development, but it is necessary to create clearer, more objective and more focused instruments and tools, goals, and actions, and to create means of measuring, comparing and evaluating for decision making; this is the only way to adapt public policies to the demands of this development. It is exactly in this context that the tool, based on the goals of Agenda 2030 and composed of indicators that culminate in an index, was proposed and developed, not focusing on the country, but on a cut of this general context that are the municipalities.

Municipalities, especially in Brazil, are dynamic organisms that constantly change their directions, strategies, and public policies, most often driven by different ideologies and constantly become the immediate results of their

management. In general, we do not have major state policies, but government policies, and as a consequence of constant changes that end up harming the population. The idea of creating this tool, based on a UN guideline and endorsed by the Brazilian state, should also contribute to a reduction in these previously mentioned directions exchanges. Maintaining an internationally endorsed sustainable development framework creates stability for citizens and increases transparency and management efficiency.

By considering this context of dynamic organisms, we must not lose sight of the fact that, although the proposition of the tool is closed, it must be constantly evaluated over time, understanding the future realities of the municipalities and the directions that may come in possible changes set by the UN itself. The tool proposed in this study cannot be considered definitive and perennial, it must be dynamic and can be modified and expanded based on the identification of national and international contexts. However, it must always maintain the fundamental characteristics, such as comparability, comprehensiveness, easy application among others already explicit, which served as a basis for its development.

The result of the analysis indicates that the municipality of Novo Hamburgo still has a long way to go to be considered as a municipality that has an adequate level of sustainable development and thus may come to contribute to the global development context. Even though the result presented points to some of the indicators and targets with satisfactory and excellent levels, many others indicate that the municipality makes almost no contribution to sustainable development. Municipal management should take a closer look at the 2030 Agenda, from which it emits a direction that can reduce social inequalities, environmental risks, and economic paths that would put the municipality higher than the current low sustainable development level.

Efforts need to be made to ensure more proportionate development, by reducing differences and reducing inequalities through opportunities. The UN claims that we are talking about the survival of future generations and perhaps the survival of the humankind on Earth and points us a way, depending on what we will do individually and collectively to succeed on this journey. Let us begin then, by working on instruments such as this one proposed to ensure sustainable development.

The proposed tool is an important tool for municipal governments, demonstrating the lack of data and information, and pointing to available data sources, which make it possible to compare municipalities with the development achieved by the country. It is essential to reaffirm that building a tool that measures the development of a Brazilian municipality and comparing it to more developed countries or locations worldwide could run into several factors that would make comparability difficult in different environments, which would make it challenging to validate. As an example, we can quote the legislation, culture, investment capacity, natural conditions, and the stage of development among, establishing a limitation of the tool presented in this study. In this sense, the context that the tool was developed to compare the reality of municipalities with the Brazilian context is reinforced, which does not mean that it cannot be adapted and used in other countries.

APPENDIX

Table 38.4 Source of data and references used to research the indicators and to set the tool

<i>Goal</i>	<i>Source</i>	<i>National source</i>	<i>Year</i>	<i>Municipal source</i>
1—Poverty eradication	www.ibge.gov.br IBGE, MDS 2010	http://www.pedagogia.com.br/artigos/sistema_nacional_ensino/index.php?pagina=1	2010	https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/panorama
2—Starve eradication and sustainable agriculture	www.ibge.gov.br IBGE e portal municipal	www.ibge.gov.br	2016	https://an.novohamburgo.rs.gov.br/modules/noticias/article.php?storyid=60973&tit=Prefeitura-encaminha-acoes-para-erradicacao-da-pobreza
3—Health and welfare	IBGE www.ibge.gov.br	https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/pesquisa/39/30279?tipo=ranking	2015	https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/pesquisa/39/30279?tipo=ranking
	Agenda 2020	http://agenda2020.com.br/sinaleira/novo-hamburgo/	2016	http://agenda2020.com.br/sinaleira/novo-hamburgo/
	Portal Governmental federal e portal municipal	http://www2.planalto.gov.br/acompanhe-planalto/noticias/2017/01/orcamento-de-2017-e-sancionado-com-mais-recursos-para-saude-e-educacao	2017	http://portal.camaranh.rs.gov.br/pm3/informacao_e_conhecimento/noticias/prefeitura-apresenta-orcamento-para-2018
	Capes, portal municipal	http://www.capes.gov.br/sala-de-imprensa/noticias/8769-ministerio-da-educacao-vai-investir-r-1-bilhao-para-formacao-de-professores-com-190-mil-vagas	2017	http://novohamburgo.osbrasil.org.br/wp-content/uploads/sites/72/2017/05/Novo_Hamburgo_RS_07.2017_DE-OLHO-NO-PLANO-PLURIANUAL.pdf
4—Qualified education	IBGE	http://www.brasil.gov.br/cidadania-e-justica/2012/09/criancas-beneficiarias-do-bolsa-familia-tem-frequencia-escolar-maiorque-85/tabela-de-frequencia-escolar/view	2012	https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/panorama
	MEC	http://portal.mec.gov.br/index.php?option=com_content&view=article&id=12814&Itemid=872	2012	http://atlasbrasil.org.br/2013/pt/perfil_m/418#educacao
	IBGE	https://www.qedu.org.br/brasil/ideb	2018	https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/panorama
	Portal Governmental	http://portal.mec.gov.br/index.php?option=com_content&view=article&id=12814&Itemid=872	2017	http://portal.camaranh.rs.gov.br/pm3/informacao_e_conhecimento/noticias/aprovado-orcamento-de-r-1-3-bilhao-para-2018

5—Gender equality	Site Transparência PM Acesso a informações PM MDS	https://biblioteca.ibge.gov.br/visualizacao/livros/liv101551_informativo.pdf http://g1.globo.com/politica/eleicoes/2016/blog/eleicao-2016-cm-numeros/post/proporcao-de-vereadoras-eleitas-se-mantem-apos-quatro-anos.html http://www.brasil.gov.br/cidadania-e-justica/2016/03/programas-sociais-fortalecem-o-empoderamento-das-mulheres	2017 2016 2018	0	https://www.eleicoes2016.com.br/candidatos-vereador-novo-hamburgo-rs/2/ www.novohamburgo.rs.gov.br/noticia/viva-mulher-saiba-centro-referencia
6—Drinking water and sanitation	http://app.cidades.gov.br/serieHistorica/# http://app.cidades.gov.br/serieHistorica/# SNIS	Diagnostico dos serviços de água e esgotos – 2016 (ministério das cidades) Diagnostico dos serviços de água e esgotos – 2016 (ministério das cidades) Diagnostico dos serviços de água e esgotos – 2016 (ministério das cidades)	2016 2016 2016	http://www.prosinos.rs.gov.br/downloads/NOVO%20HAMBURGO_PMSB_rev_0_pdf.pdf http://www.prosinos.rs.gov.br/downloads/NOVO%20HAMBURGO_PMSB_rev_0_pdf.pdf http://agenda2020.com.br/sinaileira/novo-hamburgo/	
7—Clean and affordable energy	Agenda 2020 Brasil.gov.br IBGE, MME	http://agenda2020.com.br/sinaileira/novo-hamburgo/ http://www.brasil.gov.br/noticias/infraestrutura/2011/11/energia-eletrica-chega-a-97-8-dos-domicilios-brasileiros-mostra-censo-demografico http://www.mme.gov.br/web/guest/acesso-a-informacao/acoes-e-programas/programas/proinfá/o-programa/energias-renovaveis http://www.mme.gov.br/web/guest/acesso-a-informacao/acoes-e-programas/programas/proinfá/o-programa/energias-renovaveis	2016 2016 2010 2018	http://www.prosinos.rs.gov.br/downloads/NOVO%20HAMBURGO_PMSB_rev_0_pdf.pdf http://www.pgiods.ibge.gov.br/index.html?mapid=128 https://novohamburgo.atende.net/?pg=transparencia#/grupo/13/item/1/tipo/1	

(continued)

Table 38.4 (continued)

<i>Goal</i>	<i>Source</i>	<i>National source</i>	<i>Year</i>	<i>Municipal source</i>
8—Decent work and economic development	<p>Projetos e leis municipais, PM</p> <p>IBGE</p> <p>MDS</p>	<p>https://euousempreendedor.com/programas-de-incentivo-ao-empendedorismo/</p> <p>http://investimento.turismo.gov.br/conheca-a-identidade-digital-do-governo.html</p> <p>https://www.ibge.gov.br/estatisticas-novoportal/sociais/trabalho/9180-pesquisa-mensal-de-emprego.html?=&xt=resultadosForam utilizados dados das regiões metropolitanas</p>	<p>2018</p> <p>2018</p> <p>2016</p>	<p>https://leismunicipais.com.br/prefeitura/rs/novo-hamburgo?q=empreendedorismo+e+nova%C3%A7%C3%A3o</p> <p>https://novohamburgo.atende.net/?pg=transparencia#!/grupo/6/item/10/tipo/1</p> <p>https://www.ibge.gov.br/estatisticas-novoportal/sociais/trabalho/9180-pesquisa-mensal-de-emprego.html?=&xt=resultadosForam utilizados dados das regiões metropolitanas</p> <p>http://datasebrae.com.br/municipios/rs/Perfil_Cidades_Gauchas-Novo_Hamburgo.pdf</p>
9—Industry, innovation and structure	<p>DEPECON, FIESP CIESP, 2015.</p> <p>Sebrae-RS</p> <p>MDIC, SEBRAE, IBGE</p>	<p>DEPECON, FIESP CIESP, 2015. panorama da indústria 14^a edição, 2015</p> <p>https://www.bndes.gov.br/wps/portal/site/innovacao/home/onde-atuamos/innovacao/!ut/p/z1/04_jUIDg4tKPAFJABpS40fpReYllmemjJzn5cYk5-HH6kVFm8T6W3q4cjv4GPv4-7uYGjj7u_p7BwQEGJk5m-l5gjQ9IPpw64iA6oAqh1P6kUZFvs6-6fp8BYkIGbqZeWn5-hGZeflicm]-foE2VGRAMw9nB8!/</p>	<p>2015</p> <p>2018</p>	<p>http://datasebrae.com.br/municipios/rs/Perfil_Cidades_Gauchas-Novo_Hamburgo.pdf</p> <p>https://www.jornalnh.com.br/_conteudo/2018/02/noticias/regiao/2236297-centro-de-inovacao-de-novo-hamburgo-e-detalhado-pela-prefeitura.html</p>
10—Reduction of inequality	<p>IBGE</p> <p>MDS</p>	<p>https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/panorama</p> <p>https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/pesquisa/10084/71890</p>	<p>2018</p> <p>2014</p>	<p>http://atlasbrasil.org.br/2013/pt/perfil_m/418#rendahttp://tabnet.datasus.gov.br/cgi/ibge/censo/cnv/ginibr.def</p> <p>https://cidades.ibge.gov.br/brasil/rs/novo-hamburgo/pesquisa/10084/71890</p>

<i>Goal</i>	<i>Source</i>	<i>National source</i>	<i>Year</i>	<i>Municipal source</i>
11—Sustainable cities and communities	IBGE Ministério das Cidades	https://indicadoresods.ibge.gov.br/objetivo11/indicador1111 http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=12932	2010 2011	https://indicadoresods.ibge.gov.br/objetivo11/indicador1111 http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=12932
	SNIS	https://www.mprs.mp.br/media/areas/ressanear/arquivos/diagnostico_rs_2014_snis.pdf	2016	www.snis.gov.br/ - SNIS - http://app3.cidades.gov.br/serieHistorica/#
	SNIS	http://www.deepask.com/gops?page=Veja-ranking-de-estados-pela-populacao-atendida-com-coleta-de-lixo-domiciliar-no-Brasil	2016	SNIS - www.snis.gov.br/ - http://app3.cidades.gov.br/serieHistorica/#
	Secretaria Nacional de Proteção e Defesa civil –	http://www.integracao.gov.br/documents/3958478/0/II+-Plano+de+Contingencia+-+Livro+Base.pdf/8bb53620-a1b4-4f3b-ad2d-29bfaac55258	2017	https://www.novohamburgo.rs.gov.br/noticia/defesa-civil-apresenta-plano-contingencia http://www.pgiods.ibge.gov.br/index.html?mapid=128 https://cidades.ibge.gov.br/brasil/rs/novohamburgo/pesquisa/1/74454
12—Responsible consumption and production	MMA MDS	http://www.mma.gov.br/estruturas/a3p/_arquivos/guia_compras_sustentaveis.pdf http://www.mma.gov.br/poi/C3%ADrica-de-res%C3%ADduos-s%C3%B3lidos	2017 2010	https://novohamburgo.atende.net/?pg=transparencia#!/grupo/13/item/1/tipo/1 http://www.prosinos.rs.gov.br/downloads/plano_gestao_residuos_solidos_novo_hamburgo_02082012.pdf https://novohamburgo.atende.net/?pg=transparencia#!/grupo/13/item/1/tipo/1
	M. das cidades	https://www.cidades.gov.br/desenvolvimento-urbano/observatorio-do-desenvolvimento-regional	2018	https://www.cidades.gov.br/desenvolvimento-urbano/observatorio-do-desenvolvimento-regional
13—Action against global climate change	Ministério MA	http://redd.mma.gov.br/pt/cameras-consultivas-tematicas/pacto	Existe conselhos e leis	http://www.pgiods.ibge.gov.br/index.html?mapid=128
14—Water life	MDIC, M. da agricultura, pecuária e abastecimento	http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra?codteor=860451&filename=PL+1102/2011	2018	https://novohamburgo.atende.net/?pg=transparencia#!/grupo/13/item/1/tipo/1

(continued)

Table 38.4 (continued)

<i>Goal</i>	<i>Source</i>	<i>National source</i>	<i>Year</i>	<i>Municipal source</i>
15—Terrestrial life	http://www.mda.gov.br	http://www.mda.gov.br/site/mda/pagina/car ; Secretaria especial de agricultura familiar e desenvolvimento agrário; Prefeitura municipal; https://www.socioambiental.org/pt-br/noticias-socioambientais/governo-divulga-quase-todos-os-dados-do-cadastro-ambiental-rural	2018	http://www.florestal.gov.br/documentos/car/boletim-do-car/3913-boletim-sicar-set-2018/file
16—Peace, justice and effective institutions	Mapa da violência no Brasil http://www.mapadaviolencia.org.br/ MDIC, Comex	http://www.ssp.rs.gov.br/indicadores-criminais https://igarape.org.br/wp-content/uploads/2017/12/2017-12-04-Homicide-Dispatch_4_PT.pdf	2017 2014	http://agenda2020.com.br/sinaleira/novo-hamburgo/ https://igarape.org.br/wp-content/uploads/2017/12/2017-12-04-Homicide-Dispatch_4_PT.pdf
17—Partnerships and means of implementation	MDIC, Comex	http://www.mdic.gov.br/comercio-exterior/estatisticas-de-comercio-exterior/comex-vis/frame-municipio?municipio=4313409 ; http://www.mdic.gov.br/comercio-exterior/estatisticas-de-comercio-exterior/comex-vis/frame-brasil	2018	http://www.mdic.gov.br/comercio-exterior/estatisticas-de-comercio-exterior/estatisticas-de-comercio-exterior/comex-vis/frame-municipio?municipio=4313409 ; http://www.mdic.gov.br/comercio-exterior/estatisticas-de-comercio-exterior/comex-vis/frame-brasil

Source: Authors' creation

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Advancing the Inclusive Agenda for People of Determination in the UAE Through Sustainable Innovations

Racquel Warner and Immanuel Azaad Moonesar

INTRODUCTION

This investigation of the increasing public and governmental discourse around inclusion in the United Arab Emirates reveals the profound transformation in the social and economic perceptions about disability. The accelerated leveraging of technology and appropriation of resources to remove barriers in the UAE society that once caused exclusion of a particular group of people is an example of what future responses around the world should look like. The government has taken the lead in shifting the discourse around people of determination from being a burden on society to becoming a social and economic asset. This paradigm shift has now resulted in the UAE becoming active participants in the global disability market which comprises of an estimated 1.27 billion consumers, and equating to nearly one in five people worldwide. This trend is expected to continue into the future as the inclusive agenda of the UAE gains more traction and more people of determination are brought into the wider economy. Added to this consumer demography are relatives and friends with an associated attachment to the consumer-related needs of persons with disabilities. The total global disability market is approximated at over \$8 trillion (Return on Disability Group 2016).

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PEOPLE OF DETERMINATION

The UAE refers to the people with special needs or disabilities as “people of determination” in recognition of their achievements in different fields. They are protected and empowered through services and facilities in the areas of education, health, jobs and other ventures (UAE Government 2020; Camulli and Xie 2019). Under the National Policy for Empowering People, a person with special needs is regarded as someone suffering from a temporary or permanent, full or partial deficiency or infirmity in his physical, sensory, mental, communication, educational or psychological abilities to an extent that limits his possibility of performing the ordinary requirements as people without special needs (UAE Government 2020). The UAE Cabinet approved a People of Determination Protection from Abuse Policy which aims to protect the people with special needs from abuse while empowering them (UAE Cabinet 2020). The government condemns all forms of abuse and neglect of people of determination. Abuse and neglects involve depriving people of determination of their basic right to care, rehabilitation, medical care, recreation or community integration. It also condemns using such people to get material profits (UAE Cabinet 2020). The People of Determination Retreat was held in March 2019 (UAE Government 2020), as part of the nationwide efforts to mobilize resources in an innovative way through the use of technology in support of the people of determination. Several Sheikhs, ministers, national figures, people of determination and social specialists participated in the retreat sessions where 31 initiatives and programs were approved to support the future of this segment of society and ensure their integration across various sectors. The retreat outlined eight tenets to empower people of determination and facilitate their needs at all levels. They are sports, quality of life, education and labor, international representation, health, media, service and culture (UAE Government 2020).

UAE INNOVATION CONTEXT FOR INCLUSION

The year 2015 was designated as the year of innovation in the United Arab Emirates (UAE). There were many successful inclusion awareness raising programs, workshops, seminars, conferences, forums and debates that were convened to explore innovative ways that the inclusive agenda could be incorporated across UAE society. Researchers and scholars have defined innovation as the general process of creating something different which occurs with the conversion of existing knowledge and ideas into a new benefit, such as new or improved process or services (Edvinsson et al. 2004; McNabb 2006; Mulgan et al. 2007). The sudden interest and drive for innovation became one of the many vital dimensions within the UAE in improving government systems for all residents due to increasing affluence and expectations. This new nationwide direction created opportunities for showcasing and utilizing technology

efficiently and effectively (Moonesar et al. 2019). As innovation in government services increased, the inclusive agenda for the UAE was advanced.

Over the years, there have been shifts in innovation. Researchers have classified such paradigm shifts according to six themes (Chesbrough and Vanhaverbeke 2006; Moonesar et al. 2019).

1. **Push to Pull:** In the context of the innovation era, there has been a shift from pushing systems, products, services and structures to pulling in resources and demand. Such mechanisms impact differently on public support systems by providing new insights, ideas and creating mixed policy debates for future changes in policy strategies (Costantini et al. 2015).
2. **Consume to Create:** Such a theme in the context of the innovation moves from inactively consuming to actively contributing and creating where the experience is the move of a participatory nature and co-production. Researchers have highlighted that service and consumption times have merged to such an extent that we even consumed and invested with our work; it was, therefore, possible to create a place that in turn creates value through the offering of innovation experience (Celaschi 2015; Hohberger et al. 2015). This paradigm shift raises ideas of inclusive co-production and co-creation among the customers and public, without regard for social barriers.
3. **Assets to Access:** This ideology entails to shift from obtaining and hoarding knowledge to disseminating and sharing the wealth of knowledge such as big data and open data. Individuals in contemporary times are self-organized in open, voluntary technology-enabled collectives to share their enhancements to the data or collaborate on analyzing, disseminating or leveraging the data for many applications, from enterprise computing to mobile, consumer-oriented applications (Brunswick et al. 2015). In recent times, “big data” is an increasingly important “engine” to better understand the complex “nervous system” of open collaboration.
4. **Linear to Complex:** This is a shift from the “normal” way of doing things in the workplace such as independent and predictable systems and processes to one that fosters interdependency and adaptive systems and processes. Usually, systems are said to be linear within a governmental department or organization; for instance, when it comes to innovation, such governments are integrating the systems with other departments when information feeds into another system and thus creating a more complex and robust public sector system. Bleda (2014) highlighted that in the past decades, supported by considerable theoretical and evidence-based empirical analysis, the concept of innovation has progressed dramatically. From being defined as a sequential linear process of generation and diffusion of novelty, to a more contemporary view of innovation as a complex distributed process shaped by the interactions among multiple agents with distinctive features, incentives and goals. The notion here goes back to the thinking of changing our

strategy away from “planning” to more of a “preparing and enacting” culture when it comes to innovation.

5. Scarcity to Abundance: As economists and market analysts have been forecasting the future of the world, they have normally reported on the depletion of the world’s natural resources. The shift in this theme is to move away from the scarce natural resources to newer and natural abundance of resources (eCunha et al. 2014; Kumar 2015) such as renewable resources, labor and good will.
6. Universal to Unique: This is a final shift from mass production to more tailored and individualized artifacts. For instance, in the healthcare field, advances in the individualized medicines were tailored to the genetic DNA of patients. Such a theme shift associates and aligns with the notion of “responsible innovation” (Davies and Horst 2015), which is currently being imagined in policy and governance practice.

Given the above elements of innovative intervention in the public and private sector, the UAE has sought to remove barriers to including people of determination through changing the way individuals with disability are referred to from disabled to the “people of determination.” An objective enumeration and analysis of the issue of inclusion in the public discourse reveals the areas of inclusion which have gained traction in the narrative of the UAE. This analysis identifies where there are still gaps that need to be addressed in the future in order to achieve the complete transformation to a disability-friendly country. As the UAE embraces futuristic ambitions, this chapter aims to position the issue of inclusion in the overall strategic vision for Dubai and the UAE.

Objectives

1. To understand the profound innovative transformations that have taken place in Dubai/UAE in response to a global inclusion agenda.
2. To make a comparison of how the laws, policies and initiatives regarding the inclusion address the themes of education, health, equal opportunity, accessibility and advocacy.
3. To predict how Dubai/UAE will adapt to accelerated global changes related to innovative inclusion.

The significance of this chapter emanates from the fact that the UAE has demonstrated an active pursuit of inclusion, and by collating the instances in official documentation where the issue is being addressed across multiple entities in the country, stakeholders will be able to improve the existing provisions for people of determination or commence initiatives to activate areas that are still lacking.

LITERATURE REVIEW

Globally various groups of people face barriers that exclude them from participating fully in the society. This exclusion occurs because of stigmas, superstition or stereotypes about gender, religion, disability, race, ethnicity and sexual orientation. People who are excluded become marginalized and are often unable to access opportunities in order to lead a normal life. Kabeer (2000) describes a continuum of disadvantage that ranges from economic to cultural marginalization. Morally, this is unacceptable and the United Nations has become a champion in pushing the boundaries of inclusion to ensure that those on the fringes of society are brought into the mainstream. The United Nations and the World Bank encourage all countries around the world to promote inclusive policies in order to end poverty and achieve the Sustainable Development Goals. One indicator of the extent to which countries are advancing toward more inclusion is the increase of the narrative of inclusion in the laws, policies, scholarly research and in the media. This is an interesting metric when juxtaposed with the fact that exclusion is not usually covered in the national narrative in the countries where the practices are perpetuated, and the upsurge of coverage and interest about inclusion is a marker of a priori assumption of exclusion.

Social Exclusion

From the 1990s the discourse around social issues of poverty, justice and inequality and the narrative expanded to include the term “social exclusion” as a way of expanding the definition of social injustice that was being perpetuated upon many stigmatized and marginalized groups of the population. The multi-dimensional construct of social exclusion is not as static as poverty or inequality. Consequently, policy makers have been challenged to address this issue in all its forms. Existing institutional mechanisms for distribution of resources continue to deprive groups of people because of disability, gender, race, ethnicity, religion or sexual orientation, and despite the strides being made, the pattern of deprivation goes unabated in many countries (Kabeer 2000)

Economic Exclusion

According to Greene, et al., “economic exclusion is a multidimensional process in which particular groups are prevented from participating fully and equally in the economic life of their city or metropolitan area” (2016). Economic exclusion can be perpetuated by both the private and public sectors over a prolonged time and this adversely affects the victims’ educational prospects, employment, health and wellbeing. Historically, economic exclusion has occurred more widely based on the demographic features of communities. In many contexts, low-income, colored or migrant neighborhoods usually do not have access to the same economic resources as high-income, white

neighborhoods. In the workplace people with disability and women usually experience more economic exclusion. There are many groups who find themselves at the intersection of two or more characteristics that result in their economic exclusion such as a disabled woman or a migrant man. Fraser (1997) refers to this as “bivalent collectivities” which compound the issue of economic exclusion.

Extant research has helped our society to better understand the economic impact of exclusion and how important it is to intentionally address this blot on societies (Piketty 2014; Chetty and Hendren 2015). In a systematic review of the economic cost of exclusion, Morgon Banks and Polack concluded that exclusion from education, health and employment made populations vulnerable to poverty. However, promoting inclusion could reverse this outcome. According to Awan et al. (2012) Pakistan gained US\$71.8 million per year by rehabilitating blind people and including them in the workforce. Many country-level studies have quantified the impact of earnings due to exclusion or inclusion of people with disability from work. Lund et al. (2013) report that in South Africa, severe depression and anxiety disorder amount to a loss of US\$3.6 billion per year. Trying to quantify the actual cost of exclusion has been elusive but in 1995 the UNDP calculated the cost of unpaid productive work in low-/middle-income countries (LMCIs) at US\$439 trillion. In 2008 the World Bank calculated the macroeconomic cost of reduced labor productivity of people with disability in LMCIs at US\$473.9–976.2 billion per year (World Bank 2008). These studies indicate among other things that the economic cost of exclusion is tangible and action should be taken to reverse this economic drain in the future.

Toward Inclusion

The intersectional nature of exclusion makes it difficult to equate it to the binary opposite of inclusion. In fact, this would be a reductionist approach to addressing the ills of exclusion. However, many countries in response to the United Nations’ SDG goals, have embarked upon national agendas that outline inclusive growth, which aims to redistribute resources for the inclusion of people and groups that were once excluded. Policies and laws are being reviewed to remove institutional exclusion and promote more social cohesion across a diverse demographic landscape. The movement toward inclusive education was validated internationally by the Salamanca Statement (UNESCO 1994) and reflects the United Nations’ global strategy of Education for All (Evans and Lunt 2002).

In the United Arab Emirates, the Dubai government has responded with enthusiasm to making the city a more inclusive place for all. Federal Law No. 29 of 2006 was a pivotal law in the UAE to protect the rights of people of determination. Article 12 of the law articulates that the country guarantees people with special needs equal opportunities in education within all

educational, vocational training, adult education and continuing education institutions in regular classes or special classes with the availability of curriculum in sign language or Braille and or any other methods as appropriate. The law further provides for equal care, rights and opportunities for people with special needs in health care, training and rehabilitation, and aims to ensure their rights and provide all services within the limits of their abilities and capabilities. Prior to 2006 the only provision in the law for people of determination was Federal Law No. 2 of 2001 which made provision for monthly assistance to people of determination under the social welfare clause. Table 39.1 summarizes the various laws and policies that were activated and suggests the areas of inclusion that are addressed therein. There is a noticeable absence of any discourse on advocacy by people of determination and the advancement of issues related to inclusion are mainly found within the government.

Table 39.1 Summary of main laws and policies which enable an inclusive agenda in UAE

<i>Law (name, number summary)</i>	<i>Policies (descriptors and targets)</i>	<i>Area of noticeable impact</i>
<ul style="list-style-type: none"> • Law No. (2) of 2014 – Concerning Protection of the Rights of Persons with Disabilities in the Emirate of Dubai. This law supports the UAE Disability Act 2006. • Cabinet Resolution No. (7) of 2010 Concerning Non-governmental Organizations Providing Care and Habilitation to Persons with Disabilities. • Federal decree No. 116 of 2009—Ratification of Comprehensive and Integral International Convention on Protection and Promotion of the Rights and Dignity of Persons with Disabilities. • Law No. (12) of 2008— Establishing the Community Development Authority in Dubai and its amendments. • Federal law No. 29 of 2006— Concerning the rights of Persons with Disabilities and its amendments. 	<p>The National Policy for Empowering People with Special Needs is based on the improvement of living conditions of the people of determination on the six main aspects.</p> <ol style="list-style-type: none"> 1. Health and rehabilitation 2. Education 3. Vocational rehabilitation and employment 4. Mobility 5. Social protection and family empowerment 6. Public Life, culture and sports <p>Ratifying the Comprehensive and Integral International Convention on Protection and Promotion of the Rights and Dignity of Persons with Disabilities.</p> <p>This law benefits UAE disabled nationals with assistances and rights to equal privilege to work in governmental organizations, to have distinctive infrastructure, healthcare, education and transportation service facilities at public places in present and future developments in the country.</p>	<p>Education Health Accessibility Equal opportunity</p>

Source: Authors' creation

SECTORAL APPROACH TO INCLUSION

Inclusive Education

It is noteworthy that Federal Law No. 29 of 2006 explicitly identifies education as a key pillar for inclusion and inclusive growth. Bakhshi et al. (2013) and Hanushek and Wößmann (2007) agree that there is a positive relationship between education, future job opportunities and improved standard of living. Investments in education enable economic growth on a national level. Allen (2000) posits that schools are important drivers for establishing social capital that can lead to employment opportunities and entrepreneurship. Figure 39.1 shows how education as a pathway to inclusion can generate earnings and increase labor productivity (Morgon Banks and Polack 2014)

At the state level the aforementioned law was activated in 2008 in Abu Dhabi under the patronage and support of HH Sheikha Fatima Bint Mubarak. She launched an initiative with the slogan “our life is in our integration”. This national project for inclusion aimed at complete integration of members of the society who were people of determination at the social, educational, health and environmental levels. Through this program necessary provisions were made in the educational systems to facilitate the inclusion of people of determination through practical access and required professional faculty who could support the development of these students. By the 2015 academic year 156 public

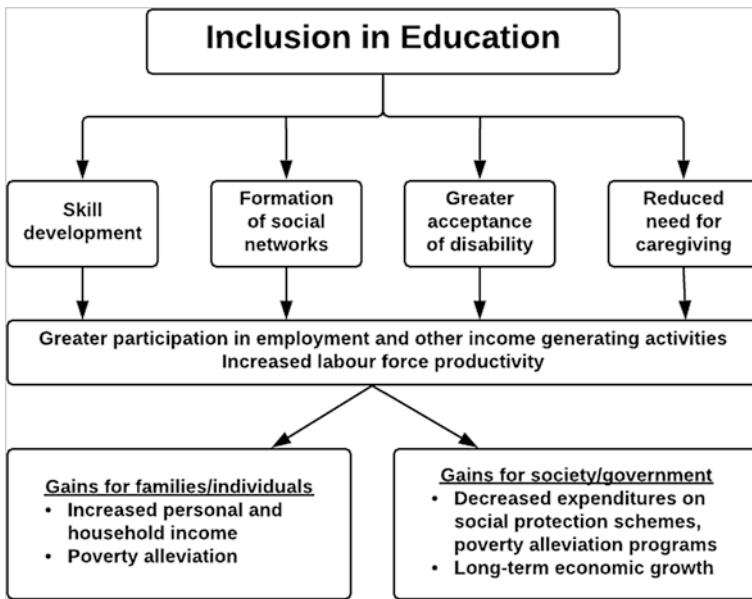


Fig. 39.1 Role of inclusive education as a pathway for economic growth. (Source: Morgon Banks and Polack 2014)

schools across the UAE had implemented the national project for inclusion (UAE Cabinet 2019).

Additionally, the UAE has made big efforts to include people of determination in the mainstream educational settings (UAE Government 2020). The Ministry of Education provides expert teachers who specialize in dealing with children of determination. In 2008, the Ministry of Community Development launched an initiative to integrate people of determination in the government education system. The initiative which was launched under the slogan “School of All” and adopted by the Ministry of Education was a major step toward the social integration of the disabled and their involvement in the development process. Dozens of disabled people continue their education, many of whom have since graduated from higher education and some received their PhDs (UAE Government 2020). The National Project for Inclusion of People with Special Needs, which was launched in 2008 under the slogan “Our Life is in Our Integration” (UAE Government 2020), emphasizes providing the necessary environment and facilities for people of determination in order to facilitate their practical access to the educational system.

In 2013 Dubai announced an inclusion initiative called “My Community...A city for everyone” under the leadership of HH Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum. This initiative is part of a wider strategic plan, called Dubai Disability Strategy 2020, which, in addition to education, incorporates health and rehabilitation, employment, universal accessibility and social protection with the aim of making Dubai a fully inclusive city by 2020. To support this vision of a fully inclusive city the Knowledge and Human Development Authority (KHDA) launched the Dubai Inclusive Education Policy framework. It sets out standards that ensure provision of quality inclusive services for students with special needs. The framework also seeks to empower educational stakeholders to closely monitor progress and compliance of inclusive standard (KHDA 2019).

By articulating a clear inclusive education agenda, the UAE is demonstrating a shift to a human rights-based approach, in which the social and physical environment and the pedagogical approaches school are being adapted to meet the educational needs of students of determination. This is a shift from the charity perception about disability. Inclusive education equips students of determination with better life outcomes through improved skills, employment opportunities and better life chances.

Inclusive Healthcare

In the twenty-first century many countries are grappling with a demographic shift because of the increasing diversity of the population and because more previously excluded members of society are now being brought into the mainstream. This is an immense growth opportunity for sectors like healthcare, but it is also a challenge for them to ensure that the processes and care offered are individualized or personalized to meet the varied needs of this diverse

demographic group. An article in the *Forbes* magazine actually suggests that inclusion and individuality are a new business competency which is central in any transformational strategy (Llopis 2018). Other studies at the Johns Hopkins University have shown that understanding the complexities of diversity, inclusion and cultural competency are important in delivering high-quality patient care (Institute for Alternative Futures 2014).

The specialized healthcare needs of people with disability are as varied as the disabilities they present. Some healthcare needs associated with disability require extensive treatment, and others do not. However, all people with disabilities have the same general healthcare needs as everyone else, and therefore need access to mainstream healthcare services (WHO 2018). Article 25 of the UN Convention on the Rights of Persons with Disabilities (CRPD) reinforces the right of persons with disabilities to attain the highest standard of healthcare, without discrimination. Unfortunately, however, many healthcare systems around the world have not yet adequately responded to the burden of treating people with disability, especially mental disability. Consequently, the gap between the need for treatment and its provision is wide all over the world. According to a WHO report (2018), “in low- and middle-income countries, between 76% and 85% of people with mental disorders receive no treatment for their disorder. In high-income countries, between 35% and 50% of people with mental disorders are in the same situation” (WHO 2018).

The National Policy for Empowering People with Disabilities in the UAE has a focal point of healthcare and rehabilitation. This has been operationalized by an extensive program of healthcare and diagnosis for people of determination through proper recordkeeping of all the people of determination living across the UAE and also training healthcare staff across all clinics and hospitals to support people with special needs. Healthcare laws and policies have also been passed. One example is found at the Dubai Health Authority (DHA) and it states that “people of determination are entitled to free, comprehensive healthcare coverage. The services offered for free include early screening for autism, early childhood interventions, physiotherapy, speech and language therapy, rehabilitation programs, and specialized intervention options” (AlMarzooqi et al. 2020; Al Suwaidi et al. 2019).

To specifically address mental healthcare gap in the UAE, a new mental health strategy was announced in 2019 by the DHA with nine new initiatives: legislation, governance and regulation, promotion and awareness, prevention, early intervention, innovative service delivery, workforce development in recruitment and retention, facilities and patient empowerment. Humaid Al Qutami, director-general of Dubai Health Authority, said: “The strategy demonstrates the commitment of the DHA to build a world-class health care system to meet the needs of its residents. It clearly reflects the DHA’s vision towards a healthier and happier community. It also reflects the greater Dubai 2021 vision for the city of Dubai to be a smart and sustainable city, with people who are happy, creative and empowered, a society that is inclusive and cohesive, and to be the preferred place to live, work and visit” (GulfNews 2019a).

Additionally, the Ministry of Health and Prevention (MoHAP) issues an electronic medical card to people of determination entitling its holder to receive free medical services through MoHAP. Similarly, the Ministry of Community Development (MoCD) also offers a card entitling people of determination to free health insurance and medical glasses for children of such cardholders (UAE Government 2020).

Equal Opportunity

In the UAE generally, employment legislation provides for positive discrimination in favor of UAE nationals as a way of ensuring a low unemployment rate among Emirati population. However, on 15 July 2015 Law No. 2 of 2015 against Discrimination and Hatred (the Law) was issued to introduce federal legislation which specifically prohibits all forms of discrimination on the basis of religion, belief, sect, faith, creed, race, color or ethnic origin (each being a “Protected Characteristic”). In regard to gender, the UAE leads the region in terms of the number of women in ministerial positions, with improvements recorded in gender parity in the legislators, senior officials and managers and healthy life expectancy indicators. The UAE ranked 121st out of 149 countries globally with a score of 64.2% in the gender gap index measured by the World Economic Forum (WEF 2018)

When examining the inclusion policy in the workforce, the UAE Labor Law forbids any kind of discrimination. People of determination have the right to hold jobs under public office Federal Law No. 29 of 2006 Concerning the Rights of People with Special Needs and Dubai Government Law No. 2 of 2014. However, in the private sector the only law employers must adhere to is the Emiratization quota.

To facilitate the training for workplace inclusion the “Tamkeen” initiative was introduced to provide people of determination with the theoretical and practical knowledge needed to succeed in the organizational context and an ongoing professional development. The initiative also assists organizations and entities prepare a suitable environment that can help people with determination progress in their careers. Through the “Tamkeen” initiative organizations have been assisted in engaging directly and in a mutually beneficial manner with people of determination (Tamkeen 2018).

With regard to employment, “El Kayt” initiative was launched by Community Development Authority (CDA) to integrate people of determination in the community effectively and to give them the opportunity to effectively contribute to the society. Also, it prepares them to obtain jobs that match their academic qualifications and physical capabilities in both the private and government sectors through training. Moreover, the authority launched the “Sanad Smart Card,” a free-of-charge privilege card dedicated to people of determination. The card gives access to various services by more than 70 government and non-government entities. Among the offers are discounts, free access to events,

ability to finalize government transactions in car and/or over the phone and/or at home (Community Development Authority 2019).

Universal Accessibility

The National Policy for Empowering People with Disabilities stipulates accessibility as one of its pillars. The objective of this stipulation is to provide accessibility to every disabled individual around the UAE, by building disabled-friendly buildings, making public places and transportation easily accessible and providing disabled-friendly customer service agents in all public places, to communicate with the people of determination.

The Road and Transportation Authority (RTA) has responded positively to this policy and implemented many changes to increase accessibility. According to the RTA, tactile floor plans have been installed at all metro stations to aid visually impaired persons (Roads and Transport Authority, 2019). RTA also introduced vans that can lift people with wheelchairs safely and comfortably to drop them off at their destinations. Similarly, the Dubai Metro and its stations have been specially designed to allow people of determination to move around and enjoy safe rides on a daily basis. People of determination are exempt from paying the Salik toll charges and vehicle registration fees. They also now have designated free parking spaces that have been allocated across Dubai. The RTA has also created special videos with sign language to provide simultaneous translation for those with hearing disability. In the same way, full support was given by Dubai Civil Aviation Authority to provide personalized services at the airport. Furthermore, each metro ticket booth is handicapped-accessible to facilitate the needs of persons in wheelchairs. Audio-visual signs have been installed throughout these public transportation hubs, and escalators have been remodeled to include side-hand-rests. Finally, pavement heights at curbs and crosswalks have been lowered to accommodate people in wheelchairs.

In a similar positive response the Dubai Water and Electricity Authority (DEWA) responded by creating a fully dedicated sign language call center through a live video chat with highly trained staff to answer the needs of people with hearing problems. Similarly, the hospitality sector took immediate action as well as a number of hotels in Dubai have dedicated rooms and facilities to help people of determination enjoy a hassle-free stay. In addition, among the unique offerings was the introduction of the UAE's first ever online Emirati Sign Language Dictionary. With 5000 words available to help those with hearing difficulties have easier interaction within the society, the dictionary is an excellent training material for sign language translators and interpreters.

It is noticeable that in the accessibility standards, barrier removal have been part of the inclusive agenda in the UAE. A "design for all" guideline for quality standards of services was provided for people of determination in UAE. In this universal design guidelines there are seven major areas that are addressed:

equitable use, flexibility in use, simple and intuitive, perceptible information, tolerance for error, low physical effort and size, and space for approach and use (Ministry of Community Development, 2016). This universal design is a best practice in many developed countries and is used as a practical way to remove the barriers associated with accessibility for people of determination. Services such as transportation, utilities and communication are now more accessible than they used to be because of these policies and initiatives.

Advocacy

The concept of advocacy means exercising human agency to give voice to the issues that affect people. For people of determination, the ability to advocate for themselves is essential, whether this is at an individual or group level. In most societies, group advocacy is one of the most effective way to make changes in systems, policies and procedures that affect the daily lives of people of determination. Advocacy groups perform a vital function in providing information about the rights of people of determination and identifying instances of discrimination. These groups assist in raising awareness by keeping the issues that affect anyone living with a disability in the mainstream public discourse and by seeking solutions to recurring problems that affect this community. By promoting and protecting the rights of people of determination, advocacy enables social change as they report and update relevant authorities about the impact of policies and initiatives on people of determination.

Evidently the UAE government and various quasi-government entities are committed to supporting inclusion by issuing laws and legislations to empower people of determination and protect their rights. Continued emphasis is placed on the role of the community members to accept the integration of people of determination. The approach taken by the UAE in the past ten years has been to educate the population to adapt the global changes in order to achieve an inclusive society. According to Wafa Hamad bin Sulaiman, director of Rehabilitation and Care Department of People of Determination at the Ministry of Community Development, social awareness and several campaigns have been introduced in the workforce, schools and centers to educate the community on how to treat and support disabled people to improve their confidence, become active participants in the society and reach their full potential (Zakaria 2018). A series of initiatives to empower special needs and provide full support to them indicate that Dubai is one of the best examples of a successful adaptation of the global challenge to foster inclusion. Increasingly advocacy for people of determination is seen as a responsibility for the government. There are however a few private entities who on a lower scale seek to raise awareness about issues faced by people of determination. At present there are not many self-advocacy groups for people of determination.

In a recent study conducted by the Mohammed Bin Rashid School of Government in Dubai, it was noted that from the citizens' viewpoint, when

governments or businesses try to harness personal data in order to advocate for citizens, the key concerns are related to loss of control, breaches of privacy and misrepresentation or misuse of data (Salem 2017). It is paramount to addressing public concerns on data harnessing in the Arab region when looking toward socially inclusive data-driven public policy. Previous findings demonstrate a broad spectrum of public concerns about practices affecting personal data generated by social media and IoT. These concerns are understandably justified in the era of big data and data-driven governance.

Innovative Public Sector Response to the Inclusive Agenda

At the Federal level, the Telecommunications Regulatory Authority (TRA) of the United Arab Emirates (UAE) was established according to the UAE Federal Law by Decree No. 3 of 2003—Telecom Law. TRA is responsible for the management of every aspect of the telecommunications and information technology industries in the UAE. The Information Communication and Technology (ICT) Fund was initiated by TRA (TRA 2020) to achieve rapid, progressive and concrete developments within the ICT sector in the UAE. The key objective is to drive the strategic development of the country's ICT sector in order to strengthen the innovation and knowledge capital level of the market by providing research, education (Randeree and Narwani 2009) and entrepreneurial opportunities. The Fund launched its operations to jumpstart innovation within the sector in the UAE mainly in the fields of intellectual capital, technological leadership, smart research, innovative ideas and incubating start-ups (TRA 2020) for all citizens inclusive of people of determination.

METHODOLOGY

To evaluate the frequency of reporting about inclusion in the five thematic areas selected for this study, a content analysis approach was adopted similar to a study by Bou-Karroum et al. 2017, which systematically reviewed media publications to determine the impact of health policy-making. Government documents and published articles online and in-print were analyzed for reference to the themes only in English language. This enabled us to determine the degree to which inclusion now plays a part of the national narrative and which of the five aspects of inclusion requires more attention and reporting in order for it to be part of the discourse on inclusion. A range of 1–5 was designated to determine the degree to which the themes are part of the media landscape: five (5) as the highest reporting and one (1) lowest reporting based on the number of documents observed on government websites, newspapers online and research papers. Please see the classification given based on the number of texts:

- 5: Private/public sector companies and public sector departments adopted this law and developed projects and initiatives in this regard. There are over eight articles/media published on this item.

- 4: Public/private sector. There are over eight articles/media published on this item.
- 3: Public/private sector. There are over five articles/media published on this item.
- 2: Public/private sector. There are over three articles/media published on this item.
- 1: Public/private sector. There is more than one article/media published on this item.

FINDINGS/RESULTS

From the distribution of the 47 publications that were reviewed for this chapter, there was clearly a dearth of any narrative about inclusion or people with disability prior to 2006 (see Table 39.2). After the passing of the first law there were only few initiatives that really addressed inclusion in the UAE society. In 2016, the development of the National Policy for Empowering People of determination seems to have precipitated an increase in initiatives and policies across the five themes addressed in this chapter. Notably, this occurred after the year of innovation was launched in 2015. From the data, it is safe to posit that the issue of inclusion became embedded in the governmental discourse of the UAE from 2017 onward, and this coincided with the increase of innovative digital government initiatives which aimed to expand service quality and citizen engagement.

Using the rubric developed to analyze the number of publications as a proxy for the level of awareness about issues of inclusion in the laws, policies and initiatives, Table 39.3 gives a picture of each theme related to inclusion and the types of official publications about each issue. From the data gathered it would appear that not all the themes have had the same degree of development in terms of laws, policies, initiatives and regulations. For example, only the theme of education has been addressed across the four mentioned genre of publications. Accessibility, equal opportunity and health themes were all addressed in policies which were activated in various initiatives across the society. The theme

Table 39.2 Meta-analysis of data: Policies, laws and initiatives addressing inclusion in the UAE by year

<i>UAE inclusion development</i>	2006	2009	2014	2015	2016	2017	2018	2019	<i>Grand total</i>
Initiatives			1	3	2	6	2		14
Law	1								1
Policies		1		2	1	15	7	5	31
Regulation					1				1
Grand total	1	1	1	5	4	21	9	5	47

Source: Authors' creation

Table 39.3 Content assessment by document type of inclusive agenda in UAE (2006–2019)

<i>Average of content with themes scaled out of 5</i>	2006	2009	2014	2015	2016	2017	2018	2019	<i>Average</i>
Accessibility									
Initiative			5		5				5
Policy							4.5	4.5	4.5
Advocacy									
Policy				5		4.5	4		4.5
Education									
Initiative				5		4.33	5		4.66
Law	5								5
Policy		5		5		5	4.5		4.83
Regulations					5				5
Equal opportunity									
Initiative				5	5	4.5			4.75
Policy						5			5
Health									
Initiative						5	4		4.5
Policy					5	5	4.5	4.66	4.75

Source: Authors' creation

of advocacy lags behind in only being addressed in policies but no associated laws, initiatives and regulations seem to have been developed. The data allows us to suggest that the awareness about inclusion in the theme of education seems to be more than in other themes, while in the other themes there is more awareness and action that is required with reference to Table 39.3.

By simply observing the inputs on Exhibit 1 (see Appendix), it can be deduced that as the innovative technology agenda was activated in the UAE, there were more initiatives that reached out to the people of determination because now there were digital tools that could enable the inclusive agenda such as digital government facilities and the use of social media for enhancing citizen engagement.

Recently, key findings on Social Media, Citizen Engagement and Government Services revealed UAE residents having positive perceptions of the use of social media for public service design and delivery and its potential benefits (Salem 2014, 2017). Customers in the UAE seem to be ready and willing to engage with the government via social media in the design and delivery of public services for all citizens, including people of determination. This is expected, given the UAE government's leading efforts in the region to integrate social media into government services, and the pervasiveness of social media use among UAE residents. Customers agreed that their engagement through social media for public service design and delivery could result in several benefits including better fit and quality of public services, reduced service costs and enhanced social inclusiveness (Salem 2014, 2017).

DISCUSSION

From a critical perspective, the government of Dubai has put practical measures in place to support the UAE's national agenda to meet the inclusive policies advocated globally, by way of legislation and policy. Technology and innovation have been used to spread awareness, increase accessibility and provide innovative support of the people of determination in Dubai. These measures address the core areas of education, meaningful employment and access to public services. However, on an international scale, the actions being taken by the UAE (with specific reference to Dubai) have not put in place the advocacy measures required to mandate inclusion and therefore participation in the inclusion agenda remains largely optional for stakeholders. From what we can see Dubai does well in terms of providing a wide range of services to people of determination, but in determining the impact and measuring outcomes, there is a gap. Education, healthcare and accessibility are represented frequently in the official and public discourse.

In contrast, equal opportunity and advocacy still seem to be the two elusive themes in the narrative around people of determination. The absence of quotas for the private and public sector means that inclusion decisions are left up to the discretion of the entities; how many people of determination will be accommodated and what the experience will be like for those individuals when joining a given organization are not standardized in the existing discourse. In many UN member states, a quota system for workplace inclusion has been used to advocate for the meaningful inclusion of the disabled in mainstream organizations. It should be noted, however, that quotas are not a silver bullet that radically addresses barriers to inclusion and this type of policy does not bring immediate cultural shift but it is a starting point of the long journey of embedding inclusion in the social psyche. "Inclusion is not a goal that can be reached but a journey with a purpose" (Mittler 2000, p.133). Further, in the absence of any private and independent advocacy groups who can voice the experiences of people of determination, there is no way to empirically determine the impact or success of the policies, laws and initiatives. The dearth of evidence will affect future capacity to plan and allocate required resources, and people of determination could again become excluded because they have no representation.

Deployment of further resources to the inclusive agenda of the UAE will require active monitoring to ensure adherence to the existing provisions for people of determination and to understand what the barriers are to advocacy. Empirical data gathering about the participation of people with determination is an imminent need for public sector stakeholders so that better planning and resource allocation can be achieved. Emphasis on public sector-driven inclusion is an admirable ethos but particularly in the education and healthcare, the country needs to have a more collaborative partnership with the private sector

to ensure adequate and sustainable resource allocation for the ongoing success of the inclusive agenda. The UAE needs to continue awareness campaigns for the public and private sectors with target specific messages across socio-economic strata, which take into account the diverse perspectives of the multicultural demography who reside in the country. The limitation of this study includes the data outcomes that were assessed based on online searches on effectiveness of media interventions in English only and not actual evaluation of effectiveness.

CONCLUSION

The UAE is continuing the journey toward establishing itself as the smartest city on the planet by 2030. This agenda is primarily being driven by the city state of Dubai. The federal and local governments have a vision of inclusion that allows people of determination to be part of this advancement. Innovation in the UAE public sector is crucial in creating the public value through good public sector governance and leadership. The governmental discourse and actions toward inclusion have steadily increased with the emergence of various innovative tools at their disposal. As a result, it can be observed that education and health sectors have used innovative approaches to bring people of determination into the mainstream by removing any barriers to their participation in society. UAE government has recognized the need to understand how the innovative practices can be leveraged in the governance of the inclusive agenda but there is room for improvement in allowing self-advocacy. However in the absence of a proper framework to measure the impact of innovative practices to enhance inclusive policies and initiatives, it will be difficult to evaluate success or address gaps. Citizens are yet to warm up to the data harnessing that is being done as they access public service provisions, and further assurances of ethical use and protection are needed. Despite this challenge the future of an inclusive agenda in the UAE is predicated on ongoing review of existing laws, policies and initiatives, evidence-based intervention where needed and the continued use of innovation to widen participation among the people of determination.

Way Forward: Innovation Assessment and Benchmarking Activities for Social Inclusion

The policy implications of technological innovation could be to identify and develop the relevant innovation assessment and benchmarking activities for the inclusive agenda that the UAE has adopted. This could be achieved by using the framework by Asgarkhani (2007) which includes factors such as the view of

management and ICT strategists; economic, social and cultural implications; the implications of digital inclusion/exclusion and e-readiness upon social inclusion; and the citizens' view of the success of digital government in enhancing public access to information about equal opportunity, universal accessibility and advocacy. In the simplest terms, an assessment tool that uses the four-step process suggested by Crossan and Apaydin (2010) would be an initial way to assess the impact of the various initiative and policies aimed at including people of determination in all sectors of the UAE.

Step 1: Assessment—to have an independent agency or institute review and look inside the government entities and its sectors; conduct internal assessments in relation to inclusion; along with several dimensions of innovation, that is, through the critical analysis of the current state, effectiveness, pain/barrier points; and identify critical areas to benchmark externally. For instance, the factor of the view of UAE management and ICT strategists through the examples provided under Equal Opportunity & Education.

Step 2: Benchmarking—to have again an independent agency or institute review and look outside the government entities/sectors, with the notion of understanding the best practices of other the government entities/departments and sectors (both inside and outside) in relation to inclusion.

Step 3: Development and Adaptation—to allow for this new learning to be relevant and applicable in relation to inclusion. For instance, “Ask”: How can we innovate beyond this understanding of “external best-in-class”? and/or “How can we adopt and adapt this understanding in line with our organization’s specific business needs, culture, organizational readiness?” For instance, the Smart Dubai initiative was founded following the vision of His Highness Sheikh Mohammad bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to make Dubai the happiest city on earth. Participation from all city stakeholders—residents (inclusive of people of determination), visitors, business owners, parents and families—is a cornerstone of the UAE strategy.

Step 4: Institutionalization—it would be critical to own and shepherd the practice into routine operation across the UAE government entities and sectors for including inclusion together with gathering and incorporating feedback into cycles of continuous improvement and provision of evidence-based research.

APPENDIX

Table 39.4 Exhibit 1: Specific documents in the public domain according to themes and year of publication

<i>Themes and specific documents</i>	<i>2006</i>	<i>2009</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>
Accessibility, n = 12								
Emirates Blockchain Strategy 2021							1	
Foreign Aid Strategy 2017–2021						1		
Government Communication Strategy 2017–2021						1		
Ministry of Finance Strategic Plan 2017–2021						1		
National Cybersecurity Strategy 2019								1
National Food Security Strategy 2051							1	
National Innovation Strategy			1					
National Space Strategy 2030								1
Strategy for the Future					1			
The National Policy for Empowering People of Determination						1		
The UAE Strategy for the Fourth Industrial Revolution						1		
UAE Energy Strategy 2050						1		
UAE Strategy for Artificial Intelligence						1		
Advocacy, n = 4								
The National Policy for Empowering People of Determination						1		
The UAE Soft Power Strategy						1		
UAE Centennial 2071							1	
Vision 2021				1				
Education, n = 15								
Advanced Skills Strategy							1	
Education 2020 Strategy		1						
Federal Law No. (29) of 2006 Concerning the Rights of People of Determination	1							
General Rules for the Provision of Special Education Programs and Services (Public & Private Schools)				1				
Ministry of Education Strategic Plan 2017–2021						1		
National Advanced Sciences Agenda 2031							1	
National Literacy Strategy				1				
National Space Programme						1		
National Strategy for Higher Education 2030						1		
Quality standards of services for people of determination in government and private institutions					1			
The National Employment Strategy 2031							1	
The National Environmental Education and Awareness Strategy				1				

(continued)

Table 39.4 (continued)

<i>Themes and specific documents</i>	2006	2009	2014	2015	2016	2017	2018	2019
The National Policy for Empowering People of Determination						1		
The UAE Astronaut Programme						1		
Equal Opportunity, n = 6								
Ministry of Justice’s Strategic Plan 2021						1		
National Strategy for Empowerment of Emirati Women				1				
National Strategy for the Year of Giving						1		
National Tolerance Programme					1			
The National Policy for Empowering People of Determination						2		
Health, n = 6								
Mental Health Strategy								1
National Climate Change Plan of the UAE 2017–2050						1		
National Strategy for Advanced Innovation							1	
National Strategy for Wellbeing 2031								1
The National Policy for Empowering People of Determination						1		
The National Policy for Senior Emiratis							1	
The UAE Water Security Strategy 2036						1		
UAE National Agenda					1			
UAE National Family Policy							1	
UAE National Youth Agenda and Strategy								1
Grand Total, n = 47	1	1	1	5	4	21	9	5

Source: Authors’ creation

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PART IV

Future-oriented Management Education



A Serendipitous Road Map to Educate Cosmopolitan and Sustainable Development- Oriented Managers

Sergio Castrillon-Orrego

INTRODUCTION

This chapter proposes a critical and creative approach to reframe business education, exploring radical (root-based) endeavors towards sustainability. The dilemmas that emerge as societies and economies face the frenzied rhythms and unknown consequences of the current Fourth Industrial Revolution, along with the dire threats that climate change brings, obliges corporations and the field of management education to reconsider their premises and epistemic assumptions. Reconceiving the intersections between business and society, mediated by the tantalizing promises introduced by exciting technologies enables educators and corporate leaders to better face current political upheavals, demographic trends, work-related stress, and the many economic shortcomings that pose a threat to humankind's survival and flourishing.

Acknowledging the profusion of phenomena related to the current digital era, including quantum computation and biotechnological metamorphosis, sometimes excessively embellished and without critical scrutiny, we claim here that since many of the effects are unforeseen, and perhaps unforeseeable, managers and business educators must improve their decision-making capabilities, in terms of sustainability and ethical soundness.

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We argue that this purpose can be supported by questioning the premises that are jeopardizing human prosperity, and seeking a deeper comprehension of natural and social systems. In this last sense, it seems essential to enhance the understanding of and sensibility towards diverse mindsets, learning from the whole spectrum of the human experience, through time, in different contexts.

How can we advance in such a direction? In the era of Big Data, multiple algorithms can help us analyze millions of data, providing valuable information, and certainly enabling new knowledge for consideration. Nevertheless, what about wisdom? What about quality of life? What about life itself? Echoing T. S. Eliot, we ask: “Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?”

In the wake of potential economic crises, where natural resources are increasingly polluted and depleted, where drinkable water is scarcer than ever, where icebergs are melting, and ocean levels are rising, it is imperative to deflect the inertial forces that have led us to unsustainable patterns of production. Increasingly darker footprints and the earlier arrival of the overshoot day as reported by the Global FootPrint Network (2019) are ethically unacceptable, and materially unbearable for the planet.

Why have the conventional postulates of economic organization led to economic growth for some (depending on how, when, and where it is measured), but not real prosperity for all? Why has the market never found its equilibrium? Does a growing GDP equal progress? Which economic indicators constitute proxies for growth in terms of well-being and value? Which indicators can forewarn us about development, evolution, or involution?

Realizing the disruptive challenges that innovative technologies pose to current societal settings, business conventions, and environmental agitations, this chapter invokes the need to recall, recognize, and reinterpret traditional human perceptions and intuitions about phenomena that relate to current development categories.

In general terms, we propose a research agenda that dives into the exploration of non-mainstream forms of societal organization, either ancient, forgotten or merely marginalized. We believe that rescuing and deconstructing the underlying beliefs of diverse societies can provide new hermeneutics to technological and economic predicaments. For example, how have material production and consumption patterns differed across cultures and time? How have ideas of economic value-generation varied? How has technology been defined by different social groups?

Evoking and analyzing how human groups have defined and enacted patterns of social and economic organization may illuminate how current dilemmas can be tackled in the present and future, taking hints from the past. Which set of criteria is used? Which criterion, if any, has prevailed? What kind of beliefs have emerged and lingered?

For example, examining how diverse causes of and answers to technological disruptions, have improved or endangered, people’s progressions can help us learn from previous mistakes and riveev clever solutions. Which environmental

crises led to innovative adjustments or to community extinctions? For example, how can we learn from the clues given by Mayas, Australian aborigines, Incas, Polynesians and inhabitants of eastern islands, among others, in order to prepare for eventual crises?

Thus, we propose to raise awareness about the importance of research into and learning from the intuitions, feelings and perceptions of diverse human groups. Combining and comparing their messages may inspire decision-makers to conceive creative and enduring solutions to contemporary challenges. If individuals, corporations and all kinds of business and social organizations were to learn and explore diverse sources of knowledge, for example by exploring ancient and marginal traditions, the chances of sustainability would be increased.

For instance, thought experiments can nourish reflection on the sense and purpose of economic activity that provokes unsustainable externalities and toxic flows of misleading data. Hopefully, we will discover more intelligent ways (not merely more efficient) to combine available resources, avoiding their depletion while stimulating their healthy regeneration.

The inertia of mainstream economic and political organization is so strong and frenetic, that it hardly allows reflexive interrogation about its nature. Humans are extremely surrounded by digital novelties, most of the time inhibiting instead of enhancing proper judgment. Paradoxically, the most innovative technological creations are increasingly, and often entirely, detached from nature.

In order to break those inertias, the chapter offers sections addressing and putting forward: arguments in favor of pursuing a cosmopolitan horizon and research agenda; a consequent call for an engaged and mindful methodology; arguments in favor of a reflexive education; a revision of definitions of technology, exploring how it can contribute to better living; and finally, social reflexivity through diverse cultural lenses is proposed.

Herein is important to state that the purpose of this chapter is not to answer all the questions which arise throughout the text, but to illustrate how reflexivity potentiates the emergence of multiple questions that have the potential to shake inertias and overcome entropic dynamics that threaten sustainability today; thus reinventing creative and transformative forces.

CONTEXT AND BACKGROUND

Since the UN Global Compact constitutes “The world’s largest corporate sustainability initiative” (UN Global Compact 2019), it is a convenient and pedagogically powerful heuristic to analyze sustainability actions and ideas, around the Ten Principles it promulgates, and around the whole set of Sustainable related Goals (SDGs) and targets, which embody the most ambitious development agenda of our time.

The Global Compact principles are articulated around four broad areas: human rights, labor, environment, and anti-corruption. These four areas and ten principles are more than mere analytical categories, they represent the

political consensus achieved among countries at the global scale, such as “the Universal Declaration of Human Rights, the International Labour Organization’s Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.” (UN Global Compact 2019).

Funneling efforts in these areas helps to potentiate business as a source of well-being, or as Ellis put it “as force for good” (2001). By tracking down how this axiomatic consensus has been manifested throughout history, we might rediscover more balanced ways to relate with nature, rescuing examples of integrity (against corruption), respect for humans and diverse forms of life, and reinvent wiser and more dignified working habits.

This quest for better practices through ancestral wisdoms does not imply nostalgia for the “good old times” – that perfection ever existed in other contexts. It just invites us to broaden the possibilities of learning from the mistakes and lessons that groups outside of the mainstream corporate world might have produced, and which could be relevant nowadays.

Perhaps by listening to the Inuit, observing indigenous communities from Polynesia or Amazonia, or by revisiting the heritage of the Celts, examining the beliefs of Shintoism, or reinterpreting the intuitions represented in diverse cultural myths, we might get some clues to guide us through the maze of unsustainable puzzles, as Theseus did following Ariadne’s thread (Castrillón 2005).

LITERATURE REVIEW

Human stupidity seem limitless (Moreau 1987). Reflect on the way corruption permeates governments and business causes waste of resource throughout the whole system, generating expensive entropies (Monteverde 2019), distorting the functioning of economic agents (Tran 2019), and perpetuating toxic cultural habits (Scholtens and Dam 2007). Even those who appear as short-term transactional winners, end-up with lots of enemies, hanging from uncertain relations, and “controlling” a non-sustainable environment. All material wealth, so easily perishable, exemplifies a delusional model.

Overcoming our senselessness obligates the recognition of the sometimes psychopathic behavior of corporations (as denounced by Mark Achbar and Jennifer Abbott in their 2004 film, *The Corporation*) accompanied by the pathologies exhibited by so many power holders, as describe by Furnham 2000, Kets de Vries and Miller 1986, and Richardson et al. 1996.

When contemporary intellectuals signal today’s pressing issues (Harari 2018), it becomes impossible to deny the need for ethical sensibilities and capabilities. And given the digital agitations, it is imperative to discuss authors that have specified updated versions of Moral Intelligence, i.e., 2.0 (Kiel and Lennick 2011). The dreadful scenarios crafted by greed and selfishness call for the application of renewed intelligence to be solved.

As evidence mounts to demonstrate that the Earth cannot sustain increasingly voracious human populations, the call for action is non-deferrable.

Although exploring Mars and other planets to assure survival of the species seems like a laudable endeavor, the real challenge consists in facing and learning from all the mistakes humans have made through time. Thinking that we can live in other places, while evading the obligations to our planet, reflect psychological denial rather than genuine intelligence.

It would be more realistic to scrutinize the human experience, spotting the right and wrong moves our species has made in the past. A sincere assessment of our virtues and vices, recognizing and adopting virtues and learning from vices, can hopefully enlighten our decisional processes.

It is comforting to see the economic benefits of human rights recognition (Charles 2007), and the benefits of adopting environmentally friendly industrial processes (Albuquerque et al. 2019), or improving business models (Únal et al. 2019); nevertheless discussions and actions seem confined to limited mental models. Although honest and positive, the current sustainable agenda seems mostly defined in utilitarian terms, where evidence is to be measured mostly by positivistic economic indicators that somehow encapsulate the perspectives for discussions.

Parting from the mainstream, we argue that current times, simultaneously enriched by information and industrial technologies, disrupted social logics and economic dynamics, require transcending utilitarian argumentation promoting holistic reflexivity, including more imagination, and of course, a rediscovery of the human nature and conditions.

Therefore, we should accept the invitation to enjoy and propel the power of imagination, a human singularity given by nature (Dortier 2004), in order to escape our uni-dimensionality (Marcuse 1968); dare to question the purposes of education (Ruano-Borbalan 2001), especially in the field of business, where is usually reduced to training for profit making, as Friedman bluntly stated (Friedman 2000).

In order to overcome that dogmatic position, we must disrupt functionalist training for limited areas, challenging decision-makers for all fields of knowledge, to become exactly the opposite of what Friedman suggested, and what wisdom traditions have striven to discover and forge: wise decision-makers, capable of complex thinking.

We believe sustainability will be enhanced by individuals and communities willing and able to arbitrate among competing demands, guided by long-term perspectives, respect for natural cycles, and life's dignity. We believe the capabilities to make wiser decisions, freed from power-pressures and fragmented interests, will increase when we humbly recognize past mistakes and accept phylogenetic imperfection.

Which messages were left by societies that collapsed? What teaching can grasp the cultures that lost balance with their environment? Which learnings left us insight into those leaders who abused people in undignified labor conditions? Or on the contrary, can we find inspirational ideas and practices that can create transformative initiatives in order to funnel the potential of state of the art science in favor of authentic human development?

What can we learn from Hindu epics, like the Ramayana, Mahabharata and Bhagavad Gita? What does the experience of Gilgamesh teach us? What about Homer and Hesiod? How can the divergent thought of Confucius and Lao Tse help us face the world today? What about the Popul Voh? Can we find good examples of sustainability-oriented leaders? Do we remember the impacts of corrupted leaders?

Business has a lot to learn from the whole of the human experience. Fragmented models and assumptions (like perfect market equilibrium, economic-calculators of cost–benefit) need to be revised. The artificial, *ceteris paribus*, has reduced our awareness of complexity, while complicated externalities place on the water and terrestrial ecosystems that support life on Earth.

Since the simplistic GDP indicator overshadows other measurement (and perceptual possibilities), we seldom understand the irredeemable lost that botanic and animal extinction represent, nor the unquantifiable pain that abused children, or people in slums, suffer. The math seems wrongly used, or how can we explain hunger alongside morbid obesity? Why do we keep producing so much food waste that simultaneously intensifies climate change?

No doubt, economic models have to be deconstructed; but more importantly, the integrality of human nature has to be crudely decorticated. As recent studies show, human consumption patterns are unsustainable, only drastic changes will allow us to survive, let alone develop (Rowlatt 2019).

A HUMBLE METHODOLOGICAL PROPOSAL

This chapter constitutes a humble quest. The methodology proposed for this quest clearly rejects positivistic standards. Being socially engaged and constructivist favors a critical perspective, one that seeks to promote “insights, critiques and transformative redefinitions” (Alvesson and Deetz 2000). And given the fact that any hermeneutic effort might hurt sensibilities, it explicitly demands to assume a mindful (Bentz and Shapiro 1998) and culturally responsible (Swartz 1997) approach.

The pursuit of this mindful, reflexive, and critical approach is supported by the operational orientations of arts-based research, particularly in terms of learning from histories to explore meanings and change minds (Cahnmann-Taylor and Siegesmund 2008). Our proposal is compatible with Coser’s insightful approach to towards’ societies comprehension through literature (1972). The sampled texts could come from sacred books, classics, philosophical compendiums, or even traditional folk tales that reflect the spirit of a given human group.

Some careful selections can light the way, as Bailkey and Lim (2020) who propose a rich anthology of ancient texts, or *Le Livre des Sagesse*, which recovers an exhaustive selections of human expressions of spiritual wisdom (Lenoir and Tardan-Masquelier 2002). Since these samples of texts, ideas and archetypes throughout time and geographical spaces are purposefully inclusive, anthropological, and historical they offer a non-skewed sample upon which to

explore the presence of sustainable related concepts, lighting ways to challenge our current status quo.

For instance, religion constitutes an interesting prism to explore sustainability-compatible ideas and warnings. Although ideologically biased, religious beliefs provide inspiring venues to analyze values, and might serve as an “alternative perspective in the Organizational Sciences,” such as defined by (Evered and Louis 1981). For example, how did diverse groups solve dilemmas? How did they foreshadow consequences? Why was the consumption of some animals and products prohibited? Or fostered? What were the underlying criteria?

Religions’ natural focus on values and the mindset they shape makes them a rewarding path to approach values and serves to reinforce mindfulness and purpose in research. Also, avoiding ideological and non-judgmental examination of religious ideas for development could serve as “A guide to our Wisdom Traditions,” as Houston Smith refers to the whole set of world’s religions (H. Smith 2002).

Learning from diverse cultures can teach us about how sustainability constitutes a non-exclusive and necessarily expandable journey to explore mind-sets. Through it, we could contrast today’s SDGs, their relationship to Global Compact Principles, mining for commons concerns and values, and inspiring ideas, as well as becoming wary of potential risks of approaching SDGs in ways that might be perceived as arbitrary, absolutist, or even colonialist by involved parties.

Such a research agenda must be flexible. Forcing the cross-examination of every variable may result in anachronisms. Nevertheless, this reflexive effort to rethink development in the light of multicultural human experiences will hopefully broaden humankind’s capability to transform its unsustainable patterns of behavior, either because we manage to spot predatory approaches to nature, or we because we find bona fide examples of harmonious social, environmental, and economic societal settlements.

Exploring the presence or absence of business and sustainable-related concepts through human mentalities, constitutes more than a predetermined academic task. This urgent imperative also represents a quest to learn from the best ideas humanity has borne, while humbly acknowledging our previous mistakes, identifying the roots of our current problems.

How do the challenges of development and the principles of the Global Compact appear when examined through the lenses of diverse cultural and religious groups? How have business principles been forged through time? Which beliefs can foster or hinder more fair, inclusive and resilient social interactions? Which promote (or erode) mental health?

Reflexively exploring development-related challenges also enables the deconstruction of positive and negative types; it leads to the exploration of the semantic possibilities between the extremes and other related concepts, notions, and categories which enrich the ways development can be conceived. Diverse philosophical and religious systems can help reveal the mindsets than can help us question and transform our definitions of human rights, labor, environment, and corruption. Societies in general, and businesses in particular, can learn a lot from realms usually excluded from cash-flow considerations.

SOME ARGUMENTS IN FAVOR OF REFLEXIVE EDUCATION

Enabling the inclusion and eventual comparison of multiple cultural expressions and the Global Compact's Principles serve as means to make sense of eventual ethical considerations. The interdisciplinary openness triggered by using cultural prisms like philosophical, sacred, literary texts, offers a new perspective to re-interpret economic, environmental, social, and governance phenomena. Generating the competence to contemplate and reflect upon diverging human manifestations certainly stimulates dialogue, a key feature reclaimed by more pedagogues (Christensen and Garvin 1992) and by ancient masters like Confucius and Socrates.

Contemporary drivers of change stress the need to promote dialogue at all levels and among all stakeholders in order develop genuine empathy and deeper comprehensions. The United Nations, through the Global Compact initiative, and the correlated educational PRME program, strongly suggests reflecting on the principles and dialogic practices that contribute to educate more committed global leaders. As Tayar and Paisley (2015) demonstrate, pragmatic success is favored by reflexivity and mindfulness.

In times where fake news, false flags, and narcissistic caudillos are populating the world stage it becomes more urgent that ever to leverage business goodness, to defend the love of wisdom and the need for more reflexive decision makers (Ikujiro and Ryoko 2007; Subotnik 1988; Weick and Putnam 2006). Reflecting on the customs and social dynamics of others might help us understand and hopefully discern the 'hidden connections' that nature deploys (Capra 2002) and that business ignores, threatening life and eroding sustainable value.

We might also discover alternative social orders and features of individual character building, crafting renewed comprehensions about the replicability of mores, customs, and the legitimacy of imagined futures. What can ancient cultures teach us about leadership (Goleman et al. 2002), moral intelligence (Kiel and Lennick 2011), or the plausible foundations for purposeful education (Castrillon-Orrego 2019).

The recent Business Round Table's "Statement on the Purpose of a Corporation" (August 2019), reinforces the call of the Global Compact to hold corporations accountable. The ten principles are potential prisms to evaluate how managers work towards sustainability, echoing Freeman's call to consider all stakeholders (Freeman 1999) and finally transcending Friedman's anachronism that businesses are only accountable to shareholders (Friedman 2000).

Reflexive education contains a lot of potential in order to gain awareness of, prevent, and help overcome diverse problematic issues that might surge within the accelerated digitalization of life. For instance, as Glass and Newig (2019) demonstrate, links between governance and sustainability can be more clearly understood if people participate, reflect, and question the coherence of policies and institutions.

In general terms, reflexivity favor the inclusion of theoretical plurality and diverse pedagogics, eventually fostering varied forms of responsible management education (Cicmil and Gaggiotti 2018). Reflexivity could as well generate capabilities to problematize conventional interpretations, such as history (Hunter 2019), thus strengthening the potential to criticize non sustainable business practices.

In terms of business education, promoting reflexivity can help students become more aware of who they could become (Feldman and Fataar 2019), also providing them with lifelong learning capabilities to be deployed through their professional careers.

A CALL FOR COSMOPOLITANISM - EXPANDING HORIZONS

If all the actors of the business community acknowledge their inherent responsibilities within the global system, they might coherently nurture a cosmopolitan drive, effectively taking into consideration the vital concerns of their multiple constituents. This call for cosmopolitan (from Greek *kosmopolitēs*, from *kosmos* + *politēs* citizen) commitment, is both, a reminder of the dignity of all human and sentient beings, and a call for harmonious, natural flow within the universe where all forms of life interrelate.

Developing a cosmopolitan mentality constitutes a long-term survival and balanced growth strategy for all economic agents, which simultaneously assures their own legitimacy; for example, embracing diverse interpretations of what quality of life could represent for diverse cultures. Pertinence is also fostered through the potential bridging of diverse perceptions; stimulating comprehensive solutions to the current development challenges, such as embodied in the SDGs. If economic logics are reflexively questioned through multiple lenses, it might be possible to acquire and disseminate a more cosmopolitan spirit, propitiating the achievement of more sustainable life patterns.

Mimicking nature as it unfolds in diverse environments can also open minds and hearts to other cultural models, thus deconstructing the status quo, and expanding critical thinking and creative flows, enabling the rediscovery and reinvention of economic, social, and biological logics of interaction that the “hidden hand of the market” has institutionalized to a point that now seems natural.

Conventional capitalism generates multiple exclusive and painful outcomes which hamper the construction of a common identity in which peoples from different countries can spontaneously feel citizens of our planet, sharing the same destiny.

In order to promote a cosmopolitan citizenship, where all human recognize themselves as navigators or the same “Spaceship Earth” (evoking Kenneth Boulding’s powerful metaphor), economic logic must be radically subverted in order to eradicate the unbearable consequences that the current status quo and establishment generate for the large majority of the world’s inhabitants. Millions of people suffer poverty, mental disease, lack of access to drinkable

water, deforestation, asymmetrical reception of externalities, toxic air and water, and are treated like waste and disposable parts of the system.

The exploration of foundational myths across cultures can help us remember the shared nature and fate of our species, so clearly proven by phylogenetic science but so hard to accept by xenophobic and ethnocentric groups, pervaded by ignorance and divisive interests.

Reflexivity also helps to question prevailing models, boosting the call for cosmopolitanism. For example, SDGs exemplify a cosmopolitan expression of global awareness; not only were they achieved through a consensual process built on and through the United Nations, the most visible scenario where countries' governments interact and leave public records, but also, and additionally, they can claim a "global" perspective.

Comprehensive and multiculturally inclusive initiatives advance the feasibility of shared sustainability-oriented efforts. Global Compact and SDGs represent such efforts to enact Kenneth Boulding's revolutionary conception of "The Economics of the Coming Spaceship Earth," which nevertheless might broaden when amplifying the prisms and proxies through which diverse human collectives manifest their survival learning and such as sacred texts, artistic expressions, literature, poetry, folklore....

Approaching cultures through these non-judgmental ways potentially enhances cosmopolitanism, refreshing perspective and inducing cognitive and emotional tolerance, which ultimately can contribute to perceive and solve the clamors and silent pains that reveal the current gaps in the path towards sustainability.

In order for the business community to contribute to growth and development in a sustainable way, it must ineluctably widen the scope and breadth of its horizons. In this transformative process, the substantial concerns that humankind has produced and enacted in other cultural and chronological contexts, must be included for full consideration.

As a potential venue for research, we emphasize the need to educate managers to strive for sustainable development. Although this venture could evoke an endless effort, and some degrees of utopia, in the edge of potentially irreversible crises it becomes imperative.

Digitalization implies more connections but also more noisy and possible fragmentations. As McEvoy indicates, this "Shrinking World" also brings cosmopolitanism and opportunities – and, we add, obligations- (McEvoy 1968). As several authors claim, cosmopolitanism makes it essential to highlight the importance of moral education (Merry and de Ruyter 2011), and to rethink ethics (Rivera 2016).

Fires in Australia sending smoke and ash to South America, coronaviruses spreading at the speed of business, make it evident that we share a common destiny, and makes it imperative to review nationalism through the prism of sustainability. The concept of cosmopolitanism can facilitate transcultural dialogues, or as some authors claim, set the "conditions for educational conversations" in times of globalization (Wahlström 2016). Nevertheless, cosmopolitanism is not

panacea; as Peterson warns, there exist “educational limits” (Peterson 2012), which nevertheless end up giving more importance to ethical considerations and education (Osler and Starkey 2018; Starkey 2012), specially within the context of the fourth industrial revolution (Merry and de Ruyter 2011; Waghid et al. 2019)

REFLEXIVITY AS A FLEXIBLE QUEST FOR INTERROGATION AND DIVERGENCE

Exploring human groups that diverge from the mainstream might seem useless for those who want to perpetuate the status quo. However, that is precisely where exploration’s emancipative power lies. Creativity is unleashed idleness and leisure; as Ordine demonstrates “the usefulness” provides a lot of utility (Ordine 2017), and as Judkins shows, innovation and inspiration when we try to “see things differently” (2016).

How diverse cultures and belief systems can enrich creative administration? Can knowledge for more consistent governance be extracted from the others’ principles? How can we expand lexical capabilities to reach more stakeholders? Changes to management practices and ideas can flourish by appreciating other cultural patterns and value criteria, enriching the language and dynamics for sustainable development oriented dialogue.

Exploring the perspectives that other human groups from different cultural and historic contexts provide can also alter our identities for the better, helping us reframe resource allocation and distribution decisions, and reshaping relationships with water and terrestrial ecosystems. For instance, communities indigenous to diverse environmental settings indicate ways through which people can harmonize with nature’s assets, avoiding pollution and over-exploitation. As Wade Davis demonstrates, ancestral knowledge can illuminate modern communities, teaching us how to mimic a life in equilibrium with nature (2015). For example, reading Bruchac’s recompilation of work on North American natives (Bruchac 2003), it is possible to enhance our hermeneutic power, and discover the potential of native-nation values, culture, and history, so we can see afresh and reframe our relations with nature and with other human groups.

TECHNOLOGY AS MEANINGFUL, APPLIED KNOWLEDGE

As an apocryphal Chinese proverb has it “May you live interesting times.” Confucius put it less snappily but more wisely: when asked about how to contribute in the agitated times that he was enduring, he suggested to start by naming phenomena using most appropriate terms (Analects 13.3)¹ (Confucio 1998) which seem to be very pertinent recommendations nowadays, where

¹“If names be not correct, language is not in accordance with the truth of things. If language be not in accordance with the truth of things, affairs cannot be carried on to success”

propaganda darkens publicity, and fake news is manipulated by obscure interests.

Therefore, the search for truth(s) emerges as an imperative task, which requires humility and respect for others' perspectives, which is part of what this research agenda proposes. A serene, cosmopolitan quest for essential values across cultures prevents ethnocentric fundamentalisms, and welcomes diversity and pluralistic manifestations of virtue. Equally, it opens eyes to recognize vices, wicked conducts and negative motivations, which had created unsustainable patterns of social, economic and environmental behavior. For example, how have disrespect for human rights, asymmetric labor conditions, wasteful management resources, and corrupted governments and commerce led to the destruction of human settlements? To what extent have internal causes extinguished some human populations?

More than 50 years ago, Erich Fromm questioned:

Are we confronted with a tragic, insolvable dilemma? Must we produce sick people in order to have a healthy economy, or can we use our material resources, our inventions, our computers to serve the ends of man? Must individuals be passive and dependent in order to have strong and well-functioning organizations? (1968, p. 2)

That interpellation regarding how we relate to technology is as relevant today as it was decades ago. Actually, sometimes it seems that technological revolutions exacerbate our brainless behavior. We pollute more and deplete natural resources ever more quickly. Some political leaders seem bitter and convulsive, as if permeated by an inherent unrest. In addition, the media records ubiquitous violent social protest and conflicts.

If technological progress has not guaranteed human improvement, it is worthwhile to evoke the metaphor of Pandora's Box and reflect on all the promised gifts predicted by enthusiasts for technological revolution; simultaneously we should recall our incapacity to harness them for good.

For example, a current definition of technology (Merriam-Webster 2003), as "the practical application of knowledge especially in a particular area"; or as "a capability given by the practical application of knowledge" or as "a manner of accomplishing a task especially using technical processes, methods, or knowledge." Examining these meanings, we realize that is not only about gadgets and novelties. Technological innovation also requires the insight to discern what to do with the new capabilities, and the means to apply them.

Consequently, we suggest interrogating the kinds of knowledge applied, the capabilities generated, and most importantly, the purpose of those novel knowledge applications. Do they serve a noble purpose? Do they respect human dignity? Are they compatible with all forms of life and natural ecosystems?

For example, engineering fields create technology by applying math and science, based on energy and characteristics laws of physics to create useful items. But have we applied the learning derived from anthropological experiences?

In the face of indisputable climate change, and being at the crossroads of extinction, it seems humankind has not reflected enough on how to use innovations in sustainable and life-compatible ways. For instance, what do old legends teach us about survival and technological disruptions? What did Gilgamesh learn in his quest of immortality? Did he become a moral, rational ruler after learning of the impossibility of eternal youth? What messages were transmitted through the figures of gods and demons, like Baal? How did Babylonians solve conflict? What roles did the Hittite's "Master Good and Master Bad" represent? How were crises managed? What kind of collective action and individual leadership erupted when the crops were insufficient? When flooding and droughts threaten survival? Perhaps, some of the "Oldest Stories in the World" (Gaster 1968) can teach us a lot about governance, or respect for, and proper connections with, nature.

Conceivably, a clue to the resolution of many dilemmas that emerge at the intersection of technology, societal changes, and volatile economic cycles could eventually be found through reflection on human traces.

REFLECTING ON EXPERIENCE, DEFLECTING CURRENT INERTIAS

The proposal to reflect upon the diverse manifestations of humankind's experience through its existence also infuses all stakeholders (including managers and owners) with the ethical perspectives necessary to heighten sustainability.

Reflecting upon the human condition does not exclude deflecting. Actually deviating from that which has been previously established might open venues for serendipitous discoveries. Like collective introspections, reminiscences of our best intuitions might emerge and combine with the emerging technologies and potentiating valuable clues to solve imminent threats to the survival of humanity.

Human stupidity has never been as conspicuous as now, when scientific evidence denounces all our mistakes and regrettable effects on the environment and social balances. Like a fish within a bowl, our pride and narrow focus on monetary maximization prevent us from seeing alternative forms of socioeconomic organization.

As UNESCO has signaled, our ignorance is tremendous, but worst of all, is hardly ever held up for questioning (Sureau 1995). Ignorance is ignored. Deliberately. As in Socrates' time, leaving the cave can be painful. Humanity seems to prefer gloom, shadows of a harsh reality, especially those capital holders who obscure externalities, and the people who renounce complex learning, happily adapting to their world of diffuse shadows.

Our call for reflexivity echoes not only recent epistemology, but also ancient traditions, which might acknowledge circular causality, showing how effects and causes influence each other. By proposing to learn from diverse human experiences, it might be possible to discern the beliefs that had led to unsustainable governance, social interactions, and patterns of production–consumption.

As sociology teaches us, high reflexivity enables the active shaping of interactions, while a low reflexivity leaves people reactive, passively shaped by structural forces. Humans have gained the knowledge to manipulate some raw material and innovate productive processes, which have improved our material standards, but unfortunately, we have not been able to overcome destructive inertias. As Bohler points out (Bohler 2019), we blindly follow individual brain instincts for short term satisfaction that on an aggregate basis will cause the insane destruction of the planet.

Instead of pursuing autonomy, most people prefer the easiness of automation. As Erich Fromm denounced, we seem afraid of freedom (Fromm 1984), and seek to escape our responsibilities. How can we escape our escapism? Mirroring our fears and hopes in others' stories and histories, could provide hints on how to leave the maze.

That requires mindful efforts to develop personal mastery (which most wisdom traditions suggest has to be done); and develop our multiple potential intelligences, trying to conquer autonomy and build the capacities for positive freedom. But, this requires awareness, for, as Bourdieu adverted, biases are inherent to social research (Bourdieu 1973; Bourdieu and Nice 1980). We have to be careful with ideas, because they can become "self-fulfilling prophecies," and as Ghoshal alerted, business is not immune (2005). Actually, self-fulfilling prophecies are most likely in the field of business, which is never interest-neutral.

About three decades ago, Anthony Giddens optimistically suggested that societies (at least Western ones) were gaining in awareness and reflexivity (Giddens 1983). Fakeness, bots, struggling democracies, painful migration crises, prove him wrong. None the less, herein we highlight the reflexive potential of his structuration; as a potential tool to hermeneutically make sense of the structures and roles of agents in diverse cultures. Today's agents of society can learn from past phenomena and discover means through which active agents can break unsustainable inertias and initiate the constitution of sustainable structures.

As experts demonstrate, deflecting the suicidal rhythms of humanity requires the shifting of economic trends, dramatically changing our lifestyles (Rowlatt 2019). We believe that these breakthroughs towards survival might be possible if humans awake from cybernation and respond to the call of autonomy and the need to emancipate from institutionalized indolence. Evoking Scott's pillars (Dacin and Scott 1997; R. Scott 1994), which normative, regulative and cultural-cognitive pillars have determined the institutions that have propitiated unsustainability? What alternative can be discovered in other collective institutions, something that can serve as luminary and lever for sustainability?

Can humans be capable of intelligent behavior? Yes, ... at least theoretically; but our obtuseness keeps denouncing us. No wonder folly has been so eloquently praised. Erasmus (Packard 2016), Rabelais, and Shakespeare (Greenfield and Kaiser 1968) seem talking directly to us. But folly has also been criticized, by figures such as Confucius, Socrates, and even the Ancient Egyptians through

the Book of the Dead, whose spells precognized the admonitions (and judgmental criteria) to guide social life. Like the Ten Commandments, the Spells were not intended for the afterlife but addressed directly social organization, just as ancient poets like Homer and Hesiod do – praising the noble and laudable ethos, and denouncing the despicable and non-sustainable mores.

Although the 21st century is significantly different from previous eras, some substantial challenges aren't quite similar. For example, why do we behave in senseless ways? Why does our powerful brain, capable of the nicest discernment, find it so hard to carry out wise, ethical decision-making? Humankind seems to be the only species that destroys its own habitat (knowingly). Perhaps, a radical review (i.e., by revisiting our roots) can help us escape insanity. How did traditional knowledge denounce madness, corruption, abusive behavior, environmental degradation, and social unbalance?

Many ancient wisdom tracts advocated shrewd diagnosis and severe sanctions toward enemies of lucidity. Today's social and neural scientists suggest one should seek “to empower consciousness in order to regain control of our destiny” (Bohler 2019: 187–217), evoking historic commands to form savvy leaders (Clemens n.d.), or integral governors, like king-philosophers (Bauman 2018; Plato and Jowett 1937) motivated by ethical principles.

Corporate-compatible concepts such as ‘reflective practitioners’ (Khin Sek and Fatt Kwai 2010), emotional intelligence (Goleman 1995), and primal leadership (Goleman et al. 2002), reflect old human eagerness to cultivate virtuous cycles, igniting the quest for educational technologies that might lead to enduring governance, social dynamics, productive arrangements, and balanced interaction with the environment.

Another way of rethinking the dominant arrangements of today is by fostering imagination. As Dortier neatly demonstrated after decorticating the origins of human language, culture, and cognition, a unique human trait is the capacity to imagine (Dortier 2004). Unfortunately, this power of imagination has been painfully curtailed (or perhaps painlessly, since we love the effortless life) by simplifying economic models and assumptions, such as the “*ceteris paribus*” that ends up reducing our conceptions of reality.

Through an induced process of self-fulfilled prophetization, complex variables are conveniently ignored and imagination (for many) is obscured to the point of extinction. Intercultural sensibility should awaken inter-contextual imagination, shaking heads-up the linear and oversimplified perceptions of businesses and their effects.

What if, in the wake of unsustainable foolishness, business explores other philosophical paradigms, and through the anthropological traces of religion and art (among other manifestations of human praxis) upgrades its senses in order to redesign itself? Building on Slobodkin who exposes how peculiar stories are to humans (Slobodkin 1992), we argue that there are many stories dispersed through religious beliefs that might guide us towards sustainable arrangements.

Intercultural sensitivity lead us to recognize the phylogenetic truth that humankind is a single species, and that ethnic features are just superficial, thus enhancing solidarity and reducing xenophobia. Additionally, it promotes imagination and openness to interdisciplinary knowledge, enabling the transcendence of the short-sighted corporate conception where “the manager is the agent of the individuals who own the corporation” (Friedman 2000, p. 234), which bluntly ignores the needs of a sustainable ethos.

In the wake of environmental collapse, Global Compact’s principles command the implementation of ethical market standards, which can lead to truly sustainable social and economic practices; and of course interrogating business education throughout the human experience, discovering the best possible benchmarks. For example, exploring how contemplative aesthetics can complement ethics (Don 2008), or how systems of thinking like Taoism provide intuitive comprehensions to physics (Hasegawa 1994) or politics.

CONCLUSIONS

The twenty-first century has proven to be convulsive, in economic, sociocultural, political, and technological dimensions. Multiple forms of terrorism, clashes of cultural identities, revival of religious fundamentalisms, xenophobia, erosion of institutional arrangements (such as the European Union, NATO, COP 21, WHO); seem to increase simultaneously with the most amazing scientific discoveries and technological inventions.

The Fourth Industrial Revolution (a term coined by Klaus Schwab; WEF 2016) has not liberated humankind from all the unrest and despair. On the contrary, individuals with mental distress, and stressed societies, are on the rise (WHO). The promises of progress, of modernity, that reappear with every industrial revolution, are stuck somewhere on the way; and the positive impacts do not seem to reach human groups as smoothly and evenly as promoted.

Embodying a post-modern Pandora’s Box, most dreamed gifts contained feared nightmares that we, humans, do not seem able to discern. Artificial intelligence is not making us any smarter, robotics might be reducing our most basic dexterity skills, block-chains and crypto currencies are consuming more energy and introducing more volatility than conventional monetary arrangements. Even the definition of living entities is being challenged in unprecedented manners, threatening the dignity of humans and other forms of life.

The implications of the digital era go well beyond drastic shifts in production and consumption patterns; quantic computation and autonomous machines have the potential to shake society and business, in unforeseen (and perhaps unforeseeable) ways. How can humans prepare to make sense of disrupting changes? Of emerging realities? How shall businesses prepare to make wiser decisions that protect life and generate sustainable value for all stakeholders?

Contemporary managerial and business challenges need to be continuously revisited, auscultating developmental needs that must adjust to some trends

(e.g., sociocultural and demographic), and even help shape prospective phenomena, like technological priorities, and scientific research connected to genuine human concerns.

Instead of being frozen by the daunting challenges, intelligent initiatives and reactions are urgently needed. For instance, reflexivity might provide the key to liberate the hope hidden within the Pandora's box, and cosmopolitanism might potentiate empathy, awareness about share destiny, and a decisive call for sustainable oriented actions.

Ultimately, we need wiser decision-makers, like the platonic King Philosopher, capable of seeking virtue even if it is not easily recognizable. Cultivating truth, beauty, and goodness, as Socrates suggested, nourishes and enhances ethical reasoning, and moral development, both in terms of justice (Kohlberg) and compassion (Gilligan).

The unstoppable and frenetic changes of communication and business rhythms leave individuals struggling and vulnerable to severe emotional and transactional exchanges. In the case of the elderly, or those peripheral populations marginalized by poverty, with no or limited access to safe information and communications technologies (ICTs), the reactions are predictably flailing and ineffectual.

All efforts to reduce the digital divide, and alphabetize people to manage the most recent technologies are certainly worth the labor. Nonetheless, a lack of orienting, ethically sound criteria, will condemn all efforts to wild swings, frenetically moving without clear targets.

Current turbulent times clearly demand deep transformations from people, both at the personal and collective levels. Individuals and organizations must develop the capabilities to adjust to increasingly sudden and unexpected changes. Nevertheless, fast reactions are not enough, regardless of how clever or how fast. Responsible action requires intelligent reflexivity in order to contribute in the shaping of a plausible future; foreshadowing ideals, instead of passively shadowing inertial replies.

By evoking the powerful meanings, symbols, metaphors, experiences, reflections, and heritages of ancient civilizations and diverse cultural mentalities, we hope to contribute to help people make sense (both hermeneutically and action-oriented) of the profound transformations of the epoch, which carry unheard-of and usually inconspicuous consequences.

Reflexive observation of the abundant traces of human culture, can enrich our understanding of diverse mentalities, enabling us to learn from the similarities and differences of perception, and action. Thus, besides fostering our communalities and empathically recognizing that everyone on Earth shares the same destiny, reflectively looking at the phylogenic and anthropologic nature of humanity can provide us with wiser inspiration in order to construct a more sustainable, meaningful and plentiful future.

Reinforcing the contact with diverse human mentalities can help us unearth the core of humanity's identity and full potential, empowering the discovery and creation of the most laudable futures, perhaps in serendipitous ways, but

always gaining awareness of our common destiny and need for sustainability, as we navigate through the same cosmopolitan venture.

The Digital Era ushers in unforeseen uncertainties, and perhaps unexpected threats to the survival of corporations and overall sustainability of natural ecosystems. Throughout this chapter multiple questions have been suggested as potential enquiry concerns, trying to nurture critical thinking and reflexivity, so emerging trends can be scrutinized in ways that are mindful of the well-being of all forms of life, social balances, and long-term economic prosperity.

Reflexivity requires flexibility, even more in the context of exponential changes that characterize the digital turbulences of current times. That is why continuous interrogation is promulgated throughout the text; not necessarily seeking definitive answers, but wishing to impregnate the quest for meaningful action.

Reflexivity cannot guaranteed predetermined results, but obliges us to explore life-saving epiphanies, seeking open-mindedness and warm-heartedness through serendipitous journeys, welcoming amazement; so humankind does not get lost, and, like T.S. Eliot, keeps searching and guarding the wisdom that might get lost in information.

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Promoting Business Sustainability through Experiential Learning: Connecting Multiple Dimensions

Sergio Castrillon-Orrago and Paula Almonacid

INTRODUCTION

Current societal transformations are triggered by environmental factors, such as climate change and technological disruptions that galvanize demographic, political, and socioeconomic transformations. These changes are amplified by digital vectors that magnify effects and accelerate turbulence. The effects on societal actors are asymmetrical, varying by age and access to state-of-the-art technology, and depending on income, geographic location, and degree of education.

These changes are more highly visible in businesses and within the younger generations which adopt them more quickly, both because they are more exposed to them, and because the relations of the means and purposes of disrupting technology flow more easily. Nevertheless, instead of affirming identities and proper relations with the others and the world, paradoxically, business and youngsters seem to have become more detached from nature, from the whole of society, and less aware of how their own actions generate consequences on them.

Accordingly, thinking about young people and business, and inspired by a teleological concern to improve management education for sustainability this chapter presents an action-research project, its design and results, hoping it will

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inspire similar learning experiences and be replicated in different contexts with similarly positive results in terms of education for sustainability. As the first quarter of the new century nears completion, it becomes imperative for the field of education to contribute responsible leaders, aware of complex contemporary challenges and capable of harnessing digital forces towards sustainably.

The overall research problem consists of exploring how these prospective young professionals interpret the challenges of sustainability, and their own transformative power, using business and management as vectors for change. By interrogating their perceptions, priorities, arguments, reflections, and appropriation of concepts, we explore to what extent diverse variables (digital ones among others) help them project their careers into the complexity of our times.

Inspired by important efforts to identify the transformative power of education, specially of experiential learning (Gonzalez-Perez et al. 2019; Taras and Gonzalez-Perez 2015), this project was originally conceived to investigate how young management students make sense of current business challenges in terms of Sustainable Development Goals (SDGs).

By organizing a fieldtrip to the local Botanical Garden, we tried to shake their taken for granted interpretations of theories; we invited them to explore economic, environmental and social problems that could be transformed through business solutions, thus creating awareness about the leverage power of businesses and the need to renew their connections with their territories and contexts in coherent and sustainable ways.

In this field trip, we pursued a learning experience, articulating the destination with the journey, daring students to face the shortcomings of their own city, and making them confront the challenges of development, locally, but with a global mindset. For instance, we asked them to question the sense and purpose they give to their profession, requiring them to scrutinize the aspirations and expectations they have in terms of responsiveness. We also wanted them to rethink the impacts they want to produce, examining technological combinations and envisioning the skills they are willing to develop and implement.

The studied group provided us with a privileged way to learn how young people, interested in becoming business managers and entrepreneurs, are perceiving the times they live in, therefore helping us identify potential demographic trends and revealing mis/conceptions about development, and hence identifying threats and opportunities for educators to intervene ethically, promoting the transformations that human survival and blooming might require.

Understanding persons who will join the labor market by 2025 might be quite revealing, since they have been born and raised within the current digital era, embedded but not overwhelmed by technological gadgets. Their perspectives can help educators and policy makers to identify how multiple dimensions of development and levels of analysis can be interpreted. Given the impact they will have in society, as tech-users, as consumers, as citizens, it is also important

for governments and corporations that seek sustainability to anticipate the strategies to engage them in meaningful ways.

Being conscious that the current digital era alters the way behavior is affected within society, and that business interactions with nature could be altered in unforeseen ways, this chapter seeks to share the results of an action-research project designed to discover what students think about the challenges of development and about their potential to contribute to achieving it, as well as the means they perceive as necessary. It seeks to discover something about business students, rather than assume stereotypes or prejudgments. It aims to detect the prevailing perceptions and ideas within these young students, taking their answers as clues to better ways to reconnect management, technology, and sustainable enterprise.

The survey's questions were formulated around the axis provided by the Sustainable Development Goals (SDGs) which constitute an elegant expression of the 2030 Agenda. In addition to the answers and contents addressing the specific questions, throughout the whole exercise we paid attention to the emergence of spontaneous elements. We also tried to spot the degree of complexity evoked by students, seeking to identify the kinds of associations students suggested and the number of variables involved.

The questions were mostly open, avoiding the conditioning of replies. Also it is important to mention that questions echo Kolb's learning cycle (Kolb et al. 1981, 1986), in the sense that students were invited to evoke personal experiences, to reflect, to conceptualize, and to propose active business ideas, all within the contexts of SDGs.

In order to protect privacy and assure the respect freedom of opinion, personal interpellations were sought from individuals, at a personal level, but indirectly, inviting them to think about people like themselves (i.e., their peers), so they would feel free to mention taboos or stigmatized topics of which they could have first-hand experience.

It is important to mention that the time horizon for reflection was immediate, asking participants to enrich debate with their ideas, for now and for local settings, all within a pressing timeframe of concrete action. Action as part of learning, and as developing awareness of the technical, cognitive, interpersonal, and axiological ideas they might want to develop by the time of graduation (just before 2025 for most). They need to be ready.

Among the benefits of the activity, we found that it helps participants reconnect (or at least recognize the importance of reconnecting) with the territory, with non-visible parts of society, and, in this specific trip, with nature, its forces, and some of its potential contributions to business, economic growth, and overall development.

Arguably this kind of pedagogic exercise renews belief in individuals, as empowered and capable of assume larger responsibilities. Part of the gain is re-signifying connections among people and communities, beyond virtual reality. Hopefully making people more intelligent, not just cyber-connected, but connected to the usually ignored multi-dimensional realities.

CONTEXT AND BACKGROUND

To create sustainable value, businesses require new strategic visions. Shortcomings in terms of balanced development and rapid technological transformations oblige reconfigurations of conventional functional arrangements in businesses. Not only corporations' legitimacy is at stake, but the probably the whole patten of established socioeconomic organization. These complex realities represent enormous challenges for the field of education.

Exponential and digital technologies have the power to accelerate business and to integrate markets and people. As experts point out, "international business is becoming more transversal" (Gonzalez-Perez et al. 2019, p. 3). Nevertheless, not all stakeholders are aware of the vicissitudes that world dynamics imply.

Although global warming, greenhouse gases, waste of material resources, poverty, and many negative effects of economic activity have been profusely documented by responsible media, mainstream management and business education are not responding as promptly as they should to the forthcoming environmental crisis. Many of the conceived strategies for a sustainable future are yet to be implemented. (Hazel 2006)

Hence, what can be done to foster education for sustainability? We suggest that experiential learning and interdisciplinary sensibility might help participants to acknowledge the multiple dimensions and complexity inherent to the environments in which business organizations operate.

In this sense, educators must provide frameworks than can help students make sense of their experiences, while fostering useful reactions. Therefore, we have designed activities through the whole semester, and incorporated questions in the survey, that invite students to complement their diverse learning styles and opportunities, according to Kolb's learning cycle. This implies valuing their experiences, reflecting and learning, so conceptualizations can make sense and prepare them for active experimentation. As Vince (1998) remarks, this cycle is not critique-free, but supports useful learning

When designing the experiential exercise we also considered Clayton Christensen's analysis of entrepreneurs, and findings regarding how innovations emerge (2008). Hence, prior to the field trip, students were invited to challenge the status quo and reflect on how to take risks. Immediately before the activity, students were instructed to observe everything in non-judgmental ways, to question everything, to work with others connecting ideas and experimenting with their initiatives at small scales. Given the fact that the activity also asked students to think about ulterior entrepreneurship, they were exposed to Prahalad's ideas regarding the importance of watching for opportunities at the bottom of the pyramid (Prahalad and Hammond 2002), a location where not only fortunes can be found, but also where advancements toward sustainability can be made (Prahalad and Hart 1999).

Taking accepted typologies regarding corporate social responsibility (Gonzalez-Perez 2013) as a reference, and guiding strategic reflection, SDGs

were proposed as beacons to help students organize their experiences and conceptual efforts. This approach is not completely novel (Constantine and Pontual 2015; Griggs et al. 2014; Pedersen 2018) and has proven useful in different settings. Most importantly, SDGs had demonstrated didactic potential with the students in the weeks before the field-trip. For instance, the most controversial issues that happen every day, or the most theoretically elaborated, were more easily understood by the students when faculty used the SDGs as articulating categories to explain them. One of the strengths of taking SDGs as reference is that they are supported by the United Nations' Principles for Responsible Management Education (Alcaraz and Thiruvattal 2010), thus potentiating their educative impact.

A LITERATURE REVIEW

The experiential learning exercise was supported by a theoretical framework covering some fundamentals of management (Robbins et al. 2017), so students could elaborate a comprehensive view of management, and encounter the jargon of corporations.

As mentioned before, a critical spirit permeates the activity, and following Alvesson and Deetz' critical approach (2000), students are challenged to generate insights about business dynamics, to criticize (in this case, outcomes in terms of unsustainable effects), so that they can eventually propose ideas for transformation. These are expected to fall within the realm of integrity, given the university efforts and the plausibility of Wankel's call for Management Education for Integrity, which is fostered among students throughout the academic period (Wankel 2011).

Before the fieldtrip (which served to synthesize the course), students were sensitized in class about the importance of some core competences, which were practiced in several assignments and class discussions. The references used are those developed by the Association of American Colleges and Universities, and labeled as the AACU Value Rubric ("Value Rubrics of the Association of American Colleges & Universities" n.d.). The competences we focused on were: critical thinking, creative thinking, civic engagement and ethical reasoning.

Through this exercise, we intend to disrupt conventional didactic approaches to introduce students to the management field, trying to shake the status quo at the organizational level (Alajoutsijärvi et al. 2017), but most purposefully challenging students to see differently, to explore their own ways of looking at their profession and everyday reality.

In this sense, reflexive pedagogy (Bailey et al. 1997) proves to be quite useful – it offers multiple strengths and is not totally exhausted (Dehler et al. 2001). Of course, the idea is to build upon critical thinking to empower people and organizations to contribute to the transformation of the world (Mochizuki 2016).

Transformation in what sense? What about sustainability? Karl Weick has repeatedly demonstrated the importance of proper sense-making in different contexts. More than 20 years ago he showed how order can emerge from chaos in the electronic world (Weick 1997), and over time has explained organizing processes that facilitate more meaningful learning outcomes (Colville et al. 1999; Weick et al. 2005)

In this sense, it is essential to highlight the meta-learning that occurs through experiential learning, such as the recognition of multiple stakeholders (Freeman 1999), or how poverty might be produced by capitalism within their own city (Freeman et al. 1988). As has been demonstrated, the theoretical foundations for experiential learning are sound and diverse (Gonzalez-Perez and Taras 2015), offering multiple paths to stimulate authentic learning in students.

In this sense, we believe critical and reflexive education (Tayar and Paisley 2015), combined with experiential learning, can enhance global citizenship (Lei et al. 2015). Belonging to a country with significant developmental challenges, we believe business education has the power to be part of the solution. Management has the power and the responsibility to propitiate dialogue and bridge society and the corporate world. As Lozano and Sauquet have stated, practitioners' dialogue must integrate business and ethical values (1999).

Thus, and given the threats to sustainability brought by the frenetic rhythms of digital changes, we have designed this pedagogic exercise to broaden students' perspectives of business, sharpening their critical and creative skills and helping them comprehend the ethical concerns of diverse stakeholders so they start crafting the capabilities to transform companies that hurt (De Gaulejac 2005) into those that generate well-being (Honeyman 2014). Sustainability requires deep reflection, and nowadays, urgent action. All current issues need revision (Mochizuki 2016), but also rapid development of pertinent skills (Kate and Delyse 2003).

A global consensual agenda, such as constituted by SDGs, enables the business community to use them as a power source for business and most importantly, as articulator of human collective action (Pedersen 2018). They also enable the assumption of critical perspectives (Prasad and Caproni n.d.), which provide valuable inputs that connect dimensions, and ultimately improve and legitimize businesses and corporations as valuable contributors to society. As Anderson has put it, through connections, it becomes possible to reach the goal of educating better students, for better companies (de las Anderson 2019).

METHODOLOGY

This chapter combines qualitative and quantitative analysis of the answers provided by participants to a survey that examines the learning derived from a field trip to a botanical garden in Medellin, the second largest and most important city in Colombia; a vibrant city, with exciting development challenges. Nevertheless the quantitative analysis does not divert the epistemic orientation of the research, which promotes and builds upon Alvesson and Deetz's "critical

methodology” (2000), complemented by responsible intentions and procedures (Swartz 1997) and eagerness to be mindful and awaken mindfulness among participants (Bentz and Shapiro 1998) and, hopefully, the public.

Basically it consists of an action-research willing to link theory and empirical applications (Gordon and Rosemary 2006), which might inspire students to engage in more responsible business endeavors, or even pave the way for service learning as means to carry on developing management skills (Goldberg and Coufal 2009).

Although some quantitative analyses are made, it is important to highlight that potential findings do not seek generalizations. Instead, we aspire to constructivist quality criteria of research such as acknowledgement of subjectivities, reflexivity, and *verstehen*-deepened understanding (Patton 2002: 544). In other words, instead of seeking strong conclusions, we seek deeper comprehensions and authentic sensibility in order to gain the ability to educate better. Hopefully, we accomplish this by balancing purposes and means (e.g., digital), including genuine concerns for sustainability, and enacting an enriched array of instruments (e.g., digital ones) to face the corporate challenges of generating lasting value for all stakeholders.

Students were asked, to voluntarily answer ten questions whenever they pleased, within a 48-hour deadline, and with all theoretical resources at hand. The survey was given to them a week after they voluntarily participated in the field trip. It is important to mention that participation, although voluntary, was stimulated by bonus points in grades, a fact that certainly increased participation.

4.1 Description of the Fieldtrip

The trip lasted one day, and students were given the opportunity to join any of four different groups. The destiny was the Botanical Garden, where expert biologists would offer a guided tour and a workshop on climate change and the eco services that could enrich society, benefit living ecosystems, and dynamize business in sustainable ways, provided they fine-tuned with nature.

The quantitative analysis had the purpose of measuring the distance between the answers provided by the students for each of the questions, and regrouping them in some categories by topic. This was performed through a text-mining analysis.

This specific text-mining analysis consists fundamentally in calculating a similarity measure between the documents and then taking it as an input for an appropriate clustering algorithm. In our case we used as a similarity measure the cosine similarity of TF-IDF (term frequency-inverse document frequency vectors), and an algorithm to cluster the documents, applying hierarchical clustering and the K-means clustering methods.

We selected the criterion of the cosine similarity because of its potential to provide us with thematic clusters, which could be relevant descriptors of the students’ concerns, interests, and ideas regarding each of the questions. In addition, it considers the orientation and not the magnitude of the distances. Mathematically, it represents the measure of the angle between two vectors

projected in a multi-dimensional space, provided by the cosine. The smaller the angle, the higher the cosine similarity.

K-means clustering and hierarchical clustering are unsupervised machine learning methods that have the objective of creating homogenous subgroups among observations. According to (James et al. 2013), K-means clustering is an iterative algorithm that randomly assigns each of the observations a K, where the value of K is a pre-specified number allocated by the researcher according to his experience and knowledge. The algorithm seeks to reduce the Euclidean distance between each observation and its centroid, which means that when it finds the minimum distance it stops.

In conclusion, we performed the analysis in two steps, calculating first the distance between the documents using the cosine metric criterion and then applying the clustering algorithms to each question. For the clustering step, we first incorporated hierarchical clustering to have a general idea of the number of the thematic clusters, and then explored each of the questions by including the K-means clustering with a pre-determined number of clusters in order to extract the main trends of each particular question. As recommended by the best practices of machine learning, before applying the two steps of data mining mentioned, we preprocessed the data by performing a tokenization process and removing the stop words.

Notwithstanding the quantitative analyses performed, it is important to emphasize the exploratory nature of the action-research, which mostly aims to focus on a specific group, in line with the logic of case study (Yin 1994), and qualitative research (Patton 2002). Our main purpose is to explore adequate pedagogic strategies to empower young students to better use current digital technologies and other didactic procedures as means to help a move toward responsible and sustainable business practices. Results should be taken only as bases for propositions, as invitations to design further research.

RESULTS

The results were analyzed after all entries were format-cleaned and the database provided comparable data. In total, we had 78 students who voluntarily took the survey. The age profile showed an age average of 19 years, with a maximum age of 31 years and a minimum age of 17 years. Seventy-five percent of participants were between 17 and 20 years.

In the first question, students were asked to review the whole set of SDGs, examining their full descriptors, and after paying close attention to their contents, to classify the 17 different SDGs, in one and only one category of sustainability, i.e., environmental, economic, or social. The purpose of this assortment was to make students reflect upon the semantic spectrum of contents that each SDG embodies and subsequently to make them think about the diverse possibilities to frame them.

Interpreting sustainability challenges constitutes a core step into the mobilization of political and technological means that would support its

achievement. In managerial terms, it certainly influences how causalities are comprehended, and how impacts are assessed. In general terms, eight (8) SDGs are classified as mostly “social,” five (5) as mainly “environmental,” and 4 as mostly “economic” in their nature.

According to the results, for SDGs 1, 2, 3, 4, and 5, which correspond respectively to No Poverty, Zero Hunger, Good Health and Well-being, Quality Education, and Gender Equality, most of the students selected the “social” category. These results are interesting, because they show students can escape conventionally economic indicators, such as poverty, recognizing its qualitative nature, beyond quantitative standards regarding poverty or misery as dictated by the World Bank, for example.

It also remarkable to observe that some SDGs are clearly ranged within a single category. For example, SDGs 13, 14 and 15, were ranked by almost all participants as “environmental.” This could reflect semantic clarity, but also represents isomorphic and linear thinking. Eventually, educators will work to reduce compartmentalization by strengthening complex thinking.

Some SDGs reflect more diverse groupings; for example SDGs 1, 10, 11, 12 and 17, were classified in different categories illustrating lower levels of consensual perception, though simultaneously embracing more potential to recognize circular causalities and nurture multivariable, complex solutions. It is noticeable that 37% of the students classified the first goal into the “economic” category and approximately 18% of the students classified the second goal into the “environmental” category. This result implies that poverty is recognized as a complex problem that spills over multiple dimensions. It is also consistent with participants’ interpretation of SDG 17, where they acknowledge that strengthening “the means of implementation and revitalization the Global Partnership for Sustainable Development” comprehends more than a single, compartmentalized dimension.

The second question asked them to select one SDG out of each category, according to their perception of its achievability if good business-management practices were implemented. They were directly asked to pick one SDG as most feasible through profit-oriented activity. This command was intended to have them focus on business opportunities, but also to force them away from the idea that it is up to governments and non-profits to solve social problems.

After the feasibility prioritizing, students were asked to “Briefly discuss each of your 3 selections (50 words maximum for each).” In this question 3, students could argue about impacts, benefits, pragmatism, personal taste, urgency, importance, the ideas of Prahalad, and news of interest, etc. It is interesting to notice the variety of responses, and the absence of technological or digital dimensions. Topics evoked covered: the progress of countries, aspects about government and justice, children’s education, guaranteeing health, improvements in nutrition and agriculture, gender equity, environmental damage, famine, deaths, and poverty aspects. Table 41.1 displays the clusters obtained by K-means derived from students’ discussion and justification of their selections.

Table 41.1 Arguing preferences when selecting a given SDG

<i>Cluster</i>	<i>Key word 1</i>	<i>Key word 2</i>	<i>Key word 3</i>
1	Countries	EEUU	To progress
2	Government	Corruption	Justice
3	Children	Capital	Education
4	Study	Society	Education
5	To guarantee	Healthy	Life
6	Problem	Society	Great
7	Success	Achieve	Great
8	Men	We	Beings
9	Agriculture	Nutrition	Sustainable
10	Equality	Women	Gender
11	Hunger	Food	Sense
12	Environment	Damage	Community
13	Peace	Health	Awareness
14	Hunger	Deaths	Poor
15	Economic	Promoting	Studies

Source: Authors' creation

Notes: The K-means clustering algorithm was applied to the answers given by the students to the following question: Briefly discuss each of your 3 selections (50 words maximum for each). For example, you can argue impacts, benefits, pragmatism, personal taste, urgency, importance, ideas of Prahalad, news of interest, etc.

After this round of argumentations, students were instructed to select only one SDG, explaining their choice and answering, in no more than 50 words, the question: “Why, from a Business Administration perspective, do you prefer to work towards the achievement of this SDG?”

We can observe some trends inferred from the top keywords obtained after the clustering process and the TF-IDF score. The topics and the number of clusters obtained are presented in Table 41.2.

Among the answers, the following topics were emphasized: needs of the base of the pyramid, income-generation and business career, generation of new sources of energy, discovery and initiatives that generate profits, Colombian fruits, end hunger, global financial exchange, forests and indigenous from Colombia, ideas for ensure good education and marine and flora related products. The absence of technological contents, or digital means and aspirations is, again, noticeable.

In the fifth question, we analyzed experiences, in an indirect way. The question was: “How do you think that young people like you (for example, first-year students of Business Administration), may have experienced or may directly experience the realities associated with the selected SDG? Please describe at least 3 experiences that bring young people closer to the issues related to the SDG of their choice.” We opted for this vicarious inquiry of experiences, in order to prevent hurting sensitivities that might arise out of personal conditions, and in order to assure the privacy of respondents. Table 41.3, displays the clusters obtained by K-means corresponding to this specific inquiry.

Table 41.2 Why do students prefer a given SDG, when assuming a Business perspective?

<i>Cluster</i>	<i>Key word 1</i>	<i>Key word 2</i>	<i>Key word 3</i>
1	Needs	Base of pyramid	Segment
2	Generate income	Career	Business
3	Wind energy	Solar energy	Business
4	Hunger	Agriculture	Malnutrition
5	Profit	Discovery	Initiatives
6	Fruits	Colombia	Importance
7	Run out	Hide	Hunger
8	Financial	Exchange	Global
9	Forest	Indigenous	Colombia
10	Idea	Good education	Ensure
11	Organization	Women	Development
12	Produce	Maritime	Flora
13	Keep	Planet	Environmental
14	Ideas	Our	To promote
15	Strategies	Economic	Environmental

Source: Authors' creation

Notes: The K-means clustering algorithm was applied to the answers given by the students to the following question: "Why, from a Business Administration perspective, do you prefer to work towards the achievement of this SDG?" (Minimum 350 characters, maximum 400 characters.)

Table 41.3 Interpreting the vicarious experience with SDGs

<i>Cluster</i>	<i>Key word 1</i>	<i>Key word 2</i>	<i>Key word 3</i>
1	Discriminant	Income	Women
2	Poverty	Ecosystem	Pollution
3	City	Planet	Trees
4	Knowing	Affect	Can
5	Technology	Climate change	Unemployment
6	Changing	Variable	Notorious
7	Sweetness	Consume	Children
8	Services	Youth	Environment
9	Example	Production	For
10	Coal	Generators	Energy
11	Quality	Improve	Jobs
12	Stable	Company	Economy
13	Subsoil	Extraction	Systematic
14	Indicator	Macroeconomic	Analyzing

Source: Authors' creation

Notes: The K-means clustering algorithm was applied to the answers given by the students to the following question: How do you think that young people like you (for example, first-year students of Business Administration), may have experienced or may directly experience the realities associated with the selected SDG? Please describe at least 3 experiences that bring young people closer to the issues related to the SDG of their choice.

The most frequently found aspects were: discrimination against women in terms of income, aspects related to pollution and poverty, aspects related to trees, city and planet, issues about technology, climate change and unemployment, aspects about notorious changes, the feeding of children, youth services, energy and coal generators, quality of employment, stable economies and companies, subsoil extraction and macroeconomic indicators. Here it is worth noticing that “technological issues” appear as “experiences” that might help young people to get closer to the SDG they have selected.

The sixth question of the survey invited participants to propose reflections to their fellow classmates, so that they would gain awareness about the problematic dimensions and eventual solutions related to their selected SDG. We found the following topics emerged most frequently: the ecosystem and the links between animals, education of the people of a country, aspects about understanding, coping, acts, vacancies, industry levels, informing, adopting, remembering, renewing, value, undertaking, effective, important, needs, think, power, service coverage, patients, implement, sell, states, experience, rebuild, fight, family, work and faith. It is interesting to notice that popular components of the digital universe are not propose as elements to reflect about. The following table displays the clusters obtained by K-means corresponding to this reflexive question (Table 41.4).

As part of the effort to promote critical thinking, the survey also asked students to “Describe and explain three administrative failures and/or errors in the business dynamics, which can generate the problems that each specific SDG tries to address.” When we analyzed the answers (which could not exceed 100 words), we found diverse items emerging, such as: problematic waste, filters and forests,

Table 41.4 Proposing reflections to their peers, raising sustainability awareness

<i>Cluster</i>	<i>Key word 1</i>	<i>Key word 2</i>	<i>Key word 3</i>
1	Ecosystem	Animals	Links
2	Country	People	Education
3	Face	Acts	Understanding
4	Holding	Vacancies	Will begin
5	Environment	Without	Use
6	Industrial	Levels	Compare
7	Reminder	Informed	Adopt
8	Renewable	Value	Ventures
9	Effective	Matter	Import
10	Needs	Think	Can
11	Patients	Services	Coverage
12	Implement	States	Sold
13	Experience	Rebuilt it	Fight
14	Families	Works	Faith

Source: Authors' creation

Notes: The K-means clustering algorithm was applied to the answers given by the students to the following question: What reflection would you propose to your colleagues to become more aware of the problems that are related to this SDG, and to the possible solutions

friendly products, consumerism, incentives, resources, non-profit, extinction, different, purpose, water, companies and pollution, theory, learning, induction, economic project and monopolies, objectives and problems, research in energy, expensive, ineffective, problem, administration and development of employees, cash, efficiency and leaders, vehicles, transportation and supplies, agricultural and food calendar, prophecy and administration, import, trade, rigidity.

Although results could provide diverse interpretations, and the variety of criticisms reveal the complicated and multivariate nature of the problems, it is worth noticing that no explicit allusions to digital components appear. One possible conjecture is that most young students assume technology and the changes brought along by the digital era, as neutral.

Following Kolb's learning cycle, the eighth question of the survey instructed students to conceptualize theoretical connections between business management and SDGs. The ninth question invited students to briefly formulate sustainable business proposals where contributions to SDGs can be evidenced, for example, adapting Prahalad's ideas, or offering biodiverse services (profiting from the learnings derived of the visit to the Botanical Garden). Because of the nature and duration of the course, rather than asking for full projects, the invitations were to conceive hypothetical scenarios, which hopefully would stimulate students to mature them later on. Table 41.5 displays the clusters obtained

Table 41.5 Identifying Administrative Failures, Criticizing Business Dynamics

<i>Cluster</i>	<i>Key word 1</i>	<i>Key word 2</i>	<i>Key word 3</i>
1	Operational	Problematic	Waste
2	Forest	Filters	Motivated
3	Friendly products	Consumerism	Incentive
4	Resources	Non-Profit	Many
5	Different	Extinction	Problem
6	Purpose	To count	Water
7	Resources	Companies	Pollution
8	Theory	Induction	Learning
9	Monopoly	Economy	Project
10	Goals	Objectives	Problems
11	Research	Energy	Expensive
12	Ineffective	Conclusion	Problem
13	Development	Employees	Management
14	Effectiveness	Efficiency	Leaders
15	Vehicles	Transport	Decide
16	Food	Agricultural	Schedule
17	Administration	Prophecy	Affirmative
18	Importing	Trade	Rigid

Source: Authors' creation

Notes: The K-means clustering algorithm was applied to the answers given by the students to the following question: Describe and explain three administrative failures and/or errors in business dynamics, which can generate the problems that the SDG tries to address. (Minimum 350 characters, maximum 400)

by K-means corresponding to the inquiry about identifying and denouncing administrative failures, business mistakes, and related SDGs shortcomings.

The final question directly required students to explore their own educative responsibility, by asking them “How do you think you should prepare to become a personal and socially responsible Business Administrator?” The themes that emerged from the students’ responses were the following: incorporate innovations, updates, teamwork, leader, challenges, preparation, guide, criticism, repercussions, purposes, unique, subsistence, find sustainable solutions, evolution of demands, managed, in charge, focus, route, work, study, improve, discipline, ethics, technology, solutions, information, visualize, collaborate. Although the question introduced an ontological bias, it is interesting to notice that some digital elements appear, such as “technology,” “information,” “incorporate innovations.”

CONCLUSIONS

The year 2025 is just around the corner, and the stakes for humanity are high, not only because of the urgency of the problems we face, but because their structural significance. How we face sustainability threats and act towards the huge and problematic environmental, social and economic concerns, may signify the difference between human blossoming, plain survival, or even extinction.

As educators wishing to contribute to a more sustainable future we have conducted an experiential-learning project, exploring how these prospective young professionals interpret the power of business and management in order to achieve the challenges of sustainability. By interrogating their perceptions, priorities, arguments, reflections, and appropriation of concepts, we explore to what extent diverse variables (digital ones among others), help them project their careers within the complexities of our digital times.

Multiple questions propelled this action-research. Some were kept tacit, given the limited nature of the activity. In general, we wanted to learn more about some specificities of this particular digital-native generation, their sustainability concerns, their expectations regarding their career, and their top-of-mind interests. Although many questions enticed and motivated this ethical quest, only some materialized as part of the survey. The answers to the survey provide interesting contents that educators could analyze. For instance, thoughts on how digital tools could be mobilized towards sustainability in terms of purposes and possible means.

The results of this experiential fieldtrip conducted with students who will be joining the ranks of business organizations in a few years raise important challenges for business educators. Young people constitute a marvelous opportunity to understand how current demographics combine with technological disruptions, and to understand the diverse ways in which the digital revolution is affecting society. A deeper comprehension of this segment of society will

reveal possible points and forces of inflexion, guiding potential interventions with ethical leverage.

Although new generations are digital natives, they do not necessarily perceive the potential for change that the digital revolution implies. They are often seen to be ignoring both threats and the potential to enforce sustainability. Naivety regarding how drinkable water comes out of the tap, and how energy is produced and transported, is as common as ignorance regarding the social patterns of interaction that tend to condemn entire segments of the population to structural poverty.

Consequently, one of the responsibilities of management schools is to cultivate empirical and conceptual connections that enable students to make sense of the multi-dimensionality of reality. If this multi-dimensionality is acknowledged, we might get closer to achieving SDGs and helping students to conceive more integral and sustainable business strategies.

This obliges business schools to assume an active educational role, making it imperative to get involved in controversies and taking the lead in societal debates, discussing how digital technologies can be harnessed to generate sustainable economic and moral value, even if that implies questioning the role of business itself. We can no longer assume business education to be contained within a few classrooms and factories.

One finding from this activity is that as students engage in participation, they commit to deeper learning, gaining awareness about the purpose of “being” there and becoming aware that preparing their careers obliges to connect to the world. For instructors, it raises multiple questions regarding how to integrate the digital skills of young generations into educative strategies, escaping the trivial, spontaneous usage of data, devices and social networks.

The fieldtrip activity proved to be meaningful to students, enjoyable and eye-opening in terms of the destination (the Botanical Garden), and the journey (collectively walking to, and using public transportation from the university, moving through downtown), seeing the city afresh, visiting an ignored place.

Many of them owed to this being their first visit to the Botanical Garden (or this type of site), and to being surprised by its scientific nature. Many of them seldom use public transportation, almost never scrutinize the city, or think about the complex causality of its problems. It is no exaggeration to claim that education sometimes keeps pseudo happening in a bubble. Nevertheless, if we are to achieve the 2030 Sustainable Agenda it is imperative that all actors within the business community act promptly to educate all generations, questioning the role and purpose of education, and technological means through which positive examples are enacted.

As the answers to the survey demonstrated, abundant use of digital means does not signify consciousness about the enormous advantage it represents. If all stakeholders scrutinize their own contributions, and explore their mutual causalities, sustainable development may take place.

Nonetheless, this implies an active quest for different perspectives. Experiential learning activities that promote empathy and invite vicarious

learning could be part of the effort to enact a sustainable future. Improved pedagogy can spark significant impact. Future generations deserve all the efforts we can make to assure them a sustainable future, profiting from the digital conveniences, to create life-sustaining businesses which acknowledge the complex and genuine aspirations of development.

The fieldtrip reminds faculty that management schools have to make greater efforts to connect students (and faculty) with surrounding ecosystems, with the complexities of society, and even with business dynamics. This transformative endeavor could resort to digital resources when trying to discover business opportunities and when enacting the corresponding solutions; so market dynamics, and value creation (and destruction), can be fully understood by future managers.

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*Tan Gek-Siang, Kamarulzaman Ab. Aziz,
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