

Eurasian Studies in Business and Economics 22
Series Editors: Mehmet Huseyin Bilgin · Hakan Danis

Mehmet Huseyin Bilgin
Hakan Danis
Ender Demir
Ghulam Mustafa *Editors*

Eurasian Business and Economics Perspectives

Proceedings of the 35th Eurasia
Business and Economics Society
Conference



 Springer

Eurasian Studies in Business and Economics

Volume 22

Series Editors

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Eurasian Studies in Business and Economics is the official book series of the Eurasia Business and Economics Society (www.ebesweb.org). Each issue of the series includes selected papers from the EBES conferences. The EBES conferences, which are being held three times a year, have been intellectual hub for academic discussion in economics, finance, and business fields and provide network opportunities for participants to make long lasting academic cooperation. Each conference features around 250 research articles presented and attended by almost 500 researchers from more than 60 countries around the World. Theoretical and empirical papers in the series cover diverse areas of business, economics, and finance from many different countries, providing a valuable opportunity to researchers, professionals, and students to catch up with the most recent studies in a diverse set of fields across many countries and regions.

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Ender Demir • Ghulam Mustafa
Editors

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Preface

This is the 22nd issue of the Springer's series **Eurasian Studies in Business and Economics**, which is the official book series of the Eurasia Business and Economics Society (EBES, www.ebesweb.org). This issue includes selected papers presented at the 35th EBES Conference—Rome that was held on April 7–9, 2021. The conference was organized jointly by the *Faculty of Economics, Sapienza University of Rome*, and the *Istanbul Economic Research Association*. Due to the COVID-19 pandemic, the conference presentation mode has been switched to online/virtual presentation only.

We are honored to have received top-tier papers from distinguished scholars from all over the world. We regret that we were unable to accept more papers. In the conference, 142 papers were presented and 302 colleagues from 48 countries attended the online conference. **Dorothea Schäfer** (Editor—*Eurasian Economic Review* (Scopus & ESCI)), **Ngee Choon Chia** (Co-Editor—*Singapore Economic Review* (SSCI)), and **M. Kabir Hassan** (Editor—*International Journal of Islamic and Middle Eastern Finance and Management* (SSCI)) joined the “Editor’s Panel Session” on “How to publish in WoS journals.”

In addition to publication opportunities in EBES journals (*Eurasian Business Review* and *Eurasian Economic Review*, which are also published by Springer), conference participants were given the opportunity to submit their full papers for this issue. Theoretical and empirical papers in the series cover diverse areas of business, economics, and finance from many different countries, providing a valuable opportunity to researchers, professionals, and students to catch up with the most recent studies in a diverse set of fields across many countries and regions.

The aim of the EBES conferences is to bring together scientists from business, finance, and economics fields, attract original research papers, and provide them with publication opportunities. Each issue of *the Eurasian Studies in Business and Economics* covers a wide variety of topics from business and economics and provides empirical results from many different countries and regions that are less investigated in the existing literature. All accepted papers for the issue went through a peer review process and benefited from the comments made during the conference

as well. The current issue is entitled “Eurasian Business and Economics Perspectives” and covers fields such as entrepreneurship, human resources management, management, marketing, finance, growth and development, and regional studies.

Although the papers in this issue may provide empirical results for a specific country or regions, we believe that the readers would have an opportunity to catch up with the most recent studies in a diverse set of fields across many countries and regions and empirical support for the existing literature. In addition, the findings from these papers could be valid for similar economies or regions.

On behalf of the series editors, volume editors, and EBES officers, I would like to thank all the presenters, participants, board members, and keynote speakers, and we are looking forward to seeing you at the upcoming EBES conferences.

Best regards,

Istanbul, Turkey

Ender Demir

Eurasia Business and Economics Society (EBES)

EBES is a scholarly association for scholars involved in the practice and study of economics, finance, and business worldwide. EBES was founded in 2008 with the purpose of not only promoting academic research in the field of business and economics but also encouraging the intellectual development of scholars. In spite of the term “Eurasia,” the scope should be understood in its broadest terms as having a global emphasis.

EBES aims to bring worldwide researchers and professionals together through organizing conferences and publishing academic journals and increase economics, finance, and business knowledge through academic discussions. Any scholar or professional interested in economics, finance, and business is welcome to attend EBES conferences. Since our first conference in 2009, around 14,439 colleagues from 99 countries have joined our conferences and 8047 academic papers have been presented. **EBES has reached 2628 members from 87 countries.**

Since 2011, EBES has been publishing two journals. One of those journals, *Eurasian Business Review—EABR*, is in the fields of industrial organization, innovation, and management science, and the other one, *Eurasian Economic Review—EAER*, is in the fields of applied macroeconomics and finance. Both journals are published quarterly by *Springer* and indexed in *Scopus*. In addition, EAER is indexed in the *Emerging Sources Citation Index (Clarivate Analytics)*, and EABR is indexed in the *Social Science Citation Index (SSCI)* with an impact factor of 3.5 as of 2020.

Furthermore, since 2014 Springer has started to publish a new conference proceedings series (**Eurasian Studies in Business and Economics**) which includes selected papers from the EBES conferences. The series has been indexed by **SCOPUS**. In addition, the 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, and 25th (Vol. 2) EBES Conference Proceedings have already been accepted for inclusion in the *Conference Proceedings Citation Index—Social Science & Humanities (CPCI-SSH)*. Other conference proceedings are in progress.

We look forward to seeing you at our forthcoming conferences. We very much welcome your comments and suggestions in order to improve our future events. Our success is only possible with your valuable feedback and support!

With my very best wishes,

Klaus F. Zimmermann
President

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Part I
Eurasian Business Perspectives:
Entrepreneurship

Why Immigrant Entrepreneurs are More Prone to Exit than Non-immigrant Entrepreneurs?



Fang Zhao, Tenghao Zhang, and Marie-France Waxin

Abstract Due to various cultural and social barriers, immigrant entrepreneurs are considered more vulnerable to external shocks than their non-immigrant counterparts. The COVID-19 pandemic has exacerbated the plight and pushed immigrant entrepreneurs into a more precarious situation. This study focuses on immigrant entrepreneurs as a unit of analysis and seeks to explain why and how immigrant entrepreneurs exit their businesses, how they perform differently from non-immigrant entrepreneurs, and what role culture might play in the entrepreneurial exit process. Drawing on a social psychology perspective, the Theory of Planned Behaviour, the concepts of self-construals and extant research, the study develops a research framework to facilitate the understanding of immigrant entrepreneurial exit. The study argues that immigrant entrepreneurs' exit intention and behaviour are primarily determined by their exit attitude, subjective norms, and perceived behavioural control, whereas independent and interdependent self-construals that reflect one's cultural orientations play an important moderation role between the three hypothetical determinants and exit intention. COVID-19 impact also plays an important role in influencing exit intentions. The study advances research on this largely underexplored area of immigrant entrepreneurial exit through mapping a research agenda for future research. The study also holds broader implications for public policy development, as discussed in the paper.

Keywords Entrepreneurial exit · Immigrant entrepreneurs · Cross-culture · Self-construal theory · Theory of Planned Behaviour · COVID-19

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1 Introduction

Over the past few decades, international migration has become a strong and global trend. The Population Division of the United Nations reports that as of 2019, the estimated number of international migrants worldwide stood at 272 million, which equates to 3.5% of the world's population (United Nations, 2019). The fast-growing trend of immigrants and their contribution to host countries' economic development has received substantial attention from both policymakers and academia. Studies show that due to relative disadvantages (or called blocked mobility) experienced by immigrants in the host country's labour market (Waldinger et al., 1985), many immigrants turn to self-employment or starting their own business as an alternative to wage labour (Liu et al., 2019). For instance, immigrant entrepreneurs represent 24.9% of all new business owners in the United States (Fairlie & Lofstrom, 2015). Due to various factors such as language barriers, residency status and lack of skills required, immigrant entrepreneurs are found to be more prone to exiting their business than their non-immigrant counterparts (Collins, 2002; Fairlie et al., 2010; Lofstrom, 2011). The study of Fairlie (2020) shows that ethnic-minority businesses were hit the hardest by COVID-19.

However, in the extant entrepreneurship literature, relatively less research attention is paid to entrepreneurs' exit than to new venture creation and growth (Detienne & Wennberg, 2015). The lack of research on entrepreneurial exit becomes more problematic due to a higher exit rate of immigrant entrepreneurs and the disproportionate impact of COVID-19 on immigrants and their businesses. This makes the study of immigrant entrepreneurs and exit more important than before.

Studies suggest that immigrant entrepreneurs have a 'particular configuration' (Aliaga-Isla & Rialp, 2013) of their cultural capital and behaviour that influences entrepreneurial behaviour in a different way than non-immigrant entrepreneurs (Ndofor & Priem, 2011). Research shows that when dealing with an exit process, immigrant entrepreneurs behave differently from personal (Collins & Low, 2010), social (Shahid, 2016) or family (Neneh, 2020) perspectives. For example, in Chinese culture, family often plays a central role in Chinese immigrants' entrepreneurial behaviour, since family serves as the main source of Chinese entrepreneurs' financial support, business advice and employee recruitment (Collins, 2002). Therefore, when a Chinese entrepreneur considers exiting a business, the opinions of the family members may have a significant influence on his or her exit decision. Although a wide range of research has been conducted to explore how cultural factors affect immigrants' entrepreneurial activities such as building and growing business ventures (Liñán & Chen, 2009), research on the relationship between cultural factors and *entrepreneurial exit* is still lagging (Detienne, 2010).

This study seeks to address the knowledge gap through developing a research framework and an agenda that helps (1) identify the factors that influence immigrant entrepreneurs' exit intentions and behaviours; (2) explore the relations between these factors; (3) investigate what role culture may play in the exit process; and (4) examine the impact of COVID-19 pandemic on exit intentions and behaviours. For that

purpose, we develop a conceptual model and a series of propositions, drawing on the Theory of Planned Behaviour (TPB) (Ajzen, 1991), the self-construal theory (Markus & Kitayama, 1991) and the current literature relevant to the study field.

This study suggests that immigrant entrepreneurs' exit intention and behaviour are primarily determined by exit attitude, subjective norms and perceived behavioural control. Independent and interdependent self-construals that reflect one's cultural orientations play an important moderation role between the three hypothetical determinants and exit intention. While the COVID-19 impact also plays an important role in influencing exit intentions.

The rest of the paper is organised as follows. Section 2 highlights the importance and urgency of this study. Section 3 presents a review of the literature and discusses the theoretical underpinnings of the present research. Section 4 develops a theoretical framework and is followed by the development of the corresponding propositions. In Sect. 5, we propose an agenda for future research. Implications for public policies are discussed in Sect. 6 and the study is concluded in Sect. 7.

2 Importance of This Study

2.1 *Immigrant Entrepreneurs' Exit*

Prior research suggests that immigrant entrepreneurs are more likely to exit than their non-immigrant counterparts. The empirical study conducted in Australia by Collins (2002) reveals that the average lifecycle of Asian immigrant entrepreneurs' business is significantly lower than that of non-immigrant entrepreneurs, indicating a higher exit rate of immigrant entrepreneurs. Some studies seek to explain the causes of the exit from various perspectives (e.g. Daniel et al., 2019; Fairlie & Lofstrom, 2015; Fairlie et al., 2010). As many immigrant entrepreneurs are concentrated in the SME sector—being self-employed or running a family business, family resources play a key role in influencing immigrant entrepreneurship. Bird and Wennberg (2016) claim that family financial capital and the geographical proximity of family members are two main factors influencing an immigrant entrepreneur's likelihood of staying on or exiting the current business. Wang and Warn (2019) suggest that 'class resources' such as entrepreneurs' human capital and financial capital are the key factors that facilitate Chinese immigrant entrepreneurs in Australia to successfully exit from their low-return start-up business and move to more competitive business models. The study of Shahid (2016) highlights the significance of social networks (e.g. network engagement) in exit and re-entry experiences of Pakistani and Chinese international business owners. The study by Collins and Low (2010) suggests that the 'accent ceiling' of an immigrant entrepreneur, viewed as an inability to communicate, creates entry barriers to the labour market and immigrant entrepreneurship, which is an important factor that constrains their entrepreneurial success.

Although some research demonstrates that the cultural distance between immigrant's host and original countries may affect immigrant entrepreneurial exit (Lin,

2015), there is a lack of understanding about *how* immigrants' cultural background plays an important role. There is a need for a systematic inquiry underpinned by a sound theoretical framework, which takes into account the immigrant entrepreneurial exit process and the behavioural, social and cultural factors that influence the process.

2.2 Impact of COVID-19 on Immigrant Entrepreneurs

Most recent research finds that past studies have largely overlooked how extreme environmental shocks like 'black swan' events and other global crises can exacerbate business failures (Amankwah-Amoah et al., 2021; Jaim, 2021). COVID-19 is such an extreme environmental shock that has caused unprecedented disruptions to businesses around the world. As such, studying the impact of COVID-19 on immigrant entrepreneurial exit becomes particularly important.

Studies show that ethnic minorities have been affected disproportionately by COVID-19 (Liebert, 2021; Pereira & Patel, 2021; Stamps et al., 2021). In the United Kingdom, research shows ethnic minorities have a higher mortality rate than non-ethnic people (Lally, 2020). In the United States, immigrants are among the hardest hit by the pandemic (Page et al., 2020; Ross et al., 2020). Many immigrant small businesses are traditionally concentrated in sectors that are particularly vulnerable to COVID-19 lockdowns, such as retailing, restaurants, fast food provision and personal services. An early study in the United States that compares the survival rate of businesses from April to February 2020 indicates that immigrant entrepreneurs had a significantly higher exit rate than the national average (Fairlie, 2020). Customers and coworkers of immigrant entrepreneurs are frequently other immigrants or country fellows. Due to border closure and travel restrictions in the wake of COVID-19, they are more likely to exit (mostly involuntarily). For example, many education and immigration consulting firms operated by immigrant entrepreneurs in Australia and Canada are highly dependent on international students and immigrants. Many are forced to shut down due to border closures and the plummet of customers. The uncertainty surrounding the post-pandemic recovery has also weakened entrepreneurs' confidence (Kuckertz, 2021).

3 Theoretical Underpinnings for This Study

3.1 Theory of Planned Behaviour and Implications for This Study

Fishbein and Ajzen (1975) propose the Theory of Reasoned Action (TRA) to explain the relationship between an individual's attitude and behaviour, which conjectures

that an individual's intention to perform a particular behaviour is the principal predictor of whether or not he/she will actually perform the behaviour (Montano & Kasprzyk, 2015). The TRA argues that there are two essential determinants of behavioural intentions: attitude and subjective norms. Attitude refers to the degree to which an individual evaluates and comprehends a specific questioned behaviour. Subjective norms are typically a social factor that refers to the social pressure faced by an individual with regards to whether or not to perform a particular behaviour. Some meta-analyses (e.g. Sheppard et al., 1988) report that the TRA is reliable in predicting human behaviours in many empirical studies. However, the TRA is also criticised because it is subject to predicting behaviour that is entirely under a person's volitional control. In other words, if the intended behaviour is out of the person's volitional control, even if that behaviour is significantly aligned with his or her own attitude and subjective norms, the behaviour may not be performed due to his or her perceptions of being unable to perform the behaviour (Sarver, 1983).

To improve the TRA model, Ajzen (1991) extends the TRA and develops a new theoretical model, a social psychological model of human behaviour. In addition to the existing determinants of attitude and subjective norms, the TPB incorporates an additional construct named 'perceived behavioural control' to examine non-volitional behaviour in predicting an individual's behavioural intention and actual behaviour. Perceived behavioural control refers to the perceived ease or difficulty with which an individual performs the behaviour and is postulated to reflect past experience as well as anticipated obstacles. The TPB postulates that beliefs serve as fundamental considerations and prevailing determinants that prompt a person to perform a behaviour (Ajzen, 2010). It contends that human behaviour is guided by three kinds of beliefs: behavioural beliefs, normative beliefs and control beliefs. In their respective aggregates, behavioural beliefs produce a favourable or unfavourable attitude toward behaviour; normative beliefs result in subjective norms; and control beliefs give rise to perceived behavioural control (Ajzen, 2010; Krueger et al., 2000). As a result, these three conceptually independent determinants, attitude, subjective norms and perceived behavioural control, collectively drive an individual's behavioural intentions and actual behaviours.

Entrepreneurship is considered an intentional process wherein entrepreneurs cognitively plan to carry out the behaviours of opportunity identification and venture creation and development (Krueger et al., 2000; Lortie & Castogiovanni, 2015). TPB was perhaps first introduced into entrepreneurial research by Krueger and Carsrud (1993) to explain and predict entrepreneurial intentions, and it has been applied extensively in different entrepreneurial behaviour studies (Gorgievski et al., 2018; Lortie & Castogiovanni, 2015; Kautonen et al., 2015). The study of Detienne and Cardon (2012) is arguably among the earliest studies to introduce the TPB into entrepreneurial exit studies, wherein they draw upon the TPB to investigate the relationship between an entrepreneur's experience and exit intentions.

For the purpose of this study, we argue that studying entrepreneurial intentions of *immigrants* should take into account the distinct cultural identity and cultural practices of immigrants. Although the 'subjective norms' in the TPB can exhibit an individual's social influence to a certain extent, cultural influence goes beyond

social influence. Mancha and Yoder (2015) criticise that the current research in TPB is elusive in distinguishing cultural aspects. Likewise, Lee et al. (2006) argue that the TPB model is not sufficient in investigating the influences of an individual's cultural orientation. The empirical study of Moriano et al. (2012) demonstrates that TPB components are moderated by culture. To further improve the understanding of the role of culture in immigrant entrepreneurial exit, we decided to incorporate the concept of *self-construal* (Markus & Kitayama, 1991) into the TPB to examine the influence of culture.

3.2 *Self-construal Theory and Implications for This Study*

Self-construal is 'a constellation of thoughts, feelings, and actions concerning one's relationship to others and the self as distinct from others' (Park et al., 1998), and it signifies how individuals interpret and assess the world (Jebarajakirthy & Das, 2020). According to Markus and Kitayama's (1991) self-construal theory, there are two dimensions of self-construals, namely, independent self-construal (IndSC) and interdependent self-construal (InterSC). The IndSC refers to people who see themselves as individuals whose behaviour is organised and carried out primarily in accordance with their own internal thoughts, feelings and actions, rather than in reference to others (Chaisamrej, 2006). Research shows that people with Western cultural orientations such as those of the United States, Western Europe and Australia tend to be independent self-construal (Markus & Kitayama, 1991). The InterSC, on the other hand, refers to people who view themselves as part of a surrounding social relationship and claim that an individual's behaviour is determined by and depends on what the person perceives to be the thoughts, feelings and actions of others in the relationship (Jebarajakirthy & Das, 2020). People with an interdependent view of self tend to see themselves as being essentially connected to others and defined by relationships with others. Research shows that people living in Asia, Africa, Latin America as well as parts of Southern and Eastern Europe tend to be InterSC (Cross et al., 2011, Markus & Kitayama, 1991). Markus and Kitayama (1991) and other scholars such as Cross et al. (2011) and Singelis (1994) agree that both types of self-construal are not absolutely mutually exclusive. In other words, it does not mean a person with interdependent self-construal has no recognition of internal needs, feelings that are distinct from others, but rather those internal needs and feelings of the self are not considered to be the dominant factors in guiding his or her behaviours, and vice versa.

Studies show that self-construal theory provides a useful lens to explain a wide range of cultural differences in cognition, emotion and motivation at an individual level (Park et al., 1998; Cross et al., 2011). It has been widely used as a proxy in interpreting cultural impact on individuals' intentions and behaviours (Jebarajakirthy & Das, 2020). The rationale for employing self-construal theory in this study is that immigrant entrepreneurs often reside in countries where culturally and socially are distant from their origin countries. Therefore, their views about

themselves are usually different from their non-immigrant counterparts, which is seen as the most prominent indicator of cultural differences across diverse cultural contexts (Triandis, 1989). Unlike many cross-cultural comparative studies, which compare different groups of people who are still living in their countries of origin, known as monocultural individuals, the focus of this study is immigrants, who are bicultural individuals whose cultural identities are intertwined with both the cultures of the host country and the cultures of the origin country (Hamid et al., 2019). Accordingly, their views of self could reflect various degrees of independent and interdependent self-construals. Thus, it can be argued that, generally speaking, an immigrant entrepreneur's composition of InterSC and IndSC could be different from non-immigrant entrepreneurs, whether the latter are residing in one's country of origin or the host country. Non-immigrant entrepreneurs usually demonstrate a high degree of homogeneity in terms of culture (Liñán & Chen, 2009), whereas immigrants are arguably more culturally heterogeneous (Ward et al., 2018).

The self-construal theory can also be employed to perform intragroup levels of analysis, that is, a group of immigrant entrepreneurs from the same country of origin and living in the same host country. It can be argued that since the cultural influence of the host country upon immigrants varies from person to person, various forms of immigrant entrepreneurs' *mixed embeddedness* (Kloosterman & Rath, 2001) can result in distinct intragroup cultural diversity. For example, a new arrival immigrant entrepreneur may have little or no cultural influence exerted by the host country, while a senior immigrant who has been living abroad for decades is probably highly assimilated into the host society. Their self-construal could be different. Even if two immigrants from the same cultural background have been living in the same host country for the same length of time: one is living and doing business in accordance with the precinct of one's own ethnic enclave, while the other is married to a native and integrated more deeply into the local community, the extent of their cultural influences from the host country is undeniably different, and acculturation is unavoidable.

The preceding discussion demonstrates the merit of combining the two theories to investigate whether and how culture influences individuals' attitudes, subjective norms and perceived behavioural control and, subsequently, an immigrant entrepreneur's exit intentions and the actual exit behaviours. Some studies have attempted to combine TPB (or TRA) with self-construal theory to study human behaviour. For example, in their study of incorporating self-construals into the TRA to examine the recycling behaviour among various ethnic students in Hawaii, Park et al.'s findings (1998) suggest that self-construals have direct effects on the relationship between attitude and subjective norm. In Mancha and Yoder's (2015) study, which incorporates self-construals into the TPB model, they argue that cultural antecedents have a substantial impact on people's green behavioural intentions. Moon et al. (2020) find that both types of self-construals significantly predicted attitude and subjective norms in their TPB-based study of green purchase intention. However, to the best of our knowledge, the application of a combined TPB and self-construal approach to the study of immigrant entrepreneurial exit is among the first.

4 A Conceptual Framework and Proposition Development

Drawing on the TPB and self-construal theories, this study develops a conceptual framework with nine propositions to help identify the factors that influence immigrant entrepreneurs’ exit intentions and intentional behaviours, explore the relations between these factors, and investigate what role culture plays in the exit process. The framework integrates the independent self-construal and interdependent self-construal concepts from the self-construal theory (Markus & Kitayama, 1991) into the TPB model (Ajzen, 1991). The framework presented in Fig. 1 proposes that immigrant entrepreneurs’ exit intention and exit behaviour are primarily determined by the entrepreneur’s attitude toward exit, subjective norms toward exit and perceived behavioural control over exit, whereas independent and interdependent self-construals are hypothesised as moderators between immigrant entrepreneur’s attitude, subjective norm and perceived behavioural control, and intention to exit. COVID-19 impact is proposed to have a direct impact on immigrant entrepreneurs’ intention to exit. Figure 1 provides the details on each of the propositions.

4.1 Attitude and Intention to Exit

Attitude reflects a person’s positive or negative beliefs about performing a specific behaviour and denotes that person’s beliefs about the consequence of performing that behaviour. According to TPB theory, attitude toward exit pertains to people’s evaluation of whether an exit from a business is desirable or not. In this study, we argue that attitude results from an immigrant entrepreneur’s behavioural beliefs, which refer to the entrepreneur’s subjective probability about the consequences of an exit and the personal evaluation of those consequences. For example, an immigrant

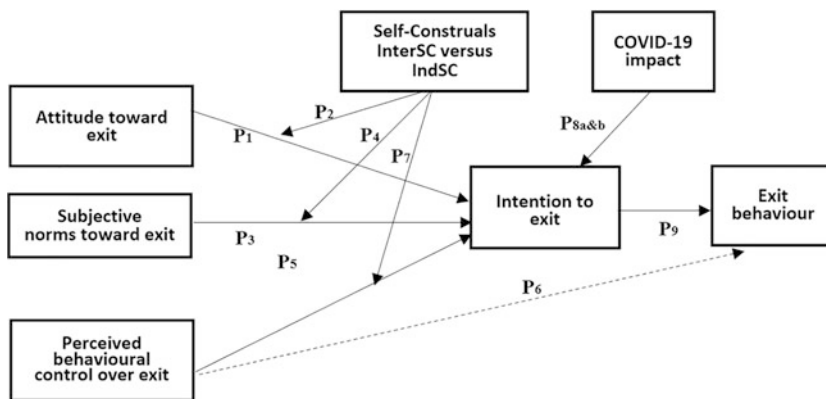


Fig. 1 The proposed conceptual framework for the study of immigrant entrepreneurs’ exit. (Source: Authors own study)

entrepreneur may have the inclination to exit, because the business is in rapid growth and the entrepreneur intends to transfer the business ownership to his or her family members and to seek new lucrative business opportunities; or an offer of attractive wage labour alternative comes along which makes the entrepreneur no longer want to stay in the entrepreneurial sector. In such cases, the exit is perceived as a highly volitional, or favourable attitude. An immigrant entrepreneur, on the other hand, maybe unwilling to exit if the business is on the verge of bankruptcy, or due to the entrepreneur's poor health conditions or other thorny issues, and thus the entrepreneur is forced to exit the business involuntarily, which is perceived as less volitional, or unfavourable attitude (Leroy et al., 2015). Research shows that a highly volitional attitude is positively related to the commitment to a planned action, especially when the action is difficult to execute (Hollenbeck et al., 1989). The execution of the exit of a business is a complicated process and arguably a difficult decision, which requires the entrepreneur to make substantial efforts and devote considerable time to the exit preparation and to cope with unanticipated circumstances such as pandemic disruptions. Immigrant entrepreneurs with a favourable exit attitude are therefore likely to be more motivated to execute the exit process and be committed to the planning for exit strategies and scheduling for their post-exit stages. On the contrary, for those immigrant entrepreneurs who exit their business involuntarily, with an unfavourable attitude toward the exit, they may be reluctant to make efforts and spend time on it, and passively accept the business closure, or being liquidated, or may even change their minds to suspend or halt the exit process. Based on the discussion, we propose:

Proposition 1 *An immigrant entrepreneur's attitude toward exit affects the intention to exit. (e.g. The more favourable attitude toward the exit is, the stronger the intention to exit would be.)*

4.2 Self-construal, Attitude and Intention to Exit

According to Markus and Kitayama (1991), a person's view of self (self-construal) can influence, or even determine his or her own cognition, emotion and motivation. Based on this theory, we argue that immigrant entrepreneurs with interdependent self-construal are more likely to consider their role in the relationship between themselves and their family or society (Cross et al., 2011), thus when they consider exiting their business, their attitudes are more likely to be affected by others and motivated by social-oriented goals. On the other hand, immigrant entrepreneurs with independent self-construal are more likely to rely on their own judgement and make their own decisions (Voyer & Franks, 2014) as they generally weigh their own attitude toward a certain behaviour more than that of others (Jebarajakirthy & Das, 2020). We, therefore, propose:

Proposition 2 *The effect of attitude toward entrepreneurial exit on intention to exit varies between interdependent and independent self-construal immigrant entrepreneurs.*

4.3 *Subjective Norms and Intention to Exit*

In the context of this study, we argue that subjective norms toward entrepreneurial exit denote the perceived social pressures faced by an immigrant entrepreneur to exit or not. Subjective norms arise from an entrepreneur's normative beliefs, which are the perception of important referents' evaluation of a possible exit and the individual's motivation to comply (Ajzen & Fishbein, 1980). Important referents, more commonly known as 'significant others', in the current research refer mainly to the entrepreneur's family members, close friends, business partners, employees and people from the same ethnic community. Hence, subjective norms are a function of normative beliefs toward the exit of a business, represented by opinions of the entrepreneur's significant others, and the entrepreneur's motivation to conform to these opinions. Ajzen (1991) and Fishbein (1980) argue that the relative importance of subjective norms in predicting behaviours can be influenced by external variables such as demographics. Studies show that immigrant entrepreneurs often rely heavily on their family and ethnic resources (Bird & Wennberg, 2016; Collins, 2003). In this regard, when they plan to exit a business, the opinions of their family and ethnic community are of vital importance. Therefore, we make the following proposition about the relationship between subjective norms and exit intention:

Proposition 3 *An immigrant entrepreneur's subjective norms toward exit affect the intention to exit. (e.g. The more favourable subjective norms from the entrepreneur's important referents toward the exit are, the stronger the intention to exit would be.)*

4.4 *Self-construal, Subjective Norms and Intention to Exit*

In light of the self-construal theory, interdependent-emphasised individuals are more intimately connected with their social environment than independent individuals, as the former 'subsume their desires to externally imposed norms' (Lee et al., 2006). Empirical research suggests that in many non-Western regions such as East Asia, subjective norms are usually more important than attitudes in predicting an individual's intentional behaviours (Tuu et al., 2008), whereas, in Western countries such as the United States, attitude acts as a much stronger predictor than subjective norms (Park et al., 1998). For example, when a female East Asian entrepreneur considers her business exit, she probably contemplates a wide range of possible effects that the potential exit may bring on her family, her friends and her community; she may weigh the anticipated outcomes of intended decisions to see whether the exit will

have significant positive or negative impacts on others. On the contrary, when a female Western entrepreneur considers her exit, she is more likely to weigh others' opinions and attitudes lightly than people with a high level of interdependent self-construal. We, thus, propose:

Proposition 4 *The effect of subjective norms toward entrepreneurial exit on intention to exit varies between interdependent and independent self-construal immigrant entrepreneurs.*

4.5 Perceived Behavioural Control and Intention to Exit

Perceived behavioural control in this study refers to the extent to which entrepreneurs perceive they have control over the exit process and the outcomes. Perceived behavioural control reflects the entrepreneur's confidence that he or she can perform the exit satisfactorily to achieve a specified goal attitude (Leroy et al., 2015). Intention can be expected to predict behaviour with high accuracy only when the behaviour is under volitional control. This is particularly the case when the intended behaviour is complex and unusual. Because immigrant entrepreneurial exit is frequently complicated and a rare event for many entrepreneurs, their perception of control over the exit process is critical. For example, an immigrant entrepreneur intends to sell his/her current business and has received support from significant others. However, later on, the entrepreneur finds that the actual cost of liquidation is significantly higher than previously budgeted, and thus perceives the exit impractical. As a result, his/her control over the intended liquidation becomes rather weak due to the insufficient budget for it. In such a case, the entrepreneur might give up the exit intention and keep operating the current business. Our Proposition 5 is:

Proposition 5 *An immigrant entrepreneur's perceived behavioural control over exit affects the intention to exit. (e.g. The greater the entrepreneur's perceived control over the exit is, the stronger the intention to exit would be.)*

In addition to the relationship hypothesised in Proposition 5, in light of TPB (Ajzen, 1991), perceived behavioural control can predict actual behaviour *directly* because it can be used as a substitute for a measure of actual control. For instance, even if two entrepreneurs are in similar business circumstances and have equally strong intentions to exit, the one who is confident that he or she can handle the exit process (i.e. under volitional control) is more likely to exit successfully than the one who doubts his/her own controllability (i.e. incomplete volitional control). In other words, an entrepreneur's actual control can be substituted by one's perceived behavioural control, which is considered to be able to predict the actual exit behaviour as well. Hence, we propose a direct relationship between perceived behavioural control and behaviour, which is reflected in a dashed arrow in Fig. 1.

Proposition 6 *An immigrant entrepreneur's perceived behavioural control over exit affects exit behaviour. (e.g. The greater the entrepreneur's perceived control over the exit is, the more likely the exit behaviour would happen.)*

4.6 Self-construal, Perceived Behavioural Control and Intention to Exit

According to Markus and Kitayama (1991), independent and interdependent self-construals are among the most overarching schemata of an individual's cultural self-system, and these construals generate and organise more specific self-regulatory schemata. One significant difference between the two self-construals is the extent to which individuals perceive that they have control over the outcome of behaviour. The internal versus external forces of control are derived from the concept of 'perceived locus of control' (Rotter, 1966), wherein the theory conceptualises whether an individual believes a certain behaviour can be controlled by one's own, or by external factors that one cannot influence (Rotter, 1975). The locus of control for a person with a high level of independent self-construal lies within oneself, while for an interdependent self-construal guided person, the locus of control lies in the external environment. Ajzen, the originator of TPB, acknowledges that people may refer to perceived behavioural control over outcomes as an *internal* locus of control, whereas the perception that outcomes are determined by nonbehavioural factors is termed as an *external* locus of control (Ajzen, 2002). Although Ajzen (2002) argues that the reference is 'somewhat misleading' (p. 675), research shows that a strong correlation exists between the two concepts (Lee et al., 2006). Drawing on the line of discussion, we posit that when facing similar exit circumstances, an immigrant entrepreneur with a high level of interdependent self-construal tends to believe he/she self can handle the exit process well and achieve the desired outcome; whereas an independent self-construal guided immigrant entrepreneur tends to place the exit decision into his/her family and social relationships, and deems that whether the exit process will succeed depends largely on external factors. Thus, our proposition is:

Proposition 7 *The effect of perceived behavioural control toward immigrant entrepreneurial exit on intention to exit varies between interdependent and independent self-construal immigrant entrepreneurs.*

4.7 Impact of COVID-19 on Intention to Exit

Current research shows that COVID-19 has a *disproportionate* impact on immigrant entrepreneurs and their businesses (Fairlie, 2020). Research also suggests that there is a greater need to study the impact of the extreme crisis on businesses

(Amankwah-Amoah et al., 2021; Jaim, 2021). To address the need and study the COVID-19 impact, we propose to study this impact from two perspectives: (1) by comparing the intention of immigrant entrepreneurs to exit with that of non-immigrant entrepreneurs; and (2) by comparing the intention of immigrant entrepreneurs to exit in the areas having a higher prevalence of COVID-19 with those having a lower prevalence of COVID-19. We therefore propose:

Proposition 8a *The intention of immigrant entrepreneurs to exit is stronger in the wake of COVID-19 than that of non-immigrant entrepreneurs.*

Proposition 8b *The intention of immigrant entrepreneurs to exit is stronger in the areas with a higher prevalence of COVID-19 than those with a lower prevalence of COVID-19.*

4.8 Intention to Exit and Exit Behaviour

Intention to exit is viewed as the mental state that represents an intention to leave the firms entrepreneurs helped to create (Hsu et al., 2016). TPB suggests that intention is the immediate antecedent of any planned behaviour (Ajzen, 1991, 2002). Some entrepreneurial studies provide empirical evidence that intention is the most salient predictor of entrepreneurial behaviour (e.g. Detienne & Cardon, 2012; Krueger Jr & Brazeal, 1994). For example, DeTienne and Cardon (2012) conducted a 5-year-long post hoc follow-up study to compare entrepreneurs' actual exits to exit intentions and found that 70% of the entrepreneurs exited their business in their most intended path (among the six different exit paths). The finding provides strong evidence on the causality between exit intentions and actual exits. Thus, we propose:

Proposition 9 *An immigrant entrepreneur's intention to exit leads to the exit behaviour.*

5 Proposed Agenda for Future Research

The propositions that we have developed provide a range of opportunities to study and *test empirically* each of the relationships that are illustrated in the framework. To assist with future empirical studies, we make the following suggestions.

Firstly, a Self-construal Scale (SCS) can be considered for the measurement of self-construal constructs. For example, Singelis's (1994) SCS provides separate measure scores for InterSC and IndSC on two 12-item scales, which are supported in confirmatory factor analyses of multi-ethnic samples. Some subsequent studies have added more items into the SCS (e.g. Hess et al., 2016). In addition to the SCS, other widely adopted self-construal measurements include independent and interdependent self-construal scales (IISC) (Gudykunst et al., 1996) and implicit

measures of self-construal (Kitayama et al., 2006). Among the various measurements, the well-established SCS can be used to measure immigrants' entrepreneurial exit behaviour for two reasons. First, the SCS has been tested in numerous immigrant studies, such as in research on Asian immigrants in the United States (Liu & Goto, 2007), Moroccan and Romanian immigrants in Italy (Miconi et al., 2019). Second, the SCS has been successfully applied to a number of behavioural studies which combined the TPB with self-construal (e.g. Chaisamrej, 2006; Lee et al., 2006; Mancha & Yoder, 2015).

Customised construct development strategies, we argue, should be considered when studying a specific group of immigrant entrepreneurs. The extant studies demonstrate how the SCS scales are changed and adapted for studying immigrant entrepreneurs with different cultural backgrounds, such as Japanese (Ozawa et al., 1996) and Chinese (Aaker & Schmitt, 2001). For example, in studying the influence of self-construals of Asian-American adolescents, Liu and Goto (2007) reduce and modify Singelis's (1994) SCS to 14 items after conducting a basic psychometric test, and add constructs such as 'family relationship' and 'mental distress' to examine Asian immigrants' cultural and psychological characteristics. In studying Indian consumers' hotel visit intention, Verma and Chandra (2018) incorporate 'moral reflectiveness' and 'conscientiousness' into the TPB model to test the antecedents' intention. Therefore, we suggest that a tailored approach to our proposed framework be taken in future research.

Secondly, in terms of the TPB constructs, we suggest that Ajzen's (2002) TPB questionnaire guidelines be adopted to develop measures. In the context of testing immigrant entrepreneurial exit intentions and behaviour, some extant research might serve as a good example. For example, based on the work of Krueger et al. (2000) on TPB measures of entrepreneurial intention, Leroy et al. (2015) come up with a 20-item TPB measure for entrepreneurial exit study. Other studies could be considered, including Kolvereid and Isaksen (2006) three items of subjective norms, the perceived feasibility items for family business succession studies developed by Sharma et al. (2003), and the firm exit intention measures by DeTienne and Cardon's (2012). For the purpose of empirically testing our framework, we propose an 18-item TPB instrument, which is based on the scales developed by Leroy et al. (2015), and the aforementioned studies (DeTienne & Cardon, 2012; Kolvereid & Isaksen, 2006; Sharma et al., 2003).

Thirdly, it should be noted that our conceptual framework would work better in studying the impact of cultural factors on entrepreneurial exit if the cultural distance between immigrant entrepreneurs' host country and origin country is significant. The development of this conceptual framework is based on the assumption that the two cultures are *distinct*. Studies show that the majority of the global immigrants are migrating from developing countries to Western developed countries, especially in Western Europe, North America and Australia and New Zealand. These immigrants often experience striking cultural differences. However, there is still a significant number of immigrants migrating between countries that have similar cultures. For instance, a British entrepreneur moves to Australia, or a Canadian entrepreneur moves to the United States. In such cases, future research that is interested in our

line of inquiry could consider intracultural studies which may help develop a more nuanced understanding of the influence of culture on immigrant entrepreneurial exit.

Fourthly, to test the impact of COVID-19 on immigrant entrepreneurial exit intention, new instruments are yet to be developed and verified, as studies on the impact of COVID-19 on entrepreneurship are still developing. The key research questions to measure the impact will centre around how the pandemic is affecting the business of immigrant entrepreneurs and how they respond to the impact. Caution should be taken when using indicators that are developed for general businesses, mainly for the reasons discussed in this article. For example, there is a higher mortality rate among ethnic minority groups (Lally, 2020) which could affect not only immigrant entrepreneurs and their families but also their immigrant-dominated customers and co-workers, as well as a higher exit rate in immigrant-led businesses of (Fairlie, 2020).

Finally, as our research integrates self-construal theory into the TPB to study the cultural effects on immigrant entrepreneurial exit behaviour, there are other studies that provide interesting directions in this endeavour. For example, DeTienne and Chirico's (2013) research examines how entrepreneurs' socioemotional status influences their exit behaviour, which takes a novel perspective on the affective aspects of exploration. Moreover, the relationship between entrepreneurs' personality, which is viewed as directly shaped by cultural practices (Barnouw, 1963) and the development of exit strategies, is also a potential research direction. This argument is highlighted by Wennberg and DeTienne's (2014) research, wherein they discover that different styles of entrepreneurs (e.g. growth-focused versus lifestyle-focused) affect exit behaviour in different life cycle stages of their firms. Future research could look into the interfaces between these factors and culture and their influences on immigrant entrepreneurial exit.

6 Implications for Public Policies

The research framework and research agenda proposed in this study have three broad implications for public policy development to address the high rate of immigrant entrepreneurial exit. First, this research brings policy attention to the unique context and challenges that immigrant entrepreneurs are facing. One of the most salient features of immigrant entrepreneurship lies in its targeted market. Many immigrant entrepreneurs rely overwhelmingly on their ethnic community (Collins, 2003) as their predominant market. However, when immigrant flows start to decelerate and early immigrants are increasingly integrated into the host society, those entrepreneurs' target customers start to crumble, which is one of the key reasons for immigrant entrepreneurs' exit (Nazareno et al., 2018). As such, it is important for policymakers to help develop macro- and meso-level business diversification plans to guide immigrant entrepreneurs to diversify their business. Some studies suggest that 'planning for diversity' urban planning discourse would be an effective approach to promoting ethnic entrepreneurs' business diversification (Fincher

et al., 2014; Schmiz & Kitzmann, 2017). Second, some immigrant entrepreneurs often exit and re-enter the start-up process repeatedly, a phenomenon called ‘revolving door entrepreneurship’ (Hessels et al., 2011). This research on immigrant entrepreneurial exit could bring policy attention to post-exit entrepreneurial engagement. Previous research (Amaral et al., 2011; Hessels et al., 2011) suggests that age, gender, levels of education, entrepreneurship or paid employment experience affect ex-entrepreneurs’ likelihood to re-enter entrepreneurship and the interval between exit and re-entry. From a different perspective, this research demonstrates how immigrant entrepreneurs’ cultural orientations could influence their exit intentions and behaviour. In this regard, this research could help develop pertinent policies to facilitate immigrant entrepreneurs’ re-entry behaviours. Third, by tackling the higher exit of immigrant entrepreneurs and the disproportionate impact of COVID-19 on immigrants and their businesses, this study addresses an important social and economic inequality issue. The study helps raise the awareness of inequality at a public policy level and understand key factors that may influence the exit of immigrant entrepreneurs.

7 Conclusions

Given the important research and policy implications of immigrant entrepreneurial exit, this study provides a novel research framework to advance the research into immigrant entrepreneurs’ exit from entrepreneurship. Drawing on the Theory of Planned Behaviour and the concepts of self-construals, the conceptual framework helps to better understand the phenomenon of immigrant entrepreneurial exit. The propositions that this study has developed and the directions for future research provided facilitate empirical study and assist future research endeavours to further explore the relationships among attitude, subjective norms, perceived behavioural control and self-construals, as well as studying the impact of COVID-19 on immigrant entrepreneurs and exit.

However, this study has its limitations which should be explored further in the future. For example, the study focuses on conceptual development but lacks support from empirical evidence. The volatile COVID-19 situation also makes its impact on entrepreneurial exit unpredictable. The framework that we developed would work better if the cultural distance between immigrant entrepreneurs’ host and origin countries is significant. Therefore, a more nuanced understanding of the influence of culture on immigrant entrepreneurial exit is needed for future research.

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Hawkers' Attitude on Environmentally Friendly Food Packaging Practices in Night Market



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Abstract The issue of food packaging waste has become an environmental concern in the society, particularly among food hawkers. Since food packaging waste ranks the highest contributor to waste; thus, environmentally friendly food packaging (EFFP) has been introduced in the market to ensure good management practices among food hawkers and subsequently reduce environmental pollution. This study aimed to examine the effect of attitude (perceived benefits confidence, perceived risks, and environmental knowledge) on the intention to use environmental-friendly food packaging among food hawkers in Malaysia. This study adopted cross-sectional studies and collected quantitative data from 320 food hawkers. The Structural Equation Modeling was further applied to test the related hypotheses using IBM-AMOS (Analysis of a Moment Structure). The findings reveal that attitude (perceived benefits confidence, perceived risks, and environmental knowledge) had significant effect on the intention to use environmentally friendly food packaging.

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The policymakers such as the government or non-government organizations should focus on the promotions and campaigns to raise the awareness of environmentally friendly food packaging among food hawkers in Malaysia.

Keywords Eco-Friendly · Food Packaging · Night market · Pollution

1 Introduction

The issues of safety awareness regarding food packaging are not something new or unique in the food industry. Food packaging has, for some time, been heatedly debated as the cause of significant problems in developing and developed nations concerning ecological degradation as well as its contribution to chronic illnesses. According to Rahimi and García (2017), there is a considerable amount of food packaging that is not recyclable as it mostly uses polystyrene plastic petroleum. In other words, the material contains the harmful elements of expanded polystyrene (EPS) as can be found in consumer packagings such as egg cartons, disposable cups, plastic trays, cutlery, disposable or take away containers, and dairy product containers (Jayaraman et al., 2011; Zhu et al., 2018; Christensen et al., 2019). In developing countries, packaging waste management has also become a major concern since food packaging consumption has increased over time and significantly contributed to environmental degradation, which resulted from polystyrene and plastic wastage. Besides, it is estimated that non-organic products will take at least 500 hundred years to decompose completely (Giménez et al., 2016). According to the International Agency for Research on Cancer, non-organic food packaging contains carcinogens and styrene that can cause chronic diseases such as cancer when these agents contaminate food (Lyon, 1995). As such, this has supported the need to undertake swift actions towards encouraging sustainable packaging or green packaging in promoting a sustainable environment and good health behavior.

A further prevailing issue is related to food packaging costs. Globally, every country bears the cost of managing wastage produced by food packaging in the sense that the larger the volume of wastage, the higher the cost that the country must incur. For example, in 2018, more than 103 million tons of food waste were produced in the US, which is related to the urban wastage category (Cooper, 2020). Similarly, in Malaysia, studies have found that 24% of wastage in this country also consists of food waste that includes food packaging (Economic Planning Unit, 2006). The food waste that includes food packaging is used in small business activities such as street hawkers and night market food sellers. In addition, Malaysia that the highest proportion of waste disposal is generated from municipal solid waste at 64%, followed by industrial waste and commercial waste at 25% and 8% each, respectively (Jayaraman et al., 2011).

Even though many countries have widely practiced recycling to reduce environmental degradation caused by plastic and polystyrene, the activity of recycling has its own set of challenges, which opposingly may cause significant environmental pollution problems (Yue et al., 2010; Yue et al., 2011; Yue et al., 2016; Heidbreder

et al., 2019). Accordingly, the rapid movement towards producing environmentally friendly food packaging (EFFP) has become an important agenda item for business practitioners and policymakers alike as one of the measures to ensure environmental sustainability. Previous research has proven that sustainable packaging shows promise in leading towards sustainable development (Svanes et al., 2010; Verghese et al., 2015; Steenis et al., 2017). As such, the development and application of sustainable packaging have been recognized as one of the measures for achieving this outcome. Over the past two decades, there have been a vast number of campaigns to minimize or reduce the impacts caused by packaging on the environment through various media channels with approval in certain countries' legislation (Svanes et al. 2010; Lindh et al., 2016). Therefore, this study aims to examine the effect of attitude (perceived benefits confidence, perceived risks, and environmental knowledge) on the intention to use environmental-friendly food packaging among food hawkers in Malaysia. The following are the subsection that will explain for this study, including literature review and hypothesis development, research methodology, findings, discussion and implication and conclusion.

2 Literature Review and Hypothesis Development

In this section, the researcher will discuss the attitude of hawkers towards EFFP as a vital factor within the field of social psychology as well as addressing a few general issues before interpreting, predicting, and understanding people's behavior accordingly. As such, this section focuses on attitude include perceived benefits confidence, perceived risks, and environmental knowledge, and EFFP.

2.1 Perceived Benefits Confidence (PBC)

Social psychologists have defined attitudes diversely. For example, learned predispositions to respond in a consistently favorable or unfavorable way towards a given object, person, or event as mentioned by Fishbein and Ajzen (1975). The definition offers three components towards understanding the concept: (1) attitudes can be learned, (2) attitudes should be constant, and (3) attitudes are involved with positive and negative responses. Based on this definition, Fishbein and Ajzen (1975) also mentioned that attitude can be learned and developed through enjoying things that are important in individuals' life with others, either with family members as they grow up or through the people around them. Besides, general knowledge of environmental issues is not only able to influence a person's attitude towards practicing pro-environmental behavior, but it can also make people have a strong attitude where

they are expected to be relatively resistant to change. Thus, under the premises of perceived benefits confidence, the following hypothesis is suggested:

H1. Perceived Benefits Confidence has a positive effect on Environmentally Friendly Food Packaging

2.2 Perceived Risks (PR)

Another observation in the formation of attitude where attitude can be developed when people become increasingly conversant with an idea. For example, when people think about certain things that they are unfamiliar with or have little experience with, they tend to think in factual ways, and this is known as “descriptive believe” (Escario et al., 2020). On the other hand, if people become more familiar with certain ideas, things, or objects, they tend to make inferences about them as well as other aspects and this is known as “inferential beliefs” regarding the target object. Therefore, before developing an attitude, “inferential beliefs” must first be evaluated. Besides, the frequent exposure of an individual to environmental issues can increase his or her understanding of the environment (Joshi & Rahman, 2015). As such, this could lead to a positive attitude towards green purchase behavior and green consumption (Joshi & Rahman, 2015; Nguyen et al., 2018). By considering the previous theoretical and empirical findings, the following hypothesis is postulated:

H2. Perceived Risks has a positive effect on Environmentally Friendly Food Packaging

2.3 Environmental Knowledge (EK)

Attitude towards the implementation of environmentally friendly products is associated with the knowledge of environmental issues (Bazoche et al., 2015). Hence, in this study, environmental knowledge plays an important role in impacting the attitude of hawkers towards EFFP. Consumers that are knowledgeable about the current environmental condition will also develop a positive attitude towards their behavior to implement EFFP. However, developing an attitude towards things or objects that we know nothing about should be avoided. As such, this study is only limited to environmental knowledge as one of the dimensions in measuring attitude relative to the hawkers towards EFFP implementation in their businesses. Generally, attitudes are relevant for understanding and predicting the social behavior of consumers nowadays in pursuing various advantages while facing a level of risk in a decision purchase (Kim et al., 2008). In line with the previous studies, this study hypothesizes the following:

H3. Environmental Knowledge has a positive effect on Environmentally Friendly Food Packaging

2.4 *Intention to Use Environmentally Friendly Food Packaging (EFFP)*

Initially, the term “intention to use” was usually associated with an act of behavior resulting from the pre-thought of humans (Gopi & Ramayah, 2007). The word “intention” can vary in many ways and intention can be used to describe an action that may or may not occur in the future or the present. Besides, intention eventuates depending on the characteristics of the individual. In the millennium era, the literature review on intention has become more refined with the addition of various elements into its term, such as a combination of behaviors from the intention’s outcome, revisiting intention (Park et al., 2020), understanding and predicting intention. However, the literature nowadays highly discusses the intention to use towards understanding its true meaning in society towards using a product or service concerning technology (Agrebi & Jallais, 2015; Gan & Li, 2018).

3 Research Methodology

The population of this study includes hawkers operating in night markets in Kelantan. To collect quantitative data, 320 respondents was participated in the survey. This study adopted the cross-sectional design and distributed quantitative data from hawkers in night markets in Kelantan. The data collection process began with identifying the locations and operations of the night markets in Kelantan. Subsequently, the researcher distributed the questionnaires to the potential respondents for data collection purposes and the sampling method for the study was then determined. This study was employed a simple random sampling method to select the respondents to ensure that all sub-groups in the population had an equal chance to be selected. A 10-point Likert-scale was used to determine the level of agreement among the respondents (Aziz et al., 2016). For reliability, Cronbach’s alpha values are above the value of 0.6 (Afthanorhan et al., 2019). Structural equation modeling (SEM) was used using the Analysis of Moments Structures (AMOS) software version 21.0. SEM is a second-generation method of statistical analysis developed to cater for limitations in the traditional ordinary least square regression, especially when dealing with latent constructs in a model (Aziz et al., 2016). The AMOS software was used to perform the confirmatory factor analysis (CFA) to validate the measurement model of a construct and to test the hypotheses in the path model.

4 Findings

4.1 Demographic Profile

The data were collected from 320 hawkers in Kelantan with a total of 54.7% male and 45.3% female. The male respondents marginally dominated the total number of respondents in this survey, along with the number of respondents aged between 20 and 29 years (36.3%) and followed by those aged between 30 and 39 years (28.8%). Surprisingly, it was found that some hawkers aged above 50 years (6.6%) are still actively operating hawker businesses for a living when the businesses could have been passed down to their children or appointing other workers to run the businesses for them instead of operating the businesses themselves.

In terms of creed or race of the respondents who operate their businesses in Kelantan, it is evident that Malay dominates the number of respondents in this survey with 96.3% while 2.8% of the respondents are Chinese and the remaining include others, such as the Siamese that live as part of the Kelantan community. With regard to the monthly income generated by hawkers, it was revealed from the survey that most of the respondents earn about USD723 and below with 60%, while 29.4% of them earn between USD723 and USD1446. It was also found that 3.7% of the respondents earn about USD523 or above per month from their hawker businesses. In view of this, food hawkers could gain greater income than the typical low-income rate in Malaysia.

Interestingly, another determinant used to depict the use of EFP among food hawkers is the business length of the food hawkers in the sense that the longer the business has been in operations, the more reluctant the food hawkers are towards changing their behavior and simultaneously their business operations. Overall, 85% of the respondents who are less likely to use EFP have operated their businesses for a year or more, while 15% of the respondents' businesses have been in operations for less than a year. Meanwhile, in terms of location, 28.4% of the respondents operate their businesses in Tumpat, whereas 16.3% of the respondents' businesses are based in Kota Bharu. This suggests that EFP is mostly used in proximity to the town or urban areas compared to the outskirts or rural areas. Briefly, the awareness level among food hawkers regarding EFP usage is deemed reasonably modest.

4.2 Reliability

Table 1 below displays the results for reliability analysis (Cronbach Alpha). As suggested by Hair et al. (2017), the appropriate values for Cronbach Alpha (CA) should be more than 0.70. The greater the value of CA, the greater the reliability and validity levels of the constructs to be tested. As such, all constructs in this study are accepted, as the values for CA are higher than the suggested value. Specifically, the range value of CA is between 0.877 and 0.892.

Table 1 Reliability analysis

Variables	Cronbach’s alpha
Perceived benefits belief	0.877
Perceived risks	0.885
Environmental knowledge	0.892
Intention to use EFFP	0.888

Source: Authors own study

Table 2 Correlations

		Mean_IU	Mean_PBC	Mean_PR	Mean_EK
Mean_IU	Pearson Correlation	1	0.455*	0.480*	0.508*
	Sig. (2-tailed)		0.000	0.000	0.000
	N	320	320	320	320
Mean_PBC	Pearson Correlation	0.455*	1	0.868*	0.875*
	Sig. (2-tailed)	0.000		0.000	0.000
	N	320	320	320	320
Mean_PR	Pearson Correlation	0.480*	0.868*	1	0.860*
	Sig. (2-tailed)	0.000	0.000		0.000
	N	320	320	320	320
Mean_EK	Pearson Correlation	0.508*	0.875*	0.860*	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	320	320	320	320

Source: Authors own study

*Correlation is significant at the 0.01 level (2-tailed)

4.3 Pearson Correlation Analysis

Table 2 shows the Pearson’s Correlation coefficients. Results showed that all three dimensions of attitudes (PBC, PR, and EK) have a significant positive relationship towards IU since the *P*-value was 0.000 indicates the significant value for the analysis where it is lower than the alpha root, which is 0.01. The correlation coefficients between PBC and IU is 0.455, PR and IU is 0.48, EK and IU is 0.508 has positive correlation.

4.4 Structural Model for Variables

In this section, the regression analysis for all three dimensions of attitudes (PBC, PR, and EK) towards intention to use EFFP (IU) was conducted. Table 3 shows the regression analysis of PBC with respect to IU. The coefficient of determination is the square of correlation coefficient (R^2) that measures the proportion of variation in dependent variables described by the independent variable. The coefficient of determination is expressed as a percentage. Hence, $R^2 = 0.207$ means that 20.7%

Table 3 Model summary (H1)

Model	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square	Std. Error of the Estimate
1	0.455 ^a	0.207	0.205	0.69819

Source: Authors own study

^aPredictors: (Constant), Mean_PBC**Table 4** ANOVA^a (H1)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.556	1	40.556	83.195	.000 ^b
	Residual	155.017	318	0.487		
	Total	195.573	319			

Source: Authors own study

^aDependent Variable: Mean_IU^bPredictors: (Constant), Mean_PBC**Table 5** Coefficients^a (H1)

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		<i>B</i>	Std. Error	Beta	<i>t</i>	
1	(Constant)	3.779	0.236		15.981	0.000
	Mean_PBC	0.450	0.049	0.455	9.121	0.000

Source: Authors own study

^aDependent Variable: Mean_IU**Table 6** Model summary (H2)

Model	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square	Std. Error of the Estimate
1	.480 ^a	0.230	0.228	0.68795

Source: Authors own study

^aPredictors: (Constant), Mean_PR

of the total variation in IU is explained by PBC as presented in Table 3. The model is a good fit (p -value = 0.000) since the p -value is less than 0.001, as illustrated in Table 4 as well as Table 5.

The regression analysis of PR with respect to IU was analyzed. Table 6 shows that that $R^2 = 0.230$ means that 23% of the total variation in IU is explained by PR. The model is a good fit (p -value = 0.000) since the p -value is less than 0.001, as illustrated in Table 7 as well as Table 8.

The regression analysis of EK with respect to IU was analyzed. Table 9 shows that that $R^2 = 0.258$ means that 25.8% of the total variation in IU is explained by EK. The model is a good fit (p -value = 0.000) since the p -value is less than 0.001, as illustrated in Table 10 as well as Table 11.

Table 7 ANOVA^a (H2)

Model		Sum of Squares	df	Mean Square	<i>F</i>	Sig.
1	Regression	45.073	1	45.073	95.239	.000 ^b
	Residual	150.499	318	0.473		
	Total	195.573	319			

Source: Authors own study

^aDependent Variable: Mean_IU^bPredictors: (Constant), Mean_PR**Table 8** Coefficients^a (H2)

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		<i>B</i>	Std. Error	Beta	<i>t</i>	
1	(Constant)	3.319	0.268		12.389	0.000
	Mean_PR	0.471	0.048	0.480	9.759	0.000

Source: authors own study

^aDependent Variable: Mean_IU**Table 9** Model summary (H3)

Model	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square	Std. Error of the Estimate
1	.508 ^a	0.258	0.256	0.67537

Source: Authors own study

^aPredictors: (Constant), Mean_EK**Table 10** ANOVA^a (H3)

Model		Sum of Squares	df	Mean Square	<i>F</i>	Sig.
1	Regression	50.527	1	50.527	110.777	.000 ^b
	Residual	145.046	318	0.456		
	Total	195.573	319			

Source: Authors own study

^aDependent Variable: Mean_IU^bPredictors: (Constant), Mean_EK**Table 11** Coefficients^a (H3)

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		<i>B</i>	Std. Error	Beta	<i>t</i>	
1	(Constant)	3.375	0.243		13.865	0.000
	Mean_EK	0.446	0.042	0.508	10.525	0.000

Source: Authors own study

^aDependent Variable: Mean_IU

5 Discussion and Implication

This study aimed to determine the effects of attitude on environmentally friendly food packaging among hawkers in Kelantan. The hypothesis evaluated the effects of PBC, PR, and EK on intention to use EFFP. The finding of the study supports the argument that PBC, PR, and EK have a significant effect on EFFP. The results of this study support the research that there is an influence between PBC, PR, and EK towards the intention to use green products (Kusuma & Handayani, 2018; Aman et al., 2012; Chen et al., 2012). In view of this, the value of $R^2 = 0.51$ or 51% of the intention to use EFFP is explained by attitude (Perceived Benefits Confidence, Perceived Risks, Environmental Knowledge) among hawkers in Kelantan. Based on the research findings, several implications relevant to certain stakeholders have been addressed. This can be seen from the arising issues concerning the growth of sustainable development and sustainable practices towards conserving the environment for future generations in addition to the balanced economic, social, and environmental growth and development through the environmental behavior towards green products such as EFFP. The implementation of the proposed model in this study could help compensate the factors that influence intention as well as the effects of EFFP. The reason is that the functionality of the EFFP model would be beneficial for the government through financial benefits and sustainable development as well as by promoting the government's image with respect to green products and environmental sustainability. In this context, the government plays a critical role as the policy implementer and with such a role; the government would have absolute power to foster the implementation of this model.

6 Conclusion

This study was conducted based on the problems observed among food hawkers relative to EFFP implementation. At present, the Malaysian government has introduced roles and policies to prohibit the use of plastic and polystyrene (non-environmentally friendly materials) for food packaging due to their adverse effects on human health and environmental sustainability. However, the use of non-EFFP is still widely used, and this has contributed to the vast amount of waste generated in Malaysia with 38,142 tons per day in 2018 compared to 19,000 tons in 2005. Such a situation is believed to occur due to the challenges in changing people's behavior and mindset of using non-EFFP products. Notwithstanding, this issue is neither new nor unique since it has been highlighted on many occasions at the local and national levels within Malaysia, despite the numerous awareness campaigns undertaken by the nation. As such, the increment in waste generation from food packaging remains unabated even though policies and regulations have been introduced. Apart from that, uncontrollable waste management among food hawkers is also due to the ineffective approach that has failed to suit the demographic of local residents.

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Part II
**Eurasian Business Perspectives: Human
Resources Management and Education**

Innovation and Creativity Among Individuals in Work Environments: The Effect of Personality, Motivation, Psychological, and Task-Oriented Factors



Basil John Thomas and Tarek Khalil

Abstract Innovation in an organization is the outcome of creative ideas, as accomplishment of new products and services development, implementation of new programs that are highly dependent on new ideas generated by its organizational members. Organizational members show their creativity by not only proposing new ideas on products and services, but also with some manufacturing methods and administrative practices. Stimulation of employee creativity leads to the growing competitiveness of firms in the market. Psychological studies identified various types of personality traits that drive employee creativity in working environment. However, personality-employee creativity relationship must be enriched with an inclusion of other factors. The link between these two is worthy to be studied in working environments, where firm performance is highly determined by employee creativity. This research includes not only openness to experience and extraversion separately, but also the other personality traits. It provides a comprehensive insight into innovation and creativity of its organizational members. Moreover, both extrinsic and intrinsic motivation are included in investigation, in the context of High-performing organizations in the Middle East. The results show that among the Big Five Traits, openness, conscientiousness, and extraversion are positively related to organizational Innovation and creativity, whereas neuroticism is negatively related to organizational Innovation and creativity.

Keywords High-performing organization · Personality traits · Employee innovation and creativity

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1 Introduction

In today's world, organizations face growing social as well as economic transformation, while also global competition, where technological changes occur rapidly (Mathisen & Einarsen, 2004). Moreover, organizational creativity, product and service innovation, and work process optimization are recognized as vital elements of the success. Innovation in an organization is the outcome of creative ideas, as accomplishment of new products and services development, implementation of new programs is highly dependent on new ideas generated by organizational members (employees as individuals and/or employees as teams) (Amabile et al., 1996). Organizational members show their creativity by not only proposing new ideas on products and services, but also other aspects, such as manufacturing methods and administrative practices (Zhou & George, 2001). A significant number of studies have emphasized the role of employee creativity in innovation process (Ouakouak & Ouedraogo, 2017; Yoshida et al., 2014). Stimulation of employee creativity leads to the growing competitiveness of firms in the market (Shafi et al., 2019). Many scholars attempt to comprehend the dynamics of creativity of organizational members, where they mostly try to recognize what factors drive or inhibit the employee creativity in an organization. Psychological studies identified various types of personality traits that drive employee creativity in working environment, such as cognitive style, motivational states (intrinsic motivation), openness to innovation experience, and others (Amabile et al., 1996). The five-factor model or the big five personality traits of personality is commonly used framework to investigate the role of employees' creativity based on their personality types (Yao & Li, 2020; Puryear et al., 2017). Majority of the results have identified that openness to experience and extraversion are highly correlated with the creativity (Chamorro-Premuzic & Reichenbacher, 2008; King et al., 1996).

Besides the abovementioned factors, the personality-employee creativity relationship must be enriched with an inclusion of other factors. The link between these two is worthy to be studied in working environment, where firm performance and business growth are highly determined by employee creativity (Anderson et al., 2014). It is worthy to include not only openness to experience and extraversion separately but also other personality traits. It has been found that motivation (intrinsic) drives positive outcomes in terms of task identification, employee productivity, and positive work engagement (Kuvaas et al., 2017). However, it has been rarely tested in the context of organizational members' creativity, where the role of extrinsic motivation also lacks investigation.

To clearly understand what the determinants of employee innovation and creativity are, the current study sets the research objectives as following:

- To investigate the role of personal factors in innovation and creativity of organizational members.
- To investigate how the response to employee-work engagement, such as need for their efforts' recognition, their motivation, as well as reward enhance the innovation and creativity of organizational members.

- To investigate how the job complexity leads to the innovation and creativity of organizational members.

The current research covers the abovementioned aspects and provides a comprehensive insight into innovation and creativity of organizational members. It has to be reiterated that the current research focuses on high-performing organizations (HPOs), while also carefully reviews the factors that drive employee innovation and creativity in line with the aim of organizations to improve performance. Among the success factors of HPOs, openness and action orientation, management quality, long-term success, continuous development and renewal, as well as employee quality are of utmost importance. Therefore, it is believed that employee innovation and creativity in the context of HPOs are worthy to investigate.

The study considered all five traits of the Big Five Traits framework and the findings revealed that Openness, Conscientiousness, and Extraversion are positive and significant predictors of the innovation and creativity of employees in HPOs concentrated in the Middle East. Moreover, it can be generalized to the extent that when employees are open to practicing new innovative tools and technologies, they are more likely to extend their knowledge and experience, which leads to their creativity.

2 Review of Literature

In the modern world, firms have shifted from factor-driven and investment-driven to innovation and talent-driven organizations, where it is highly important to motivate organizational members to unleash their potentials of creativity, which is interrelated with the concept of employee creativity (Miao & Cao, 2019). The results of the authors' study revealed that high-performance working system is positively associated with employee well-being, which in its turn creates positive relationship between high-performance working system and creativity in the organizational context. In the recent study (Zhou, 2021), the employees of high-tech enterprises were taken as samples to explore the influence mechanism of creative personality traits, goal orientation and employee innovation performance. The findings stated that goal orientation significantly moderates the relationship between creative personality traits and innovation performance. Moreover, the mediating effects of learning goal orientation and performance avoidance orientation were all significant.

Amabile et al. (1996) investigated the dimensions of work environment that supports the creativity. Moreover, three major factors were proposed that are (1) Organizational motivation to innovate, where an organization supports creativity in all layers of organization; (2) Management practice, which allow freedom and autonomy in work engagement, goal and strategy setting, formation of teams in terms of skills and perspectives; (3) Resources, through which organization utilizes its capabilities to support targeted innovation, such as time, money, training, and others. From the findings above, it can be suggested that the idea of employee

innovation and creativity is highly correlated with HPOs, their business models and targets. HPO is defined as “an organization that achieves financial and non-financial outcomes, which are better than that of peer groups over a period of time, by particularly focusing on disciplines that really matter for the organization.”

2.1 *Big Five Personality Traits*

Among the personality traits, Openness to experience (OPEN) refers to imagination, originality, intellectual curiosity, where individuals with independent thinking and original ideas are more tended to be active in the process of creativity and innovation (Yao & Li, 2020; Costa & McCrae, 1992). It enhances self-confidence in creativity and expected outcomes (Karwowski & Lebuda, 2016). On the other hand, Conscientiousness (CONS) is intertwined with self-discipline, individual reliability, and goal setting (Costa & McCrae, 1992). This kind of individuals are reliable and highly focus on obeying the rules, desiring to achieve, conforming to norms, whereas they are less likely to perform creative acts (Raja et al., 2004). Individuals with high Extraversion (EXT) are tended to be active, expressive, and passionate in risk-taking, which creates positive impact on creativity (Batey et al., 2010). Moreover, risk-taking behavior strongly promotes creativity of employees in working environment. In other studies, Agreeableness (AGREE) has been found to be positively associated with personal creativity, where individuals with this personality are courteous, cooperative, and reliable (Sung & Choi, 2009). Finally, individuals with high Neuroticism (NEU) are defensive, emotional, and tended to be anxious in behavior. Some studies have found negative and/or insignificant relationship between NEU and creativity (Chamorro-Premuzic & Reichenbacher, 2008; King et al., 1996). Because, creativity is normally an outcome of emotional stability, where intuition, logical, and objective thinking are strong motivators of creativity. Drawing from the differences among the personality types, the current research includes all five traits to investigate how they differ in the context of HPOs.

2.2 *Need for Cognition*

Wu et al. (2011) proposed that Need for cognition (NC) is positively related to innovation behavior of an individual, drawing from the reasoning that individuals with high level of NC are likely to engage in challenging tasks, enjoy complex and novelty circumstances (Cacioppo et al., 1996). Hence, higher curiosity for seeking new opportunities and knowledge leads to innovative behavior. In addition, individuals with “pursuit of comprehension” are more likely to link their new and existing knowledge, while at the same time acquire new information in an effective and flexible way (Evans et al., 2003). Moreover, it is proposed that in the context of

HPOs, employees with high NC will more likely to pursue innovative and creative behavior that could ultimately enhance the productivity of an organization.

2.3 Motivation and Reward-Performance Expectancy

Motivation has been rarely investigated in the context of innovation and creativity of organizational members, particularly in HPOs. The two types, namely Intrinsic motivation (IM) and Extrinsic motivation (EM) are popular in academic literature. IM refers to the desire to perform an act for individual's sake, so as to experience the pleasure and satisfaction inherent in the act (Deci et al., 1989), whereas EM refers to the desire to perform an act with intention of attaining positive consequences, such as incentive or to avoid negative consequences, such as punishment (Deci & Ryan, 2000). It is stated that when employees perceive the job task to be inherently satisfying, while at the same time incentives are indirectly given (competitive pay) based on performance, IM becomes prevalent. Conversely, EM becomes dominant when a task is less likely to be inherently satisfying, and incentives are in the forms of bonus and commission. Therefore, it is highly important to investigate how these two motivation factors will differ in the context of employee innovation and creativity in a working environment. Reward-performance expectancy (RPE) that results from performance pressure is likely to lead to the creativity (Eisenberger & Aselage, 2009), and also intrinsic motivation. Reward has been found to drive increasing creativity and performance in former studies (Eisenberger et al., 1998).

2.4 Job Complexity

Zacher et al. (2010) emphasized that the complexity of job is positively associated with opportunities. Jobs with high complexity require that employees put more efforts on utilization of their knowledge, abilities, and skills to learn on trendy technologies, while at the same time share knowledge and skills with co-workers (Man & Lam, 2003). On the contrary, lower complexity jobs do not require creativity, which is closely related to repetitive and routine tasks. Therefore, it is suggested that the complexity level of jobs in a working environment could influence the relationship between personality and innovation and creativity of organizational members.

3 Methods

The current research aims to adopt a holistic approach to investigate the key determining factors that drive innovation in an organization. In this context, a quantitative study is conducted to cover the research scope and sample population. Prior to the quantitative research, the systematic review of literature is conducted to identify the most relevant and validated conceptual framework of abovementioned determinants. The conceptual model is provided in Fig. 1, which describes the approach of the study.

Following the identification of the determinants of innovation and creativity of organizational members in HPOs, they are treated as the study constructs in the central conceptual framework. To conduct the quantitative analysis, a survey is administered for data collection from the potential respondents who are representatives of firms. The empirical evidences are crucial for testing hypotheses. To be more specific, online survey is considered effective in cost and timeliness by considering the geographical constraints of the researcher. It is aimed to conduct a pre-test to

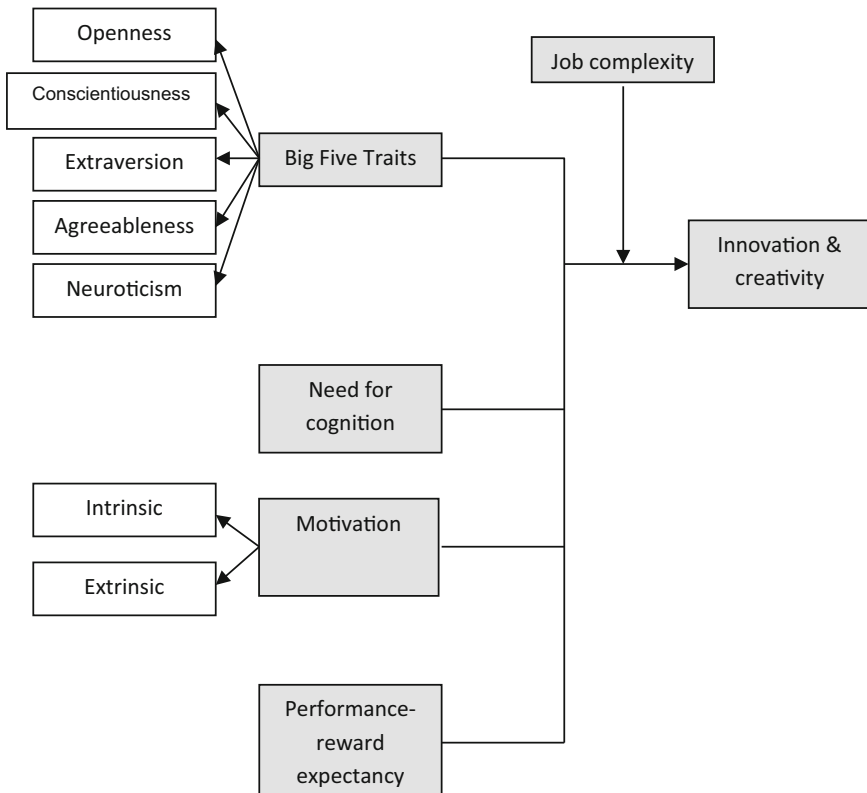


Fig. 1 Conceptual model of work environment and innovation. (Source: Authors own elaboration)

convey the overall concept and meaning, while at the same time the importance of employee innovation and creativity to the firm. The pre-test of the survey questionnaire is conducted with 10–13 experts who are knowledgeable about the topic. Items of the constructs are adopted from former studies as they are mostly statistically valid and utilized across countries, contexts, and industries. Out of the 380 samples chosen through convenient sampling which were determined by power analysis, some incomplete and defective questionnaires were discarded, which finally constitutes around 350. The data were collected during the period ranging from March to September 2020. The samples constitute employees working in HPOs in the Middle East countries, including Saudi Arabia, Qatar, UAE, Bahrain, Oman, and Kuwait.

The survey questionnaire is assessed with 7-point Likert scale from 1 being “Strongly disagree” to 7 being “Strongly agree.” For the initial construct reliability, Cronbach’s alpha (α) is used, where α value should be higher than 0.70 for obtaining the reliability from the constructs. The Cronbach’s α test is also be used in final measurement model testing along with confirmatory factor analysis (CFA), and discriminant validity test. The discriminant validity test is to rely on Heterotrait-monotrait (HTMT) ratio of correlations among the study constructs, as suggested by Henseler et al. (2015). As Fornell-Larcker criterion is lack of discriminant validity since it yields low sensitivity level, when average variance extracted (AVE) is low, HTMT.85, HTMT.95, and HTMT inference produce good sensitivity level over 90% (Fornell & Larcker, 1981).

4 Results

The demographic assessment of the HPO representatives covered mainly their gender, age, ethnicity, education, work experience and other indicators. The results reveal that male respondents constitute the majority at almost two times of female counterparts (66.6%). More than half of them are married and belong to <30 age group (57.4%). The details of the analysis are presented in Table 1 below.

The descriptive statistics, which included Mean and Standard deviation (St.D) scores findings are given in Table 2. In addition, the measurement model analysis covers standardized factor loadings through Confirmatory factor analysis (CFA) that measures scale validity, suggested by Anderson and Gerbing (1988), where item loading is to be over 0.5 acceptance level, suggested by Hair et al. (2006); composite reliability (CR) that are to be higher than 0.6, while average variance extracted (AVE) are to be over 0.5 levels, correspondingly. The analysis includes reliability testing with the consideration of Cronbach alpha (α), where α values are considered excellently reliable if higher than 0.90, highly reliable if between 0.70–0.90, moderately reliable if between 0.50–0.70, and finally lowly reliable if lower than 0.50 (Hinton et al., 2004).

Discriminant validity, which is tested with HTMT values, takes into consideration the correlations among the study constructs, refers that the square root of AVE

Table 1 Demographic analysis of HPO respondents

Demographic indicator	Item	Frequency	%
Gender	Male	233	66.6
	Female	117	33.4
Marital status	Single	83	23.7
	Married	196	56.0
	Divorced	52	14.9
	Widowed	19	5.4
Age	<30 years	201	57.4
	30–40 years	99	28.3
	>40 years	50	14.3
Ethnicity	Arab	146	41.7
	Asian	61	17.4
	American	42	12.0
	Canadian	13	3.7
	European	48	13.7
	Latino	7	2.0
	Australian	3	0.9
	Japanese	17	4.9
Work experience	<2 years	41	11.7
	2–5 years	119	34.0
	5–10 years	123	35.1
	>10 years	67	19.1
Education	Undergraduate	48	13.7
	Graduate (professional course)	122	34.9
	Graduate (non-professional course)	49	14.0
	Postgraduate and above	131	37.4
Average monthly income (\$)	<25,000	35	10.0
	25,000–50,000	98	28.0
	50,000–75,000	128	36.6
	75,000–100,000	72	20.6
	>100,000	17	4.9

Source: Own work

values must be higher than the coefficients of correlations themselves (Henseler et al., 2015).

In the current research, HTMT.90 threshold criterion showed that the discriminant validity is well-established among the constructs, which had higher correlations values, such as EXT and AGR, PRE and EXT, EM and OPEN, and others. None of the values exceeded 0.90 level, which is also acceptable in HTMT inference criterion, indicating that discriminant validity has been established (Table 3).

Structural model testing included the study constructs, namely the determinants of the innovation and creativity of organizational members in HPOs. The results

Table 2 Measurement model analysis

Study variable	Mean (S. D)	Factor loading	α	CR	AVE
<i>Extraversion (EXT)</i>			0.77	0.82	0.56
EXT1	2.25 (0.89)	0.73			
EXT2	2.48 (0.92)	0.72			
EXT3	2.44 (0.91)	0.69			
EXT4	2.18 (0.86)	0.65			
<i>Agreeableness (AGR)</i>			0.72	0.81	0.58
AGR1	2.91 (1.04)	0.71			
AGR2	2.77 (0.98)	0.75			
AGR3	2.74 (0.83)	0.66			
AGR4	2.81 (0.96)	0.70			
<i>Conscientiousness (CON)</i>			0.70	0.85	0.65
CON1	3.03 (0.88)	0.72			
CON2	2.95 (0.81)	0.77			
CON3	2.79 (0.94)	0.78			
<i>Neuroticism (NEU)</i>			0.76	0.89	0.66
NEU1	2.67 (0.91)	0.69			
NEU2	2.73 (0.90)	0.65			
NEU3	2.75 (0.92)	0.70			
<i>Openness (OPEN)</i>			0.69	0.81	0.61
OPEN1	2.98 (0.87)	0.72			
OPEN2	2.96 (0.83)	0.74			
OPEN3	3.18 (0.99)	0.78			
OPEN4	3.05 (0.92)	0.71			
<i>Need for cognition (NC)</i>			0.71	0.92	0.59
NC1	2.44 (0.87)	0.66			
NC2	2.56 (0.83)	0.68			
NC3	2.61 (0.91)	0.63			
<i>Performance-reward expectancy (PRE)</i>			0.68	0.89	0.57
PRE1	2.35 (0.85)	0.65			
PRE2	2.79 (0.94)	0.69			
PRE3	2.64 (0.91)	0.67			
<i>Intrinsic motivation (IM)</i>			0.77	0.85	0.64
IM1	2.58 (0.89)	0.74			
IM2	2.61 (0.83)	0.72			
<i>Extrinsic motivation (EM)</i>			0.75	0.81	0.61
EM1	2.81 (0.96)	0.76			
EM2	2.87 (0.91)	0.75			
<i>Organizational innovation and creativity (OIC)</i>			0.72	0.80	0.57
OIC1	2.91 (0.82)	0.86			
OIC2	2.94 (0.86)	0.81			
OIC3	3.02 (0.93)	0.82			

(continued)

Table 2 (continued)

Study variable	Mean (S. D)	Factor loading	α	CR	AVE
OIC4	2.89 (0.91)	0.79			
<i>Job complexity (JC)</i>	2.66 (0.84)	0.81	0.76	0.84	0.58

Source: Own work

Table 3 Validity analysis

	OPEN	CON	EXT	AGR	NEU	IM	EM	PRE	NC	OIC
OPEN	–									
CON	0.801	–								
EXT	0.743	0.782	–							
AGR	0.547	0.755	0.848	–						
NEU	0.681	0.659	0.687	0.674	–					
IM	0.813	0.614	0.662	0.618	0.675	–				
EM	0.822	0.669	0.819	0.652	0.576	0.548	–			
PRE	0.679	0.594	0.831	0.648	0.559	0.531	0.619	–		
NC	0.661	0.443	0.794	0.619	0.519	0.562	0.662	0.594	–	
OIC	0.619	0.707	0.778	0.628	0.613	0.726	0.496	0.614	0.467	–

Source: Own work

show that among the Big Five Traits, OPEN ($\beta = 0.221^{**}$, $p < 0.01$), CONS ($\beta = 0.271^{**}$, $p < 0.01$), and EXT ($\beta = 0.178^{*}$, $p < 0.05$) are positively and significantly related to OIC, whereas NEU ($\beta = -0.218^{*}$, $p < 0.05$) is negatively related to OIC, and AGR ($\beta = 0.084$, $p = 0.347$) does not predict OIC in HPOs. In addition, NC ($\beta = -0.054$, $p = 0.515$) does not predict OIC in HPOs either. Among the motivation factors, alike the former studies, it is found that IM ($\beta = 0.308^{***}$, $p < 0.001$) positively and significantly determines the creativity and innovativeness of organizational members in HPOs, whereas EX ($\beta = 0.013$, $p = 0.441$) is not related to OIC. In addition, it was revealed that the newly integrated variable, namely PRE ($\beta = 0.168^{*}$, $p < 0.05$), significantly and positively influences OIC (see Fig. 2).

JC was found to moderate the following relationships:

- OPEN to OIC ($\beta = 0.262^{**}$, $p < 0.01$),
- EXT to OIC ($\beta = 0.194^{*}$, $p < 0.05$),
- IM to OIC ($\beta = 0.322^{***}$, $p < 0.001$),
- PRE to OIC ($\beta = 0.204^{**}$, $p < 0.01$).

The present study contributes to the literature on innovation and creativity by highlighting that personality traits could have different relationships with employees' creative behavior at different organizational aspects. Puryear et al.'s (2017) analysis disclosed that there is a positive omnibus association between Extraversion and Employee creativity, which is also adjacent with the findings of the current research.

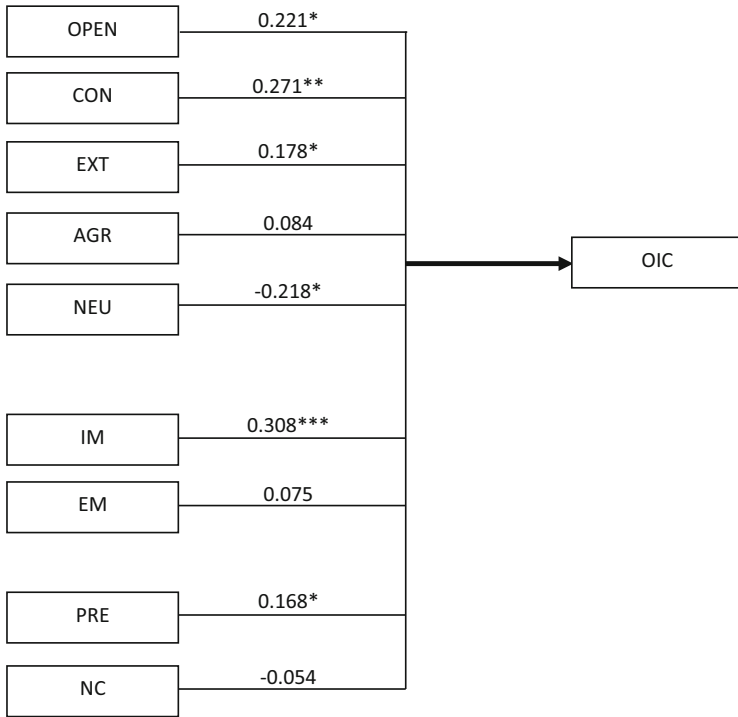


Fig. 2 SEM structural model results. (Source: Authors’ own elaboration)

The organizational subjects of the current study replicate studies showing that Openness to experience is also positively associated with employees’ innovative capabilities. It can be suggested that employees working in other types of organizations, such as high-tech firms, where creative behavior is highly crucial for better job performance, are more likely to show creative behavior if they are conscientious, open to new innovations, while at the same time their performances are rewarded well.

5 Conclusion

The current research investigated the determinants of employee innovation and creativity in an organizational context, with particular emphasis on HPOs, considering that the concept of HPO is quite new in academia and needs comprehensive exploration in association with personality traits. Compared to most of the previous studies (Strickland & Towler, 2011; Williams, 2004), this study included all five traits of the Big Five Traits framework and found that Openness, Conscientiousness, and Extraversion are positive and significant predictors of the innovation and creativity of employees in HPOs located in the Middle East. It can be explained to

the extent that when employees are open to practicing new technologies and tools, they are more likely to extend their knowledge and experience, which leads to their creativity. In addition, when they act consciously while using new tools, they attempt to understand the opportunities fully in terms of how they can utilize their job tasks. Extravert employees are also likely to show innovative and creative performance at their organizations (Yao & Li, 2020). Among the other personality factors, the Need for cognition does not predict employee creativity and innovativeness in the Middle Eastern context, while Performance-reward expectancy is among the most significant predictors of creativity.

Eisenberger and Aselage (2009) indicated that intrinsic interest could highly contribute to creativity of employees, where they could put more efforts to translate their ideas into innovative solutions, which also creates a situation that rewards on performance increase employees' work engagement in the context of creativity (Shalley & Gilson, 2004). This result is also adjacent with the finding related to the relationship between Intrinsic motivation and employee creativity. Finally, Job complexity was found to moderate the relationships of Openness, Extraversion, Intrinsic motivation, and Performance-rewards expectancy with creativity. As Zacher and Frese (2009) stated, the complexity of job task aligned with the personality traits of individuals highly impacts those individuals' belief that the complexity level will create relative opportunities. It also affects employees' cognitive and emotional states.

HPOs operating with different countries must take into consideration how personality of employees will reflect in their creative and innovative behavior and job performance. Besides that, cultural factors may also play a role in this relationship, where both organizational and national culture factors could be highly relevant in future studies. In addition, rewards per performance must be considered as well. Rewards can be both physical and emotional.

It is recommended for the future studies that the configuration of the relationship between personality and creativity could be investigated with the moderation impact of Job tenure, through continuous measurement, such as month of employment (busy and non-busy seasons). Secondly, future research could focus on the specific job type, depending on which job demands higher creativity and innovative solutions from employees, which could also put them under pressure.

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Skills Shortages in Post-transition Economies



Valerija Botrić, Ljiljana Božić, and Iva Tomić

Abstract While post-transition societies have significantly changed their educational systems since the early phases of transition to accommodate labour market demand changes, the adaptation of human capital to labour market needs is seldom linear. Increased labour mobility associated with liberalization and EU accession, accompanied by globalization and the technological shift, have put the issue of skills shortages into the public spotlight. The present analysis sheds light on the perceived skills shortages by the firms in post-transition countries of Central and Eastern Europe. We propose a new indicator of perceived skills shortages, allowing us to capture more dimensions of the phenomenon and to assess the degree of the problem. We investigate the differences between the CEE countries in the most recent period. We also analyze factors affecting a firm's perception of skills shortages. Our results suggest that innovators and large firms are significantly more likely to express skills shortages. Furthermore, we investigate the effect of perceived skilled shortages on firm productivity and find a negative correlation between the two variables.

Keywords Skills shortages · Enterprises · CEE · Post-transition economies

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1 Introduction

Obstacles related to human capital are not the immediate concern of companies in the post-transition societies; what is more, a relative abundance of human capital has been frequently considered as an important comparative advantage of these countries (Kaitila, 2001; Trübswetter & Schumacher, 2000). Early phases of transition were marked by increases in human capital or by educational booms (Tomić & Tyrowicz, 2010). Barro and Lee (2001) document a declining share of the low-educated and increasing population with completed secondary education in transition economies. Thus, the evidence implies that human capital should not have been an important restriction for future growth. Yet, dooming voices of potentially devastating future with specific sectors' skills shortages frequently pop up as an important topic in public discussions. Firms across Europe complain that the limited availability of skills impedes corporate investment (Brunello & Wruuck, 2021). The governments are asked for immediate intervention "before it is too late", but seldom is there a follow-up action. The literature has already established that transition economies are prone to skills shortages spells because of increased labour mobility, mostly towards more advanced market economies (Rutkowski, 2007). However, the evidence is relatively scarce for the post-transition period.

One of the reasons for the lack of empirical findings is the inability to measure skills shortages with limited data sources adequately, a regular feature of post-transition economies. Studies from the developed economies provide evidence that skills shortages, although mostly short-termed (Bellman & Hübler, 2014), can have significant consequences for firm productivity and R&D investment (Nickell & Nicolitsas, 2000). The paper aims to complement existing findings by analyzing perceived skills shortages at the firm level for post-transition countries. Contrary to previous literature that mainly deals with an inadequately educated workforce, our main contribution is in addressing more aspects of skills shortages. We propose a new indicator of perceived skills shortages, allowing us to capture more dimensions of the phenomenon as well as to assess the degree of the problem. We investigate the differences between the Central and Eastern Europe (CEE) countries in the recent period. In addition, we explore the firms' characteristics that lead to higher perceived skills shortages. Furthermore, we analyze whether the firms with higher perceived skills shortages experience consequences in the form of lower productivity.

The paper has the following structure. Section 2 summarizes relevant literature. Section 3 presents data and methodology for empirical estimates, which are given in Sect. 4. The last section offers some concluding remarks.

2 Literature Review

The precise definition of skills shortages or skills, in general, is frequently elusive. OECD (2017) suggests that skills encompass cognitive and non-cognitive abilities specific to a particular job, occupation, or economic sector. This is a relatively broad definition, and it can easily be seen that perceptions of skills deficiencies are highly subjective.

The demand for skills depends on firm-level technological and organizational innovations and consumption patterns related to demographic changes in the medium to long run. One of the most utilized approaches in the economics literature is the theory of skill-biased technological change (Autor et al., 1998; Antonietti, 2007). According to this concept technological change increases demand for high skills and decreases demand for workers with low- and medium-level skills. This is also related to the theory of the polarization on the labour market, which suggests that due to technological change and the automatization of the routine tasks, i.e., middle-skilled jobs, there is a rise in labour demand for both high- and low-skilled jobs (Goos et al., 2009; Autor & Dorn, 2013). Under the influence of increases in higher education, female labour force participation or changes in retirement patterns, the labour market structural changes affect the supply of skills.

The interchange between supply and demand conditions creates counter-cyclical dynamics of skills shortages, with differences between the countries related to other labour market characteristics (Brunello & Wruuck, 2021). In a competitive market economy, it is more likely that the market mechanisms will resolve any short-run mismatches between labour demand and supply. Schioppa (1991) attributes labour market mismatch to inadequate education or poor geographical and occupational labour mobility. Skills mismatch at the country/region level in that context is the gap between the aggregate labour supply and aggregate demand, usually empirically assessed by matching the observed characteristics of potential workers and jobs offered by the firm. At the micro-level, skills mismatch occurs if individual workers have a level of skills different from what is required for their job. This is further disaggregated into vertical (different worker's formal education and job requirements levels) and horizontal (different worker's field of education and job requirement) mismatch (Eurostat, 2016).

McGuinness et al. (2018) explain that skills shortages are usually perceived by the firms, while skills mismatch is frequently analyzed at the individual worker level, with the concept of overskilling more dominant in the literature than underskilling. The authors explain that there are two similar concepts from the firm perspective: skills gaps and skills shortages. Skill gaps refer to existing workers within a firm who are assessed to operate below the desired skill level. Skills shortages usually refer to an inability to fill in the vacancies with adequate workers.

Green and McIntosh (2007) explain that employees' surveys have been developed to assess the micro-level skills mismatch. The surveys typically ask whether the skills would be suitable for a more demanding job or whether training is necessary to successfully fulfil the tasks of the current job. Brunello and Wruuck (2021) warn that

individuals frequently do not have a reliable view of job requirements. Employers' surveys, on the other hand, subsequently provide subjective perceptions of the managers and firm owners on skills mismatch and shortages.

Quintini (2011) further suggests that skills shortages arise when employers cannot fill in their vacancies by offering the usual job-specific wage rate on the labour market. However, Köllő et al. (2018) argue that since skills shortages stated by employers are related to the wage and working conditions they offer, they should not exist in a competitive wage-setting framework. The reasons why firms cannot fill in required positions could include employers offering inadequate remuneration, unsatisfying working conditions or negative image of the economic sector, demanding working hours, large distances from the places of residence, and ineffective recruitment effort by the firm or firm-specific skills needs (Shah & Burke, 2003).

Brunello and Wruuck (2021) suggest that employers can respond to skills shortages by increasing training, recruitment abroad, improved working conditions, and internal re-organizations. Constant upgrading of skills is necessary to ensure a competitive position on the market, either for the workers or for the firms. Additional hour of training per employee is likely to result in approximately 0.55% higher productivity (Sala & Silva, 2013). Ideally, a clear sign of inadequate skills available on the labour market could be tracked if we could observe only the training of the new employees. However, if the labour market regulations are relatively rigid (Cazes, 2002; Feldmann, 2005), the firms' firing and hiring costs could be prohibitively high. Some recent evidence suggests that reducing the firing costs increases the level of training (Bratti et al., 2021).

In the severest case, skills shortages can limit the firm's operations. They can also influence the decision-making process and postpone the investments as well as have adverse effects on firm's productivity (Bennet & McGuinness, 2009). The firm's management can decide to either increase the workload of existing workers (by additional working hours) or by offering higher wages to attract new workers. Both can have adverse effects on a firm's profits. Kampelmann and Rycx (2012) have found that additional years of workers' overeducation are beneficial for firm productivity compared to additional years of undereducation that has the opposite effect on productivity. The positive effects of excessive skills availability are related to employers' constant focus on the skills shortage problem.

Earlier literature on transition economies provides some evidence of skills mismatch development. Obadić (2005) suggests that the increased labour market mismatch in transition countries during the 1990s can be attributed to significant product markets changes. Brixiova et al. (2009) indicate that the lack of convergence to the EU-15 employment structures is directly related to the skills shortages in CEE countries.

Jeong et al. (2008) show that education in business occupations has expanded, and technical education has contracted in Czechia and Poland since 1990, while this was not the case in Hungary. This is explained by the adjustment necessary for the transition to a market economy in the case of Czechia and Poland, while in the case of Hungary it is attributed to its earlier timing of transition. Based on the Estonian example, Lamo and Messina (2010) document how structural educational

mismatches can occur after a fast transition period. Bartlett (2013) states that the education and training systems were not able to respond to the needs for new skills in service sectors and sectors subject to global technological change in the Western Balkans economies, thus increasing structural unemployment. Tomić (2014), on the other hand, suggests that in the case of Croatia, labour market mismatch is not a predominant unemployment factor.

The literature recognizes the importance of human capital for business and productivity growth (Kutan & Yigit, 2009; Unger et al., 2011). Human capital, namely an inadequately educated workforce, is a severe obstacle for business and innovation activity in post-transition economies (Botrić & Božić, 2018). The transition itself, in particular in the early phases, was associated with massive restructuring and upfront disclosure of the technology gap (Tomić & Tyrowicz, 2010). After the initial fall in the employment rate, the appearance of new firms should have led to an increase in employment and labour productivity. The expectations were not fulfilled due to the relatively low mobility of workers across different occupations, industries, and locations (Boeri, 1999; Tomić & Tyrowicz, 2010). The technology upgrading phase was associated with EU accession that also introduced different standards in terms of production processes, organizational and marketing procedures, and safety regulations. The economic crisis from 2008/2009, which was very deep and/or particularly long for many post-transition economies, brought a wave of migration towards core EU countries. Since young and skilled workers are more ready to move (Sjaastad, 1962), skills shortages became an important policy topic in EU periphery countries.

Previous literature has identified several characteristics of firms that are more likely to identify human capital as an important obstacle for their business activities. Bartelsman et al. (2010) identified firm age, ownership type, export orientation, industry, and country variables as essential predictors of firms' perceptions of business constraints. Teixeira and Tavares-Lehmann (2014) argue that foreign ownership directly and indirectly affects a firm's human capital. Lyon et al. (2012) find that medium and large-size firms are more likely, and exporting firms less likely, to consider skills shortages an important business obstacle. Hallward-Driemeier and Aterido (2009) suggest that in developing countries, small firms have difficulties meeting the demands of labour regulations and are more likely to become targets of corruption activities. Pellegrino (2018) further argues that mature and young firms have different abilities to assess the adequacy of employees' skills and training for a particular project—while mature firms may be more aware of lack of skills, young firms tend to overestimate actual skills. Nazarov and Akhmedjonov (2012) argue that efficient managers are more likely to adopt new technologies, retain more educated workers and provide more on-the-job training for their workforce.

Additionally, previous research finds the importance of human capital (Dakhli & De Clercq, 2004; Huiban & Bouhsina, 1998; Vinding, 2006) and investment in skilled labour (Tellis et al., 2009) for innovation development. Furthermore, human capital is essential for dealing with and overcoming various innovation obstacles (D'Este et al., 2014). According to Piva and Vivarelli (2009), additional education and adequate training contribute to R&D activities and investment. Training of

employees is vital for achieving business growth in post-transition countries that generally lag behind those in developed countries in terms of innovation performance and level of technology (Božić, 2020). Educated, skilled employees are indispensable for obtaining knowledge (internal and external) and its commercialization (Leiponen, 2005). Knowledge and skills gained during formal education are helpful for learning on the job and building organizational knowledge (Leiponen, 2000). However, it is worth noting that training can contribute to gaining knowledge, although its effects on innovativeness are rather limited (Kohnová & Papula, 2019). Additionally, firms' absorptive capacity, i.e., their capacity to identify, adopt and use knowledge (Cohen & Levinthal, 1990), depends on knowledgeable and skilful employees.

3 Data and Methodology

Skills shortages are frequently assessed at the occupational level. Job-seekers occupations are usually more related to the skill requirements than their level of education (Tomić, 2014). According to the ManpowerGroup (2020) report, some of the post-transition countries belonged to the areas with the highest talent shortages increase in the world in 2019, the last pre-pandemic year. Namely, among the analyzed countries, four—Poland, Hungary, Croatia, and Romania—of the six CEE countries covered in the report (Table 1) belong to a group of countries that have reported between 66 and 90% of the difficulty in finding skills they need, while only Czechia is in the bottom group with only 15–40% of the difficulty in finding skills they need.

Table 1 Hardest to fill-in positions in CEE countries in 2019

Country	Occupation
Croatia	Skilled Trades Hospitality Driving & Logistics
Czechia	Skilled trades Construction Sales and Marketing
Hungary	Skilled Trades Driving & Logistics Hospitality
Poland	Skilled Trades Driving & Logistics Manufacturing
Romania	Skilled Trades Engineering Hospitality
Slovenia	Skilled Trades Driving & Logistics Construction

Source: ManpowerGroup (2020)

What is more, Hungary and Slovenia reported the greatest year-over-year increases, along with the USA, Sweden, and Finland.

If we look at the hardest to fill-in positions in 2019 by occupation, skilled trades (electricians, welders, mechanics) are at the top of the list in all of the six analyzed CEE countries. The same is true for the USA. This would suggest that middle-skilled, specialized manual occupations are in demand, while their supply is limited in most CEE countries. This is perhaps also the consequence of the emigration of those profiles to some other EU countries where there is also demand for these occupations, however, with much better salary options.

However, while in the USA at the second place is IT personnel (cybersecurity experts, network administrators, technical support), in most of the CEE countries the second place at the hardest to fill-in positions in 2019 is held by driving and logistics (truck, delivery, construction, mass transit). In Croatia, hospitality (restaurant and hotel workers) comes in second place, which is not a surprise given the importance of tourism for its economy. Hospitality occupations are also in excess demand in Hungary and Romania; occupations in construction (labourers) in Czechia and Slovenia, whereas occupations in manufacturing (production and machine operators) are in demand in Poland. In Romania, there are problems with filling the occupations in engineering (chemical, electrical, civil, mechanical), while in Czechia sales and marketing (sales representatives/managers, graphic designers) come second.

Although most of the CEE countries face problems with skills shortages and some similarities among them, previous observations suggest that the structure of the economy determines where the problem with skills is most likely to appear. Hospitality in Croatia and the manufacturing sector in Poland are perfect examples. Tomić and Tyrowicz (2010) explained how Poland, as an already primarily industrial country experienced the transition process in a different way from an economy already based more on services such as Croatia. On the other hand, Autor et al. (2013) suggest that substitution of the routine tasks with technological solutions will be more present in manufacturing than the service sector, given that technology developments are more labour reducing in manufacturing. However, ManPowerGroup (2020) report states that as the rise in automation of routine tasks continues, the most in-demand roles may eventually look similar across the sectors, the required skills will continue to evolve.

In order to gain more insights on the skills shortages perceived by firms, we rely on the EBRD and World Bank Enterprise Survey panel data for the period 2009–2019, comprising of three Survey waves (2009, 2013, and 2019), thus covering both the economic and financial crisis from 2008/2009 as well as the subsequent recovery. We focus on Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, Serbia, and Slovenia, i.e., post-transition countries of CEE. The same questionnaire is administered in all countries. The data is collected based on face-to-face interviews with managers disclosing information on a wide range of standard firm characteristics. The sample covers both the manufacturing and service sectors but

does not include companies ruled by government price regulations and state-owned enterprises.

We focus on the perceived skilled shortages from the perspective of employers. This includes the situation when the supply of labour is not limited formally, but employers consider that workers do not possess the skills required for successful work performance. To measure the perceived skills shortages at the firm level, we propose a new indicator based on the Enterprise Survey respondents' positive answers to the following questions:

- Whether respondent considers inadequately educated workforce major or very severe obstacle to their business endeavours. This is a traditional indicator used frequently in the literature (Jabbouri & Farooq, 2021; Mendes de Oliveria et al., 2021).
- Whether respondent provided additional training to their full-time employees during the last fiscal year as the literature suggests that skills shortages can be overcome by increased training (Brunello & Wruuck, 2021) but also that it can lead to higher productivity (Sala & Silva, 2013). Sound business practices would involve training the existing workers to acquire the desired level of skills.
- Whether respondent considers labour regulations major or very severe obstacle for their business. Labour regulations are certainly country-specific but could also be industry-specific. While hiring and firing costs gained much attention in the policy-oriented literature (Feldmann, 2009; Millán et al., 2013), regulations designed for specific occupations could increase search and matching difficulties.

The proposed measure reflects the degree to which different aspects contribute to skills shortages but still relies on the subjective perceptions of the managers. However, by taking into consideration broader labour market circumstances, we believe that the proposed measure can encompass the employers' position more accurately than simply referring to an inadequately educated workforce (Sondergaard et al., 2012).

Following previous findings from the literature, we include the following variables as potential explanations for differences in perceived skills shortages among firms' managers:

- Foreign ownership (Teixeira & Tavares-Lehmann, 2014). We include a dummy variable taking value 1 if a firm has more than 51% foreign ownership.
- The size of the firm, an important variable explaining the skills level within firms in the literature (Hallward-Driemeier & Aterido, 2009; Lyon et al., 2012). We include two dummy variables referring to the firm's size; the medium-sized firms have been left out from the specification as the reference value.
- Age of the firm (Coad, 2018; Pellegrino, 2018). We include the number of years since the establishment of the firm in the specification.
- Manufacturing dummy is included because the sample also contains service sector firms, and there might be important skills demand differences between the sectors.

- The share of high-skilled production workers in total firm employment is included to capture whether firms that demand high-skilled workers for their operations are the ones with higher perceptions of skills shortages.
- Technological intensity is assumed to be one of the most important drivers of skill changes. We include two dummy variables taking value 1 if a firm is classified as a high or medium high technology-intensive firm following OECD definition based on ISIC industry classification.
- Exporting producers tend to be more skill-intensive than their domestic competitors (Bernard et al., 2007). The specification contains a dummy variable taking value 1 if a firm is an exporter.
- Innovative firm. The importance of human capital and investment in skilled labour for innovation development is a well-established finding in the literature (Božić, 2020; Dakhli & De Clercq, 2004; D'Este et al., 2014; Huiban & Bouhsina, 1998; Piva & Vivarelli, 2009; Tellis et al., 2009; Vinding, 2006).
- Manager experience. Managers with more experience tend to rely on the latest technology, including human resource practices (Abowd et al., 2007). We include a variable depicting a manager's years of experience within the same sector.
- Country factors. To account for differences between countries, we include several variables: a dummy variable taking value 1 if a country belongs to the EU in the specific year; GDP growth rate to account for overall demand growth in the country, the share of labour force with advanced education (% of total working-age population with advanced education) as a proxy of available skills in the country; unemployment with advanced education (% of total labour force with advanced education) as a proxy of underutilization of human capital; and labour tax and contributions (% of commercial profits) as a proxy for labour market policy relevance. All the country variables have been taken from the World Bank World Development Indicators database.

The final specified model (where i denotes firm, j country and t year) is the following:

$$\begin{aligned}
 skills_{ijt} = & \alpha + \beta_1 mhigh_intensity_{ijt} + \beta_2 high_intensity_{ijt} + \beta_3 foreign_{ijt} \\
 & + \beta_4 manufacture_{ijt} + \beta_5 export_{ijt} + \beta_6 innovation_{ijt} + \beta_7 small_{ijt} \\
 & + \beta_8 large_{ijt} + \beta_9 firm_age_{ijt} + \beta_{10} empl_prohigh_{ijt} + \beta_{11} manager_exp_{ijt} \\
 & + \beta_{12} GDP_growth_{jt} + \beta_{13} lf_advanced_{jt} + \beta_{14} unemp_advanced_{jt} \\
 & + \beta_{15} labour_tax_{jt} + \beta_{16} EU_{jt} + \beta_{17} y2013_t + \beta_{18} y2019_t + \epsilon_{ijt}
 \end{aligned}$$

The sample included 4370 firms in 2009, 4888 firms in 2013 and 7612 firms in 2019. However, the number of non-response to specific questions was relatively high. As the literature already established, it is difficult to find a robust relationship with small panel data set of heterogeneous firms (Gorodnichenko & Schnitzer, 2013). There are potential sources of unobserved heterogeneity, such as different industry-level labour market demands. In order to overcome these issues, we

estimate the heteroskedastic fractional probit model in a pooled panel framework and present the results of average partial effects at the sample mean to discuss the results.

To assess the effect of perceived skills shortages on firm-level productivity, we rely on firm-level TFP estimates provided by EBRD and the World Bank by relying on the Enterprise Survey data (World Bank Group Enterprise Analysis Unit, 2017). The latest estimates, including the year 2019, have been released in April 2021. The World Bank produces two types of TFP estimates: we rely on the value-added based because the sample also includes service sector firms. Thus, we specify an equation where firm-level TFP is a dependent variable, affected by the following set of independent variables:

- Perceived skills shortages, as our key variable of interest.
- Foreign ownership (de Backer & Sleuwaegen, 2003).
- Manufacturing dummy variable is included because productivity estimates can differ significantly between the service sector and the manufacturing sector.
- Export orientation of the firm is strongly related to productivity (Wagner, 2007).
- Firm age and size are included as traditional factors of firm performance (Dhawan 2001; Cucculelli et al., 2014).
- The relationship between firm-level innovation and productivity is well-established in the literature (e.g., Crépon et al., 1998; Mohnen & Hall, 2013).
- Whether a firm has a technology licence. Botrić et al. (2017) suggest that technology licence is a significant predictor for firm-level productivity in post-transition economies.
- Manager experience has an important impact on firm performance (Cucculelli et al., 2014).
- Country and year dummies. We include the yearly GDP growth rate as a proxy for overall country conditions. We additionally include a dummy variable taking value 1 if a country is an EU member state.

The definition of the variables is the same as in the previous specification (Table 2). The final specified model is following:

$$\begin{aligned}
 prod_{ijt} = & \alpha + \beta_1 skills_{ijt} + \beta_2 foreign_{ijt} + \beta_3 manufacture_{ijt} + \beta_4 export_{ijt} \\
 & + \beta_5 innovation_{ijt} + \beta_6 technology_{ijt} + \beta_7 firm_age_{ijt} + \beta_8 small_{ijt} \\
 & + \beta_9 large_{ijt} + \beta_{10} manager_exp_{ijt} + \beta_{11} EU_{jt} + \beta_{12} GDP_growth_{jt} \\
 & + \beta_{13} y2013_t + \beta_{14} y2019_t + \varepsilon_{ijt}
 \end{aligned}$$

For the second specification, we apply pooled regression. Results of both specifications are presented in the following section.

Table 2 Definition of explanatory variables

Variable	Definition of variables
Foreign	=1, if a firm has more than 51% of foreign ownership
Mhigh_int	=1, if a firm is classified as medium high technology-intensive firm following OECD definition based on ISIC industry classification
High_int	=1, if a firm is classified as high technology-intensive firm following OECD definition based on ISIC industry classification
Manufacture	=1, if a firm operates in the manufacturing sector
Export	=1, if a percentage of sales that were related to direct exports are larger than zero
Firm age	= number of years since the beginning of firm operations until the survey implementation
Large	=1, if a firm has more than 100 employees
Small	=1, if a firm has more than 5 and less than 19 employees
Emp_high	= share of high skill production workers in the total number of employees
Man_exp	= number of years the manager has work experience within the same sector
Inno	=1, if a firm introduced new products/services over last 3 years before the survey
EU	=1, if a country at the time of the survey implementation was an EU member state
GDP_gr	= GDP growth rate in the year of the survey
LF_advan	= the share of labour force with advanced education (% of total working-age population with advanced education)
Labor_tax	= labour tax and contributions (% of commercial profits)
Unemp_adv	= unemployment with advanced education (% of the total labour force with advanced education)
Y2013	=1, if responses belong to survey wave 2013
Y2019	=1, if responses belong to survey wave 2019

4 Results and Discussion

We start the discussion by presenting the results of the newly developed indicator of perceived skills shortages averaged across all the firms within a country and presented by countries (Fig. 1). The highest level of perceived skills shortages over the observed period is witnessed in Romania, followed by Czechia and Latvia. On the other side of the spectrum are Hungary, Albania, and North Macedonia. If we compare these results with those from ManpowerGroup (2020) report on most challenging to fill positions in CEE countries in 2019 (Table 1), there are some incongruities. Namely, the obtained result for Romania is in line with the ManpowerGroup report; however, the one for Czechia differs. Still, when discussing our indicator of perceived skills shortages, we are relying on an average value over the 2009–2019 period, while the results from the ManpowerGroup report refer only to 2019. In addition, the methodology, i.e., questions aimed at employers, for the two indicators are also different. We find that in most of these countries, there are evident perceived skills shortages during the 10-year period, covering even the global economic crisis from 2008/2009 characterized by high unemployment spells.

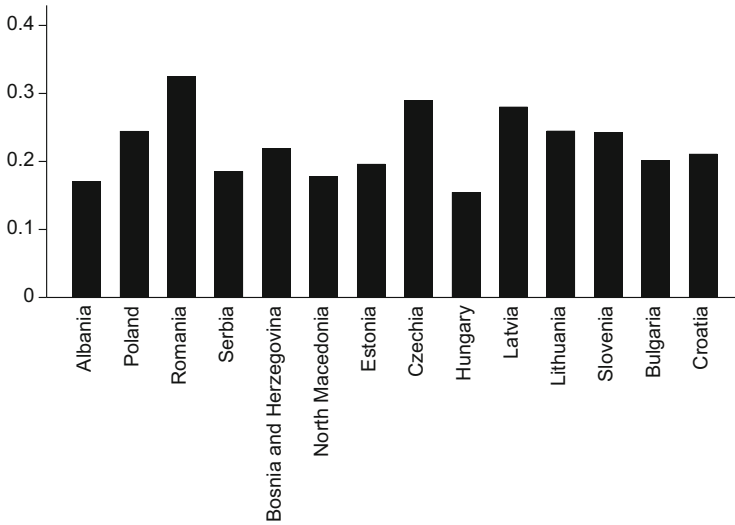


Fig. 1 Perceived skills shortages, average 2009–2019. (Source: Authors' estimates)

We now turn our attention to empirical estimates. First, we present the results of factors contributing to firm-level perceived skills shortages. Average partial effects after the estimation are presented in Table 3.

Our results confirm that size is an important predictor for perceived skills shortages (Lyon et al., 2012; Hallward-Driemeier & Aterido, 2009). Larger firms are more likely, and smaller firms less likely to perceive this as a problem. Large firms are more prominent market players and could more frequently encounter specific hiring problems, making them more aware of the current labour market situation. It could also be the case that small firms are more easily to adapt to changing demand conditions. Large firms, on the other hand, might be more bound by labour market regulations. For example, collective bargaining agreements and union presence might be affecting large firms to a greater extent.

Additionally, we have confirmed that innovators are more struggling with finding an adequate workforce (Botrić & Božić, 2018). Thus, our enhanced skills shortages indicator again pointed to the human capital as a barrier for innovative firms. Although innovative firms might be more in need of specific human capital and might be able to find a way to overcome this business obstacle, repeated findings suggest that policy instruments should be used to support innovative firms in their pursuits for an adequate workforce. This is particularly important for post-transition economies, where innovation activity, in general, is lagging behind more advanced market economies.

Stylized facts of post-transition economies suggest that we should expect a higher mismatch in their labour markets. Our results indicate that in countries with a higher share of labour tax in firms' sales, the perceived skilled shortages are more likely. Due to the higher taxation of labour, the labour cost is relatively high and firms also

Table 3 Perceived skills shortages factors in post-transition economies

Variable	Average partial effect at sample mean (standard error)
Foreign	0.006 (0.017)
Mhigh_int	0.014 (0.014)
High_int	0.008 (0.060)
Manufacture	-0.001 (0.020)
Export	0.000 (0.000)
Firm age	-0.000 (0.000)
Large	0.050*** (0.013)
Small	-0.039*** (0.013)
Emp_high	-0.016 (0.018)
Man_exp	-0.000 (0.000)
Inno	0.076*** (0.011)
EU	-0.010 (0.030)
GDP_gr	-0.001 (0.002)
LF_advan	0.004*** (0.001)
Labor_tax	0.002** (0.001)
Unemp_adv	-0.000 (0.003)
Y2013	-0.030 (0.022)
Y2019	0.009 (0.025)
N	3187
Log pseudolikelihood	-1894.4
Wald chi2(18)	68.5***
Test lnsigma chi2(11)	22.9**

Source: Authors' estimates

Note: Standard errors in parenthesis. *** significant at 1%, ** significant at 5%

perceive high firing and hiring costs. Thus, reducing the stringency of labour market regulations and reducing labour taxation could lead to more optimal use of the existing human resources in the post-transition economies.

The fact that we have found a positive relationship between higher perceived skills shortages and the share of labour force with advanced education is not necessarily odd. It could be related to the fact that skills shortages are not predominant for the workers with high skills, but the workers with lower skills. The ManpowerGroup report (Table 1) confirmed that the hardest to fill-in occupations in CEE countries are middle-skilled, specialized manual occupations such as skilled trades or driving and logistics.

The results on the relationship between firm productivity and perceived skills shortages are presented in Table 4.

Due to many methodological constraints in estimating productivity, and limitations of the sample, we consider the estimates presented in Table 4 only an illustration and not the firm conclusions. Still, we have established a negative relationship between perceived skills shortages and firm productivity in post-transition economies. In general, this could be a short-lived phenomenon that could be resolved within the normal business cycle. However, we are analyzing a

Table 4 Productivity and skills shortages

Variable	Estimated coefficient (standard error)
Constant	3.589*** (0.259)
Shortages	-0.401** (0.187)
Foreign	-0.085 (0.136)
Technology	0.148 (0.123)
Manufacture	0.618*** (0.229)
Export	0.004** (0.002)
Firm age	-0.002 (0.003)
Large	-0.129 (0.120)
Small	-0.014 (0.133)
Man_exp	-0.008* (0.005)
Inno	-0.045 (0.103)
EU	-0.579*** (0.157)
GDP_gr	-0.038** (0.018)
Y2013	0.007 (0.214)
Y2019	0.173 (0.227)
N	1854
F(14, 1839)	4.7***

Source: Authors' estimates

Note: Standard errors in parenthesis. *** significant at 1%, ** significant at 5%, * significant at 10%

relatively short period, where the productivity levels have not returned to the pre-2009 levels crisis for some firms. Pandemic brought severe disruption both in the skills creation process and firms' operations. The establishment of future trends in the post-pandemic period is still elusive. This would imply that perception of skills shortages could have significant consequences for firm performance even in the longer term. This issue does deserve to be investigated further to be able to derive proper policy recommendations.

Clearly, our indicator of skills shortages depends on the subjective perceptions of the managers. The perceptions could have been formed under specific country conditions, which could influence the comparability of the results across the analyzed countries. However, by adding additional factors into the estimation of perceived skills shortages, we believe we have overcome the problem of subjectivity that is often addressed in the literature. In addition, due to already mentioned constraints in measuring firm productivity, our finding that perceived skills shortages negatively affect productivity should be taken with a "grain of salt".

5 Conclusion

The paper is focused on firms' perceptions of skills shortages in post-transition countries of Central and Eastern Europe. Based on the panel dataset from the EBRD and World Bank Enterprise survey for 2009–2019, we propose a new indicator of

perceived skills shortages and estimate it for 14 CEE countries. We establish that the extent of perceived skills shortages differs across the analyzed countries, partially related to their economic structures and other labour market characteristics.

The main contribution of this study is in understanding factors that contribute to the perception of skills shortages in these countries. The research findings indicate that it is determined by firm size, innovation activity as well as labour taxation and share of labour force with high education. Therefore, our results confirm previous firm-level findings, which are particularly important for post-transition economies with relatively low innovation activity and rigid economic structures.

We additionally establish a negative relationship between perceived skills shortages and firm-level productivity. Although this can be expected for certain sectors in specific countries, our results suggest that this relationship is valid for post-transition economies as a group.

The literature usually finds that skills shortages are limited in specific periods because the economy adapts, either by wage-setting mechanisms or by structural changes. This does not imply that every vacancy will be filled; rather long-term consequences such as the decline of certain economic activities can be expected. However, our estimates are based on the post-financial crisis pre-pandemic period data and are followed by enormous market disruptions. Though the patterns emerging in the post-pandemic period will likely be different, our results do not suggest solid human capital foundations in the pre-pandemic period.

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How Hybrid Learning Can Enhance the Student Experience and Teaching Outcomes in the Wake of COVID-19: A Case Study of a Business School in the United Kingdom



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Abstract COVID-19 is reshaping the delivery of higher education on a global scale. With universities closing their campuses, online and remote learning has become a necessity. This article reports on the research findings on various initiatives taken by a business school in the United Kingdom to support hybrid learning. The initiatives were underpinned largely by a Community of Inquiry (CoI) framework to enhance student learning experiences and outcomes. Using a case study design, data was gathered from a variety of sources, including a university-wide survey, accounts of lecturers' experiences, and the case school's social media and other online sources. The significance of this study is that it explores specifically how to create a collaborative community of inquiry in a hybrid learning environment and articulates the major challenges of using the CoI framework to achieve positive learning experiences and outcomes in these challenging times. The findings suggest that communication, empowerment, and technology are the key enablers that drive and support the implementation of CoI's three core elements: cognitive, social, and teaching presence. The findings also demonstrate that engagement, well-being, and technology issues are the biggest challenges for hybrid learning and CoI in the wake of COVID-19. These challenges go far beyond academic and pedagogical boundaries, and thus, warrant future investigation.

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1 Introduction

The scale of the impact and disruption of COVID-19 on every sector of the economy and society is unprecedented. COVID-19 is reshaping the delivery of higher education on a global scale, with many universities closing their campuses. The pandemic has proven that academia is anything but impervious to change after moving to teaching online almost overnight (Times Higher Education, 2021). Online or remote learning has therefore become a necessity. Studies show that several factors affect students' learning experiences and outcomes during these exceptional times. Findings reveal that, apart from technology and resource issues, staff readiness, confidence, student accessibility, and motivation are critical to hybrid learning (Ali, 2020; Crawford et al., 2020; Gnaur et al., 2020).

The purpose of this article is to report the research findings on various initiatives taken by a business school in the United Kingdom to support hybrid learning in the wake of COVID-19. The initiatives were underpinned largely by Garrison et al.'s (2001) Community of Inquiry (CoI) framework to enhance student learning experiences and outcomes. The framework constitutes three overlapping elements essential in the educational process, namely, cognitive presence, social presence, and teaching presence. It is a collaborative constructivist approach in terms of its philosophical premise. In a community of inquiry, deep learning occurs through the interaction of these three presences.

Although research has shown that hybrid learning poses significant challenges to teaching and learning in terms of creating a learning community (Pinto & Anderson, 2013), and the COVID-19 pandemic led to a significant uptake in the use of hybrid learning methods in business schools around the world (Krishnamurthy, 2020; Potra et al., 2021). Researchers have not thoroughly considered that the emergency hybrid learning environment for business schools in the United Kingdom was not a well-planned premeditated shift and all three overlapping elements of the CoI in the educational process, namely, cognitive presence, social presence, and teaching presence were affected rapidly.

Therefore, there is a need to understand how CoI evolved in the context of COVID-19, a unique event in human history. This study explores how a collaborative community of inquiry in a hybrid learning environment evolved as a result of the COVID-19 pandemic, and what were the major challenges of using the CoI framework to achieve desired learning and outcomes in a learning environment during this difficult time. Also, it theoretically explores what enables the interplay of the three core elements of CoI in a business school during a global pandemic. The research findings contribute to a better understanding of the dynamics and complexity of the changing scenario of higher education in the wake of COVID-19. It also helps advance the CoI literature by placing the CoI framework in the context of COVID-19 to explore its applicability.

The remainder of this paper is organized as follows. The next section discusses the key literature on the CoI concept and framework, and hybrid learning in the context of COVID-19. The paper then describes the research design, data collection, and analysis. After that, the findings are presented and discussed before we draw the paper to a conclusion.

2 The Community of Inquiry Framework

Based on a collaborative constructivist perspective of education, the integration of personal reconstruction of experience, and social collaboration, Garrison et al. (1999) developed a Community of Inquiry (CoI) framework. The CoI framework has three core elements: social, cognitive, and teaching presence. Social presence is the ability of participants to identify with the group, communicate purposefully in a trustful atmosphere, and develop inter-personal connections through the projection of individual personalities (Abbitt & Boone, 2021; Akyol et al., 2009).

Cognitive presence is the degree to which students can conceptualize and confirm meaning through sustained thought and dialogue (Chang-Tik, 2018; Garrison et al., 2001). Cognitive presence is a practical inquiry exemplar that consists of four phases: triggering event, exploration, integration, and resolution. Social presence supports cognitive objectives through its ability to prompt and maintain critical thinking in a community of learners (Garrison, 2011). There are three categories of social presence: affective expression, open communication, and group cohesion (Akyol et al., 2009). Ultimately, teaching presence is the focus of educational social and cognitive processes to reach academically worthwhile learning outcomes (Cleveland-Innes, 2019).

The CoI framework delivers structure and direction to the complexities of hybrid learning and provides results that are valid and reliable (Stenbom, 2018). The philosophical premise of the framework is a collaborative constructivist approach to teaching and learning that is composed of educators and learners (Akyol et al., 2009; Cleveland-Innes, 2019). When this model is applied to a faculty development context, the focus of cognitive presence becomes an inquiry into teaching practice (Abbitt & Boone, 2021; Vaughan & Garrison, 2006). The ability of the community to support and sustain this inquiry forms a social presence (Vaughan, 2010). The opportunities for hybrid learning (face-to-face and online learning) as a result of the COVID-19 pandemic encapsulate the teaching presence as used in this paper.

The CoI framework is particularly beneficial for hybrid learning (Cleveland-Innes, 2019). The integration of the three core elements of the framework (social, cognitive, and teaching presence) ensures a holistic way of teaching and learning and enriches learning outcomes (Coemans & Hannes, 2017). The framework was also seen as a robust model for learning design and inquiry (Nolan-Grant, 2019). Furthermore, as student socio-economic conditions, cognitive styles (Koć-Januchta et al., 2017), and cognitive abilities (Kirschner, 2017) differ, it is therefore important that the community of inquirers (lecturers) agrees with the teaching methods and

learning technologies to be used when applying the CoI framework to hybrid learning (Wicks et al., 2015).

3 Hybrid Learning in the Context of Covid-19

The terms hybrid learning and blended learning are often used interchangeably but refer to the same concept. Hybrid learning, or blended learning, is known as a mixed mode of instruction, formally combining traditional face-to-face instruction and pure online learning. We use hybrid learning in this paper to refer to the mixed mode of instruction which formally combines distance learning by incorporating technology and face-to-face learning to facilitate the learning process (Olapiriyakul & Scher, 2006). We do this because the literature has shown that hybrid learning poses significant challenges to teaching and learning in terms of creating a learning community (Pinto & Anderson, 2013).

Since 23rd March 2020, when the UK Government announced a nationwide lockdown (Johnson, 2020), there have been several lockdowns and local movement restrictions in place in the form of tier systems in the UK (as of March 2021). This year, most teaching and learning activities have been conducted using a hybrid model. The COVID-19 pandemic forced educators and students to transfer teaching and learning activities online. Some researchers have hypothesized that capturing and understanding the experiences during the sudden transition to online teaching could be of particular value in rethinking university teaching from a digitized perspective (Gnaur et al., 2020). Prior studies have found that shifting teaching activities online has a different impact on different groups of students. Students with low-grade point averages perform better in face-to-face learning environments, while students with high-grade point averages perform better in hybrid learning environments (Asarta & Schmidt, 2017). Also, research shows that withdrawal rates in online lectures are higher than in face-to-face lectures and students re-taking online courses are three times less likely to be successful (Murphy & Stewart, 2017). Crucially, there is a need for support for higher education students if they are to successfully cope with the challenges of online studying (Händel et al., 2020).

4 Methods

This study takes a qualitative approach and a case study design to investigate the CoI practices in a business school in the UK, which had to adopt a hybrid learning approach in response to COVID-19. The study shows that a qualitative approach permits an understanding of people's actions, thus making it possible to analyze novel phenomena and define new categories or concepts (Dźwigoł & Dźwigoł-Barosz, 2020). The COVID-19 pandemic is an unprecedented phenomenon whose reverberating consequences are evident in several aspects of human

functioning, including but certainly not limited to social relations and learning, with the potential for a new conceptualization of hybrid or blended learning. Creswell and Poth (2016) defined a case study as a qualitative approach involving researchers' exploration of a real-life, contemporary bounded system or multiple bounded systems over time through a collection of detailed and in-depth information resulting in the generation of reports built upon case themes and case descriptions.

Data collection was done using a mix of collection tools which allowed for data triangulation. Using multiple data sources (i.e., triangulation) has the potential to improve the reliability of results (Stavros & Westberg, 2009); mitigates researchers' bias (Gorissen et al., 2013); facilitates data saturation by researchers (Fusch & Ness, 2015); and enables results to be analyzed and presented in a way that promotes understanding of the experience of a common phenomenon (Marshall & Rossman, 2016). Triangulation involves using multiple external data collection methods related to the same event whose understanding may be enhanced by multiple external analysis methods (Denzin, 2006). Consequently, triangulated data for this study came mainly from. The first set of data came from a survey of students at the university where the case business school was located from December 2020 to January 2021. The second set of data consisted of narrative reflections written by lecturers based on their interactions with students, lecturers, and other members of the business school community.¹ These narrative reflections were underpinned by happenings within and outside of the classroom (physical and virtual) between late March 2020 when the UK national lockdown took place and early March 2021 when we wrote this paper. Important information that helped lecturers' reflections included email correspondences between students and lecturers, course committee meetings, feedback from students, module feedback by students, a record of academic mentoring sessions, COVID-related communication, and unique moments in teaching sessions diarized by some lecturers. The third source of data was collected from the case business school's website, blogs, Facebook, and newsletters since the lockdown in March 2020. The qualitative design and triangulation allowed us to obtain rich data on how the business school has adopted the CoI framework to enhance students' hybrid learning experience in the wake of COVID-19.

Cross-sectional data obtained from a university-wide student survey was analyzed descriptively while lecturers' reflections and other sources of data were analyzed using thematic analysis underpinned by the CoI framework, given that CoI was widely practiced in the case business school. According to Braun and Clarke (2012), thematic analysis is an appropriate and powerful method useful when trying to understand a set of experiences, thoughts, or behaviors across a data set. Steps to undertaking thematic analysis echo those of other qualitative methodologies such as grounded theory and ethnography where coding and exploring data for themes is a common denominator. The thematic analysis adopted in this study was guided by Braun and Clarke (2006) but drew initial themes from the Community of Inquiry (CoI) coding template (Garrison et al., 1999). The CoI

¹This project has received the ethics approval from the University Research Ethics Committee.

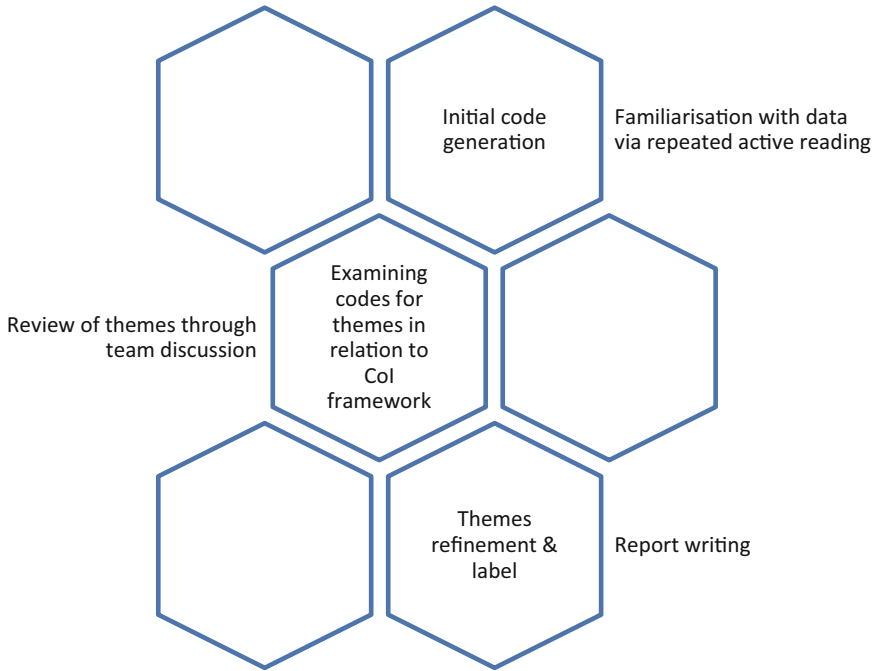


Fig. 1 Thematic analysis process. (Source: Authors own work)

framework suggests that deriving a worthy experience from education requires embeddedness in a community of inquiry made up of students and teachers who are the key actors in any educational process (Akyol et al., 2009). Hence, the unit of analysis in this study is lecturers' perception of interactions within the learning community of their business school following the move to hybrid learning in the wake of COVID-19.

Consistent with Delpont and De Vos (2011), verification of dependability to achieve reliability in qualitative data coding was achieved through co-coding by the research team. Data examination by more than one person can improve the validity of qualitative research and member checking is recommended for reliability (Büyükoztürk et al., 2015). The messy process (Miles & Huberman, 1994) of qualitative data analysis is summarized in Fig. 1.

5 Findings

5.1 Findings from a University-wide Survey

The university where the business school was anchored conducted a university-wide online survey on hybrid learning between December 2020 to January 2021. A survey

link was sent to all students and a total of 353 students responded to the survey, which accounted for around 20% of the entire student population of the university. This convenience sampling approach was used because participants were selected based on availability and willingness to take part (Etikan et al., 2016). The survey questions provided intriguing insights into students' experiences and perceptions of hybrid learning in the aftermath of COVID-19. The following provides a brief summary of the results most relevant to this study.

The survey found less than 10% of students have studied on campus since COVID-19. The top priority in hybrid learning was being able to access support when required. Reasonable expectations from lecturers, safety, and being heard were also viewed as priorities (see Appendix 1). The main challenges that students (51.7%) faced in blended learning were Wi-Fi connectivity and access. The next most mentioned challenges for students (Appendix 2) were mobile data costs and a lack of computers (22.2%). Help from lecturers (27.8%) and peers (24.6%) were the two most mentioned sources of support when online-related difficulties are encountered by students (Appendix 3). Negative learning experiences were mostly related to Wi-Fi/hardware issues (19%), absence of physical interaction (16%), and the struggle to get motivated (15%) (Appendix 4). Recommendations for improving blended delivery (Appendix 5) revealed that students wanted reliance on a single virtual learning platform (26%).

5.2 Findings from Other Sources

5.2.1 Overview: Building a Collaborative Learning Community

The case business school we studied has adopted the CoI framework in many of its courses intending to enhance students' learning experience during unprecedented difficult times. For that purpose, lecturers experimented and introduced various initiatives to help build a collaborative learning community that emphasized the integration of social, cognitive, and teaching presence. Flipped learning, emoticons, breakout rooms, and peer-to-peer assessment and learning are all popular initiatives.

- **Flipped learning.** Flipped learning is a pedagogical approach in which conventional classroom-based learning is inverted. Students are introduced to the learning materials before class and the classroom time is used to engage students in collaborative problem-solving activities facilitated by teachers (Flipped Learning Network, 2014). The pedagogical approach has gained momentum since 2015 (Karabulut-Ilgu et al., 2018). We found that the case business school used flipped learning to foster a CoI which worked particularly well in postgraduate programs such as MBA and Master's Degree Apprenticeship (MDA). By assigning students to lecture materials and presentations to be viewed at home or outside of class, flipping learning helps prioritize collaborative inquiry during class time (both online and on-campus). More importantly, flipped learning fostered social

presence and created trigger events for cognitive presence, which was facilitated and guided by the teaching presence in the form of preparing and initiating discussion topics online and offline.

- Emoticons. Another successful initiative is the use of emoticons for social presence to engage with students and peers in a virtual learning environment, such as a “chat” room. Furthermore, some lecturers used emoticons to check the welfare of students. For example, at the beginning of each class, students were asked to share an emoji to say how they were feeling on that day, given that many students preferred not to turn their cameras on. Follow-ups were made with the students showing signs of concern.
- Breakout rooms. Breakout rooms are commonly used in schools to develop CoI skills, particularly for group-based tasks. Facilitated through teaching presence, the breakout room provides students with both social and cognitive spaces to discuss and co-produce knowledge and encourage proactive and deep learning.
- Peer-to-peer assessment and learning. Students were encouraged to review each other’s work, share comments, and provide constructive feedback to their peers during the virtual sessions. This has improved the social and cognitive presence of learning and collaboration and interactivity among students. According to the lecturers who participated in this study, these initiatives have proved to be effective in CoI practices and generating positive learning outcomes.

5.2.2 Detailed Analysis: Relationships and Enablers

Our thematic analysis using the CoI template (Table 1) revealed that each of the three main themes, namely, cognitive presence, social presence, and teaching presence, has a strong association with what we have termed “enablers” in this hybrid learning context. Cognitive presence was strongly influenced by communication, social presence was shaped by empowering leadership, while teaching presence was significantly impacted by technology. Table 1 provides a snapshot of the links.

Cognitive Presence and Communication

Consistent with Lee’s (2014) submission that cognitive presence (one of the three main pillars of the CoI framework) thrives on the construction of meaning by participants in a learning community through sustained communication, we found significant evidence of the importance of communication in the move to hybrid learning in our case of a business school. Specific evidence indicates that communication is frequently at the center of most triggering events, supporting this approach to learning in this context. Observed communication dynamics revealed continuous communication through conversations that had more of a horizontal and lateral flow. The university’s central communication was triggered by the government’s guidance to UK universities on COVID-19, which had a trickling effect that gave rise to an interlocking web of communication within the business school we

Table 1 A snapshot of the links from thematic analysis

Main theme	Sub-theme	Enabler	Quotes
Cognitive presence	Triggering event	Communication	<i>It is important to provide formative feedback comments to support and encourage reading and research necessary to enhance students' cognitive presence.</i>
	Exploration		
	Integration		
	Resolution		
Social presence	Emotional experience	Empowerment	<i>I deliberately made sessions less formal to have better engagement and make students feel more comfortable at using microphones to take part in interactive activities.</i>
	Open communication		
	Group cohesion		
Teaching presence	Instructional management	Technology	<i>Requested the Technology Enhanced Learning (TEL) team's support for a briefing on recording group presentations on PowerPoint for a cohort of students to replace the in-person group presentations for one of their assessments.</i>
	Building understanding		
	Direct instruction		

Source: Authors own work

studied at. These were evident in the school's Senior Leadership Team of lecturers' communication; lecturer-to-lecturer communication; lecturer-to-student communication; and student-to-student communication. These communications were a continuous exchange of ideas that resulted in a collective construction of meaning, the implications of which may extend beyond cognitive presence to include elements of both social and teaching presence. On the communication illustrated in Fig. 2, an example of such a manifest reality is depicted:

The constant conversation was sustained within the case business school through twice-weekly online tea and coffee catch-up sessions. Also, course committee meetings with representation by students were held online. Lecturers had to quickly adapt to a lecture delivery style that found unique ways to communicate learning materials in a manner that helped students develop higher-order thinking connected with exploration, integration, and resolution. For instance, exploration through case research has become a common approach. It helps students develop the capability to connect different dots through the provision of coherent case analyses premised upon relevant course-specific frameworks at the individual or group level. As a result, they will be able to demonstrate their ability to integrate their knowledge. Similarly, their ability to link what emerges from such case analysis with contemporary issues or to make practice recommendations for resolving 'troublesome realities' in their fields has become a useful way to assess students' capability in resolving these important issues. Another aspect of communication that has helped shape students' cognitive abilities is peer feedback, which is frequently sent through chat boxes during online presentations. Synergistic interaction that entails focused and coherent student-to-student communication forms has been found to have a

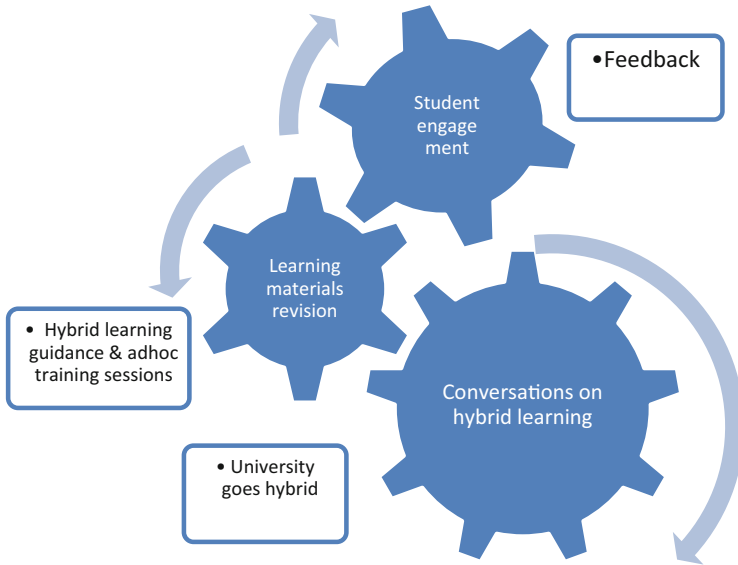


Fig. 2 Communication flows in the wake of hybrid learning. (Source: Authors own study)

significant association with higher-order thinking that finds expression as integration and resolution (Schrire, 2004; Akyol & Garrison, 2011).

Social Presence and Empowerment

Students' preference for small online class sizes emerged as one of the main recommendations for improvement in online sessions in the university-wide survey data. Social presence may be the reason for this preference. This linkage is in tandem with the finding of Akcaoglu and Lee (2016) that students perceive a higher level of social presence in terms of sociability in small group discussions. We found that creating an appropriate atmosphere that encourages and empowers students to express their emotions and experiences, accommodates open communication and facilitates group cohesion. This was particularly important at difficult times, such as the lockdown periods during the pandemic, when many students were physically separated from each other and their lecturers, resulting in isolation and disconnection from their courses. Bridging the separation requires the provision of motivation during and outside of the teaching sessions. We found that empowerment through motivation was central to the re-invigoration of the business school's mentoring program into one that proactively sought to engage with students. An academic mentor (a lecturer) demonstration of such proactive pastoral and academic support to a cohort of mentees was evident below:

I am writing to check that you are coping well with your studies and ready for your assessments (coursework submission or sitting an examination) despite recent developments in COVID19.

We found that group cohesion is generally difficult to sustain in hybrid learning, either face-to-face or in online sessions. A lecturer summed up the challenges in this way:

Poor attendance made group cohesion difficult in face-to-face sessions due to students' apprehension about the likelihood of being infected by coronavirus, as a good majority needed to use public transport. Self-isolation, increased caring responsibilities, job demands, and awareness that face-to-face sessions are live-streamed and/or recorded were other factors that made group cohesion difficult even when face-to-face sessions were available. For online sessions, the struggle for motivation, the feeling of isolation, and non-enjoyment of breakout rooms for online group work were major barriers to group cohesion.

Isolation and alienation in online learning environments are known threats to social presence (Wei & Chen, 2012) as ensuring group cohesion requires skilled crafting of content and delivery. A lecturer's attempt at improving group cohesion is summed up in the quote below.

...more short answer questions in between slides (something about every 2nd or 3rd slide) to break down the heaviness of online delivery and allow them to breathe; pose thought-provoking questions which encouraged/inspire students to think, and also speak by using their microphones. I also made sessions less formal to see if there can be better engagement and if students feel more comfortable using microphones when taking part in interactive activities...

Teaching Presence and Technology

Faced with the reality of adopting hybrid learning overnight, the case business school re-engaged with the available technology platform. These platforms were mainly two, namely Blackboard Collaborate and Microsoft Teams. Ad-hoc training sessions were organized for both lecturers and students. Every effort was geared toward elevating understanding of the technology that was central to teaching presence in hybrid learning. However, there were groans of discomfiture from certain sections of the business school. The following criticism exemplifies such a perception:

Staff was expected within a short period to design and deliver sessions for online teaching with a key expectation that online sessions should not be designed the same way as to face to face.

Some lecturers expressed their frustration when being pushed to deliver hybrid learning:

*Align session for online requirements—which were not clearly defined at the time.
Design engaging sessions- but at the stage, I was not sure how to do it as I have had none or limited previous experience of online delivery.*

Use digital tools—There was no time to practice/use some of the digital tools before the start of the delivery to build experience and make the best of it at that stage.

The importance of technology to teaching presence was also corroborated by what emerged from students' university-wide survey where WiFi connectivity or access issues were seen as a major challenge as well as the main reason for negative experience. Lecturers' understanding of technology can complement the teaching presence, as manifested in this conversation between two lecturers:

Student X contacted me this morning as s(he didn't have any other numbers. S(he) has accessed BB all semester but has tried to access the exam this morning and has received an error message which states that guests are not allowed access today and s(he) is not on the list for the exam.

The issue may be a firewall on the computer Student X was using, which prevented access to the University's system. I can confirm that s(he) now has access to the module, exam, and submission portal after changing to another computer. The issue is now resolved.

One of the lecturers' basic understanding of technology helped in offering direct instructions to a student over the phone which enabled the student to resolve a technology issue remotely simply by changing to another computer. According to the findings of the university students' survey, the top priority in hybrid learning was being able to access support when needed, and students preferred to contact their lecturers first rather than the technology team. In this regard, lecturers with a basic understanding of technology can go a long way toward improving teaching's presence in a learning community.

5.2.3 Most Cited Challenges

We found that the case business school faced many challenges in delivering hybrid learning in the wake of COVID-19 from multiple perspectives. The most cited challenges include students' engagement, well-being, and technology issues.

Engagement

One of the biggest challenges for hybrid learning using CoI in the wake of COVID-19 was engaging with students. During the period when campuses were open, there was a significant decline in the number of students attending face-to-face classes, with many students electing not to come on campus and, instead, choosing online classes. This was largely due to concerns that some students were not wearing masks after being seated in classrooms; some were close by; and some were afraid of becoming infected because they needed to use public transportation. For online classes, attendance was also an issue. Some students logged in but did not participate. Some did not like breakout rooms, especially where they were randomized, and did not know each other as they had not yet met face-to-face. One of the lecturers commented:

If you ask people [students] directly and they don't respond there could be legitimate reasons, eg a lot of students are home schooling or caring at the moment. So the approach of individually naming students to talk is unreasonable.

Well-being

We found that the well-being of both students and academics was a big challenge during the difficult times of the pandemic and, in particular, the lockdowns. Problems raised by the case business school included the isolation and loneliness that students were struggling with, especially when they were not able to be with their family members during the lockdown; the lack of privacy or being in a crowded and noisy home environment due to child care and home schooling caused by school closure; loss of confidence due to limited contact or interaction with others; mental health issues of having to cope with the strains on their personal relationships, leading to separation or divorce; not being able to enjoy the social aspects of campus life and the restrictions of lockdowns. We also found that some students had to work in unsafe settings just to pay their bills (some being the only breadwinners for the family) or had to work overtime due to staff shortages. These circumstances cause both mental and physical stress and exhaustion in the students.

The case business school has taken various initiatives to tackle well-being issues. For example, in collaboration with students from different departments, the school undertook a social isolation project to deal with isolation issues. A virtual café and digital pub were set up to enable students to meet virtually, engage in fun activities and get to know their peers across different courses. Some lecturers run weekly virtual drop-in sessions where students and lecturers catch up and chat, discussing any issues and their concerns related to their studies and lives. The school has a weekly and sometimes biweekly (twice a week) virtual coffee time where staff members can drop in and share their teaching and helping experiences.

Technology-Related Issues

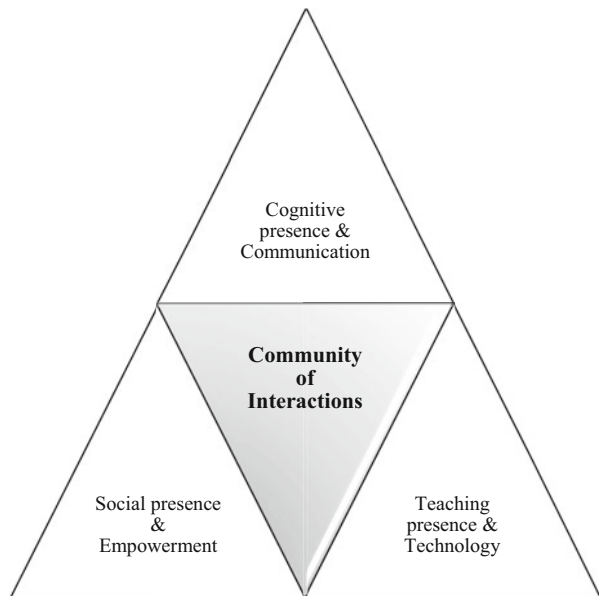
Access to Wi-Fi, poor Internet connection, PC/laptop limitations, issues with using an online library, and difficulty in getting timely IT assistance due to the high volume of calls for IT support were found in many of the lecturers' accounts of reflection. The university-wide survey also reported that mobile data costs, access to platforms and specialist software were the key challenges in hybrid learning. These issues affected not only students but also lecturers because they were not allowed access to their offices and on-campus facilities due to lockdown restrictions. One of the lecturers described his/her frustration:

As the Surface Pro screen was very faulty, an intensely flickering screen was very difficult to work with, even with a larger screen attached. Therefore, in the beginning, I also had to change my computer to a new laptop. . . It had a faulty camera and a mic, so I had to buy an external webcam. So, there was a time when it was very difficult to teach in semester 1.

6 Discussion

Findings from this case study provide insight into three main areas of applying a CoI approach to hybrid learning in the context of COVID-19. Firstly, our findings give rise to the conceptual evolution of CoI through identifying and demonstrating the important role played by specific enablers. This highlights an important area for future research experiments. The Community of Inquiry established a tripod of cognitive presence, social presence, and teaching presence, each with its own set of indicators or sub-themes. Cognitive presence is associated with triggering events, exploration, integration, and resolution; social presence is underpinned by emotional experience, open communication, and group cohesion; and teaching presence is underscored by instructional management, building understanding, and direct instruction (Garrison et al., 2001). We found that the community of inquiry was manifested in our case context as a community of interactions where cognitive presence was enabled by effective communication, social presence was facilitated through empowerment, and teaching presence was enhanced by technology. This finding, therefore, leads to the emergence of what can be regarded as a unique strand in the evolution of the community of inquiry as a practice concept. We term this the “community of interactions” (See Fig. 3). Learning community thrives on interactions. The interactions between people are essential, but the triads of communication, empowerment, and technology should be given their due attention in a hybrid learning environment. This could be an important way to ensure that harmony is secured in the interplay between cognitive presence, social presence, and teaching presence, which fosters a vibrant hybrid learning environment where people (mainly

Fig. 3 Community of interactions framework.
(Source: Authors own study)



students and lecturers), processes (teaching and learning), and resources (e.g., technology, classrooms-online and offline) work together to generate optimal outcomes for every member of a learning community.

Secondly, building a collaborative community of inquiry in the context of COVID-19 requires pedagogical endeavors in experimenting with different methods to achieve desired learning outcomes. As shown in the case study, flipped learning, emoticons, breakout rooms, and peer-to-peer assessment and learning have been used for that purpose and they have helped improve students' learning experiences. These methods have been perceived as effective in dealing with a variety of challenges facing students in hybrid learning discussed in this paper. However, it should be noted that what works in one case may not work in others. For example, we found that flipped learning in a hybrid context works better in postgraduate courses where the majority of students are mature and working professionals. In terms of outcomes, one lecturer commented:

However, satisfactory feedback was received from the students on this approach to delivery. Groans of discomfiture emerged from some who felt group work was not working well for them when sessions were held online.

This juxtaposition of realities for students is consistent with various submissions that cognitive styles (Koc-Januchta et al., 2017) or cognitive abilities (Kirschner & van Merriënboer, 2013; Kirschner, 2017) differ. The challenge of balancing the needs of students with different cognitive abilities appeared overwhelming for some lecturers in the case of a business school when hybrid learning was first adopted. The lecturer's frustration at trying to get it right was evident:

I have tried different teaching strategies and tools, but engaging students was not an easy task to achieve as they had different expectations and difficulties.

Therefore, it is important to acknowledge the difference in students' experience across different disciplines (Wicks et al., 2015) and then contextualize good practices with one's own expertise. Furthermore, change comes with varied realities for different actors. What changing to a hybrid delivery model means for a student may not be the same as what it means for a lecturer. It is also likely to be different from one student to another.

Thirdly, as shown in the case study, the major challenges of using the CoI framework in hybrid learning in the wake of COVID-19 go far beyond the pedagogical aspect. Both lecturers and students have been dealing with the impact of COVID-19 on their lives, both personal and professional. As found in this study, students' engagement, well-being, and technology issues often transcend learning and teaching. Overwhelming pressure from a mounting workload, online new learning technology anxiety, and fear of personal safety related to COVID-19, compounded with family and personal commitments, have taken their toll on lecturers' mental and physical well-being. A variety of emotional or psychological issues emerged in the reflective accounts of lecturers in the case business school. The outbursts of emotion that come with a cry for help require support, empathy, and leadership. Discernment is important for understanding that the lecturer's role in

such an instance is more to do with pastoral rather than academic. However, it is worth appreciating that the nature of the trigger for the adoption of hybrid learning (i.e., a pandemic) may be such that time has become a luxury in the face of the challenges confronting society in general and face-to-face learning in particular. Therefore, proactivity rather than reactivity is central to applying CoI when delivery involves an online learning community.

7 Conclusion

This study may have made an important theoretical contribution to CoI through its community of interactions framework. However, there is a need for a better understanding of the exact nature of the dynamics of such interactions. While this study may have explored some aspects of such interactions, it cannot lay claim to providing intrinsic details around such dynamics. Future development of our community of interactions framework will be necessary through a multiple case study design, to make explicit the dynamics inherent in these interactions. Such multiple case design may strengthen prospects for generalization if a convergence of evidence is found in multiple case contexts.

7.1 Policy Implications

The Community of Inquiry (CoI) needs appreciation within a contextual framework. There is no doubt that CoI finds a flourishing context within a learning ecosystem where the major actors are teachers/lecturers and students. These key actors are important players within a learning ecosystem that must remain dynamic and proactive in the face of change. The COVID-19 pandemic is a trigger for change that has emerged from the external environment beyond the traditional confines of a localized learning ecosystem such as our case business school. Thus, the redefinition and reshaping of contextual narratives comes with varied ramifications for not just the actors in the learning ecosystem, but also for its processes and resources. Consequently, inquiry and interactions have morphed into one to make sense of a new way of learning which manifests as hybrid learning. A reality (i.e. the new normal) that may remain an important agenda for the learning ecosystem for some time.

This new reality of learning delivery (i.e., hybrid learning) comes with various policy ramifications for those saddled with higher education policy formulation and/or higher education providers. Firstly, the nexus between learning and technology is now a lot stronger than previously imagined. Technology must be seen as a critical success factor in educational provision. Harnessing the benefits of technology for learning will not just be about pouring heavy investment into the acquisition of learning technology or technological platforms. It will also be about investment in

the training of learning ecosystem actors (i.e., lecturers/teachers and students) who will have to engage with such technology. Secondly, hybrid learning will not reduce the need for pastoral support within a learning ecosystem. Rather, it is likely to increase its relevance. Technology is no substitute for social engagement, but educational providers must find ways to sustain social interaction through leveraging technology in a new climate of educational delivery where direct personal contact may have been reduced, but it has gained even more practical significance. Hence, the need for psychological or emotional support to be accorded priority. Thirdly, the rise of mental health and well-being issues to even more prominence on the learning agenda in a post-pandemic hybrid learning environment will require lecturers/teachers to be appropriately equipped to cope with managing their own well-being and supporting their students in this respect. Promoting a collaborative community where connectedness is deliberately encouraged may help secure the emergence of a culture in which the welfare of all is a top priority for every member of any learning community.

7.2 Contributions and Future Research

This study primarily makes two contributions: (a) it helps better understand the key issues and challenges facing hybrid learning and building a collaborative community of inquiry in an unprecedented time of COVID-19, and (b) it advances the CoI framework by identifying and capturing the enablers that drive and support the three core elements (cognitive, social, and teaching presence) and their interdisciplinary interactions. The dynamics and complexity following the dramatic shift from face-to-face to hybrid learning in the wake of COVID-19 discussed in this paper highlighted the need for more empirical studies on various issues concerning the learning environment involving not only learners/lecturers and the physical and virtual environments, but also learning technologies. We hope that this study paves the way for further inquiries to come. On the positive side, COVID-19 is a catalyst for change as it is transforming the way teaching and learning activities are undertaken. Hybrid learning is and will be here to stay.

Appendix 1: Top priorities for students when studying online

Priority	Percentage (%)
Accessing support	54
Reasonable learning expectation	52
Safety	52
Being heard (Students' voice)	42

Source: Authors own work

Appendix 2: Online learning challenges

Challenge	Percentage (%)
Wi-Fi connectivity/access issues	51.7
Mobile data cost and no computer	22.2
Specialist software	15.5
No private workspace	10.6

Source: Authors own work

Appendix 3: Source of help with online learning difficulties

Source of help	Percentage (%)
Lecturers	27.8
Peers	24.6
Online resources	19.0
Friends & Family	15.1
Library staff	5.6
IT staff	4.8
No help needed	3.2

Source: Authors own work

Appendix 4: Most negative aspect of online learning

Aspect	Percentage (%)
Wi-Fi or hardware issues	19
Absence of physical interaction	16
Struggle to get motivated	15
Poor content and lecturers' response time	12
Blackboard's use/switching with Teams	10
Dislike for online learning	7
Others	14
None	7

Source: Authors own work

Appendix 5: Students' recommendation for improving quality of delivery

Recommendation	Percentage (%)
Use one virtual learning platform	26
Interactive and engaging lectures	17
Short, recorded, and subtitled lectures	16
Smaller class sizes/more 1:1	16
Provide hardware loans	9
Others (including digital skills training for students)	16

Source: Authors own work

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Part III
Eurasian Business Perspectives:
Management

Knowledge Management in a Political Context: A Case Study About the Members of the German Bundestag



René M. Mittelstädt

Abstract This paper investigates how Members of the German Bundestag manage their individual knowledge relevant for policy making, using original data collected in a standardized quantitative online survey in early 2021. About five percent of the 709 Members of Parliament from all seven parties currently represented responded, granting a first insight into a western parliament. The main points of the survey dealt with the prior knowledge of the MPs, their familiarization phase, the support from the parties and the parliamentary administration and the organization of the MPs' offices. The results support earlier research which stated that knowledge in parliaments tends to be tacit, informal, and not recorded. Only 37 percent of the MPs felt well prepared for their future tasks when they took office. Only 25 percent received an orderly handover by their predecessor. Accordingly, 97 percent of those questioned agreed with the thesis that loss of knowledge within parliament is a major problem. I conclude that knowledge is not systematically archived and evaluated in current politics. This is a disadvantage, especially for inexperienced MPs. Building on this, I discuss a first proposal for a political knowledge management model.

Keywords Crisis management · Data · Knowledge management · Members of Parliament · Policy making

1 Introduction

Pointing out the relevance of knowledge in today's information society seems trivial. Despite knowledge being mentioned as a power factor—of minor importance, though—by early scholasticism (García, 2001) and political philosophy (Hobbes, 2012), economic theories long neglected its role and focused primarily on classical factors of production like land, labor, and capital (Smith, 2020).

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In the mid-1990s, Nonaka and Takeuchi (1995) developed their theory of knowledge creation based on the example of Japanese companies. Alongside other authors' work, this was the beginning of systematic knowledge management as an economical discipline. Aiming to understand and improve the strategic use of knowledge within enterprises, knowledge management developed a broad range of models and approaches and appears to be indispensable in modern business management, as various companies have begun to install chief knowledge officers (Sukumaran et al., 2012).

Drawing the conclusion that knowledge furthermore plays an essential role also and in particular within the political system should be a self-evident fact. Politicians, public administration and governments are in continuous need of current information (e.g., demographic trends, tax revenue, demoscopic data towards public opinion, etc.) for situation analysis and decision-making (Felföldi & Donoso, 2012).

It is therefore surprising that both economic and political science in the western world have long ignored this subject. The current existing literature focuses mostly on marginal aspects, like specific policy fields (Fuhr & Gabriel, 2004), local municipalities (Martin, 2003) or public administration departments (Kasim, 2008), but leaves many interesting and urgent questions unanswered. Parliaments in particular would represent an insightful study field as the key institutions of a democratic system, since they are characterized by sophisticated, knowledge-intensive duties as well as having high fluctuation due to the variety of elections, which often results in the election of inexperienced politicians or deselection of long-term parliament members respectively (Coghill et al., 2008). To make matters worse, one cannot assume that MPs will share their knowledge with their political competitors (Cong & Pandya, 2003).

While there are several studies from primarily Asian countries, the research situation for Europe is extremely thin. I am currently aware of only one previous study on the Finnish Parliament (Mustajärvi, 2003). Nevertheless, most approaches fail to consider the unique structure of parliaments, as they focus too much on administration structures, and do not pay enough attention to, for instance, the difference of government and opposition groups or the de facto independence of MPs. Considering the increasing number of crises in even shorter intervals (ecology, economy, demography, migration, terrorism, nationalism, etc.) that MP have to deal with, the value of knowledge and the need for a more sustainable use within the political system is obvious (Cong & Pandya, 2003).

This paper starts by contributing to the understanding of how parliaments and their members collect, use and archive their personal knowledge in terms of policy making. Constituents are increasingly expecting representatives of parliaments to respond quickly and accurately. Similarly, the amount of information accessible to MPs, most of it unsolicited, does not always increase the quality of information retrieval, appraisal, or usage (Orton et al., 2000). The presented case study will focus on the German Bundestag. Acting as the national parliament since 1949, initially only for the western part of the country and after reunification for all of Germany, the Bundestag together with the Bundesrat—representative chamber of the federal states—makes up the legislative branch of the Federal Government. Currently, the

19th Bundestag has a total of 709 members from seven political parties, making it the largest Bundestag to date.

My empirical analysis is based on original survey data collected from currently active MPs in early 2021. I would like to emphasize that my results are neither representative for the Bundestag nor politicians in general. Nevertheless, to the best of my knowledge this is the first time that such research has been conducted, so it can provide valuable insights into the policy making processes. Given the leading role of Germany and its Parliament within the European Union, a high degree of professionalism on the part of MPs can be assumed. A systematic knowledge management, however, seems rather unlikely.

My results presented in this paper support the theses. Just a quarter of the MPs questioned said that they had already dealt specifically with KM, while another quarter had never done so. At the same time, around 97 percent agreed with the thesis that loss of knowledge, especially in the event of personnel changes, is a major problem. Unsurprisingly, knowledge work is a very important task for an MP, requiring more than 10 h per week. My survey also showed that MPs mostly do not follow a structured system with regard to their personal knowledge management. Instead, this task is delegated to personal employees. Although the German Bundestag provides professional assistance, which the Members of Parliament regularly make use of, the question arises as to whether these instruments are sufficient to carry out the core task of an MP—the legislation process and steering the government.

The following chapter briefly describes the current state of the literature. This is followed by explanations of the methodology and the data collected. After discussing the results and some suggestions for improving MPs' knowledge management, I draw my conclusions in chapter five.

2 Literature Review

2.1 Theoretical Background

“Knowledge is power”—This expression, allegedly coined by the English philosopher Sir Francis Bacon (1561–1626), is enjoying great, almost inflationary, popularity today. Regardless of whether it is in science, economics, or private life, the value of knowledge is enormously valued in today's knowledge and information society. However, it took several centuries for this modern understanding to take hold.

In fact, there is no known occurrence of the precise phrase in Bacon's English or Latin writings. However, the expression “*ipsa scientia potestas est*” (“knowledge itself is power”) occurs in *Meditationes Sacrae* (Bacon, 1996), although the concept of knowledge used here did not yet correspond to our modern understanding. In his early work, Bacon referred to the power of God, of which knowledge is one aspect. In fact, Bacon was not concerned with the technical knowledge of an individual, but

with man's rule over nature, since progress in his understanding is linked with a certain purposefulness that makes life easier for people and, at best, makes them happy (Vickers, 1992). According to his credo, man must be independent of nature and therefore know the rules and laws, but only the application of science enables them to do so (Leonhardt, 2016). The first known reference of the exact phrase appeared in the Latin edition of *Leviathan* by Thomas Hobbes (2012), when he listed attributes of man which constitute power; although, knowledge is still given a minor position. It was not until 1976 that Foucault gave a detailed and dedicated understanding of the connection between knowledge and power (García, 2001).

One may rightly object that despite the lack of a philosophical theory, the strategic value of knowledge was always relevant throughout history. This paper does not, of course, claim to be a complete philosophical-historical analysis. However, the previous explanations should have proven that knowledge as a resource has not had the attention it deserved until the late twentieth century (Boltmann & Bankole, 2017). Since the 1970s, global transformations have been observed in economic structures that are directly related to the rapid development of information technology, and trigger profound changes in almost every area of life. Informatization, internationalization, and individualization are the drivers of social structural change in the direction of a knowledge society (Hasler Roumois, 2013).

2.2 *Economic Discipline*

The concept of managing knowledge is not new. In fact, organizations have always used knowledge management practices, although not in a deliberate and systematic way (Cong & Pandya, 2003). A first methodical approach of managing knowledge started in the 1990s, when companies began to implement chief knowledge officers (Bennet & Neilson, 2004). Scientific research began in parallel and led to the creation of today's economic discipline.

So far there is no uniform definition. Davenport and Prusak (2006, p. 4) define "knowledge as a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides an environment of and framework for evaluating and incorporating new experience and information. It originates and is applied in the minds of "knowers." In organizations, it is often embedded not only in documents repositories but also in organizational routines, processes, practices and norms." In terms of KM, this paper will use the following definition based on the analysis of Girard and Girard (2015) of existing approaches: Knowledge management is the process of creating, sharing, using and managing the knowledge and information of an organization.

Out of the great number of studies, the work of Nonaka and Takeuchi (1995) deserves special mention, in which they developed their theory of the knowledge spiral (SECI), using the example of Japanese companies. Building on Polanyi (1958), they propose a model that incorporates a spiraling interplay between explicit and tacit knowledge, with four dimensions: Socialization, Externalization,

Combination, and Internalization (SECI). Knowledge is extracted from implicit knowledge to create explicit knowledge, and explicit knowledge is re-internalized into implicit knowledge in this approach.

Another recognized approach comes from Probst et al. (2012), who see knowledge creation not as a linear, but as a continuous improvement process, symbolized with an inner and outer circle of eight building blocks. Third, the work of Davenport and Prusak (2006) shall be pointed out without making a claim to be exhaustive. The authors categorize knowledge work into four sequential activities—accessing, generating, embedding, and transferring—and present a practical approach to cataloging and storing knowledge. What all approaches have in common is the recognition that knowledge is a valuable resource that represents the key success factor of “lasting competitive advantage” (Nonaka, 2007, p. 162).

2.3 Public and Political Sector

While much of the literature focuses primarily on knowledge management in the private sector, there are currently several case studies and approaches looking at the public sector as well. As the so-called New Public Management reforms—which emerged in the early 1980s in an attempt by the conservative government in the UK to increase public services efficiency by using private sector management models—progressed, the awareness of the benefits of knowledge managing grew (Cong & Pandya, 2003). However, the differences in structure and tasks between the economic and public sectors do not allow a simple transfer of KM measures (Hasler Roumois, 2013).

Unfortunately, there is no general overview of knowledge management in the public sector so far. Given the enormous need for knowledge in public institutions driven by today’s information society, globalization and crises of all kinds (Wengelowski, 2004; Cong & Pandya, 2003), it appears extremely advisable to conduct more research in this field. But instead of continuing to focus on public administration institutions, this paper will concentrate on parliaments to fill a long-neglected research gap. This is surprising as parliaments, by virtue of their constitutional mandates and functions, are intensive information resource organizations. To fulfill their core roles within legislation and governmental control, information and knowledge are at the core of their business processes (Boltmann & Bankole, 2017).

Although some promising case studies primarily focusing on Asian countries have been published in the last 10–20 years, these often fail to discuss or even properly realize the unique structure of parliament administrations, parliamentary groups and Members of Parliament (Gaffoor & Cloete, 2010). First of all, a parliament or its members are not a homogenous group, but separated—sometimes even shattered—into various sub-groups, including government and opposition, coalition fractions, regional or sociological groups (Rudzio, 2015).

There is no comparable professional equivalent where a group of people from various backgrounds and with vastly variable skills are expected to perform difficult new tasks with no prior professional or educational training (Orton et al., 2000). In addition, the access to and the need of knowledge differs widely depending on which group an MP belongs to. There are institutions installed within most parliaments, such as libraries or research and documentation services, but these facilities normally use public information only. As Ahamed, Amarakoo and Senevirathne (2015: 4) point out, “knowledge in Parliaments tends to be tacit/informal and not recorded.” In addition, MPs vary considerably in terms of their professional background, so neither the awareness of the importance nor the ability to manage knowledge can always be expected. Furthermore, it appears unlikely, that MPs would be willing to share their knowledge with their colleagues or the public, since politicians are constantly fighting for their re-election (Esaiasson & Holmberg, 1996).

Facing the ever-growing need for information and fast decision-making as a result of globalization, demographic change, and crisis situation (Cong & Pandya, 2003), the need of parliaments and their members for proper knowledge management is obvious. A variety of circumstances might drive an organization to develop a formal and systematic knowledge management system. These include the desire or need to: (a) get a better understanding of how the organization operates; (b) save time and effort searching for information and documents; (c) minimize mistakes and needless duplication of labor; and (d) reduce the time it takes to respond to questions (Ahamed et al., 2015). As the work of Willis (2018: 486) shows for climate policy, the ways in which the politicians approach complex topics “is Influenced by their understanding of scientific evidence, but also by their professional identity, their concept of their role as a representative, and the way they navigate the day-to-day realities of life as an MP.” I therefore argue that the quality of information feeding into and impacting on the decision-making process is very important in ensuring that informed and effective government can take place (Orton et al., 2000).

In 2002, the Finnish Parliament Committee for the Future published the pioneering book “Developing and Implementing Knowledge Management in the Parliament of Finland” that emphasizes the importance of knowledge management for democracy and economic growth, while proposing a knowledge management strategy for the legislative context (Felfoldi & Donoso, 2012). A few years later, the Federal Government Plan (PPA) 2004–2007 presented by the Brazilian Government included a program for Knowledge Management, obliging all federal policies to implement e-gov procedures, such as inter-institutional learning networks, strategic approaches to information and the use of information technology (Mendes et al., 2004). One of the first comprehensive studies was carried out by Mingmitr (2016) on the Thai Parliament in 2016, where he applied various success factors for good KM mentioned in the literature to the Thai parliament.

So, while more and more state parliaments are recognizing the importance of KM, such studies for the German Bundestag have so far been completely unavailable.

3 Methods and Data

3.1 The Sample

The election to the 19th Bundestag on September 24, 2017, resulted in the election of the largest parliament to date, with 709 members. Because of the current 299 constituencies, the minimum legal number of MPs is 598, but due to the system of overhang and equalization seats, the given number was reached (Jesse, 2018). Seven parties are currently present in the Bundestag, for which at least 5 percent of the votes is required. The two conservative parties, CDU and CSU, form the government together with the social-democratic party (SPD). The Greens, the socialist Left Party, the classic-liberal FDP and the as yet unrepresented right-wing AfD form the opposition. Seven MPs left their parliamentary groups in the course of the legislature and are solo representatives. In addition, several members left for personal and/or professional reasons. The mandates were taken over by successors. The distribution of the seats is shown in Table 1.

The target population of my survey are all active Members of the German Bundestag ($n = 709$). At the end of January 2021, I personally wrote to all members of parliament by email and asked them to participate in my survey. Two weeks later, I sent a reminder to the selected MPs with whom I had personal contact before. Participation was of course voluntary and absolutely anonymous. By the end of February, I received 35 replies, which corresponds to a share of 4.94 percent. On average, the questionnaire was answered to 86%. Given the low response, I decided not to rule out any responses. Nevertheless, this is clearly poor and has to be kept in mind when drawing conclusions from the data. To get a sense of how representative this survey is, I compared the composition of my sample with official statistics. The relationship of membership can be found in Table 2.

For reasons of capacity, many socio-demographic queries, such as gender, were omitted. Only the level of education is seen as relevant for personal knowledge management. 60 percent of the participants ($n = 21$) stated that their highest degree was academic. Another 20 percent even have a doctorate ($n = 7$). This coincides with the fact that more than 80 percent of all members of the Bundestag are academics (Sperber, 2019; Deutscher Bundestag, 2021b).

Table 1 Distribution of seats in the 19th electoral term

Party	Votes	Seats
CDU/CSU	32.9	246
SPD	20.5	152
AfD	12.6	88
FDP	10.7	80
The left party	9.2	69
Alliance 90/the greens	8.9	67
Independent member	–	7

Source: Deutscher Bundestag (2021a)

Table 2 Relationship of party membership to election result

Answer choices	Responses	Election results
CDU/CSU	37.14%	32.9%
SPD	14.29%	20.5%
Die Grünen (greens)	5.71%	8.9%
FDP	14.29%	10.7%
Die Linke (the left)	8.57%	9.2%
AfD	17.14%	12.6%

Source: Deutscher Bundestag (2021a)

Given that the topic is in no way controversial or ideological, it cannot be assumed that the survey is not biased for any reason. Nonetheless, the very low response rate is a problem. The literature gives rates of 30–50 percent (Baruch & Holtom, 2008). All results must therefore be interpreted with great caution. One reason for this was that many MPs refused to answer because they would receive too many scientific inquiries. Future projects should therefore concentrate on specific policy areas and the experts working in them. Even if my results agree with the previous assumptions in the literature, this is certainly a weak point that must be corrected in later runs (Nulty, 2008).

3.2 *Online Survey*

To carry out the survey, a standardized online questionnaire containing 25 questions was created using the Survey-monkey website. The evaluation was also carried out on it. The overall research question of this study was: How do Members of the German Bundestag collect, use, and archive their personal knowledge in terms of policy making? Several hypotheses were put forward to answer this question, like for instance.

1. There is no uniform knowledge management system in the German Bundestag.
2. Loss of or insufficient access to knowledge is a problem in Parliament.
3. There is insufficient induction when taking up new positions.
4. Responsibility for KM is not clearly delegated within parliamentary offices.
5. KM is mainly done using standard computer programs.

These theses correspond to the literature, as the assumptions are that although knowledge is recognized as a strategic asset in Parliament, it is mostly shared in an unstructured, informal manner and not linked to the strategic goals of Parliament (Boltmann & Bankole, 2017).

The questionnaire started with a simple icebreaker question, whether MPs have ever dealt with KM. Only 25.7 percent of the participants answered that question with yes, another quarter replied “a little bit.” The further course of the survey was divided into four categories. In doing so, I orientated myself on the categories commonly used in literature. For instance, Boltmann and Bankole (2017) referred

to KM leadership, KM Process, People and Culture, Technology (ICT), KM Practice, Learning and Innovation and KM Outcomes. Building on that, I use Ahamed et al.'s (2015) approach of five steps of implementing a KM system in parliament, consisting of the overall mission, a knowledge audit, defining a strategy, developing a plan and—this not used here—evaluation.

The first part of my questionnaire dealt with the personal experience on assuming office. My goal was to find out to what extent MPs were prepared in terms of their knowledge for their new parliamentary tasks, and how they were supported by Parliament. Second, I focused on the selection of the MP's personal staff and the way they are included in the knowledge managing processes, assuming that staff members have a rather important role here. The third question category deals with the actual processes around knowledge management and how Members of Parliament obtain, use and archive data and information, respectively. The last part of the survey concentrated on the support offered by both parliament administration and the respective parliamentary groups. Although it was not in a separate category, the subject "learning" was always included implicitly.

The original plan was to conduct several expert interviews in order to supplement the quantitative results with qualitative results. However, due to the corona pandemic, this has not yet been possible and should be made up for in the further course of research. All results should therefore be seen as preliminary. One clear limitation of this study is that only cross-sectional data was collected (Andreeva & Kianto, 2012).

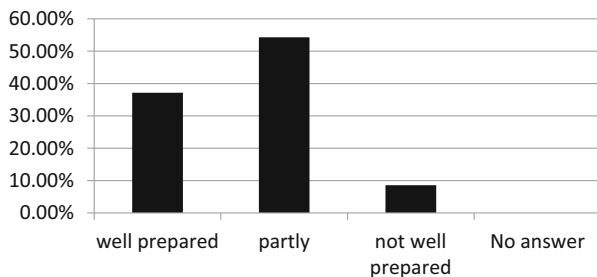
4 Results and Discussion

4.1 Knowledge Management by German MPs

Almost 80 percent of the participants agreed with my thesis that knowledge in parliament is largely implicit. This also coincides with statements from the available literature (Boltmann & Bankole, 2017). The statement that the departure of elected officials and employees carries a great risk of loss of knowledge was even agreed by 97.1 percent of the questioned MPs. Thus, the general assumption that KM is important but overall insufficiently dealt with topic within the Bundestag can be seen as confirmed.

Since the job of a politician has no clear job description (Loat, 2011), a very high work load in a comparatively short time period (in the case of the Bundestag, 4 years) and a correspondingly high pressure to achieve re-election, I see a high tendency for MPs to become lone fighters. The German system could reinforce this, because although members of parliament are subordinate to a higher parliamentary group hierarchy, according to the constitution, they are ultimately only responsible to their conscience (Patzelt, 1998). Therefore, well-structured and sustainable knowledge management would be even more important. A look at the collected data supports these assumptions insofar as each MP is solely responsible for his/her

Fig. 1 How well prepared did you feel when you started your parliamentary work?. (Source: own dataset)



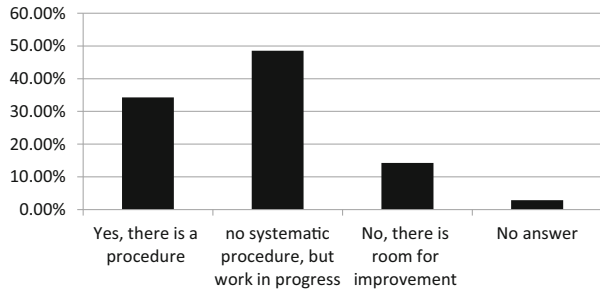
knowledge management. Ethnographic research of Parliament and government shows that Members of Parliament spend their days in a fast-paced blur of meetings, actions, and reactions (Willis, 2018). Nonetheless, there are offers of support from the Parliament and the political groups, which I will come back to below.

The extent to which the MPs are familiar with the overarching subject area is also of decisive importance for the quality of decisions. In fact, the majority of MEPs had already dealt with their current political areas of expertise before they began their work. For example, 67 percent did this as part of their training, and 77 percent as part of honorary positions. A little more than 54 percent of the participants got their wishes completely fulfilled when appointing the committees. Only 2.8% had to familiarize themselves with completely new policy areas. Accordingly, about 37 percent felt well prepared when they first came into office, as Fig. 1 demonstrates, but that should not hide the fact that more than 60 percent felt bad or only partially prepared. Interestingly, the variable of party membership does not have an effect on this question.

The starting position when taking office can therefore be viewed as mixed at best. To make matters worse, the process of handing over offices appears to be in great need of improvement. About 25 percent received a satisfactory handover from their respective predecessors, while three quarters were either unsatisfied or partly unsatisfied with it. In terms of content, these transitions were also often characterized by oral discussions (51%) and offers of help (58%). A mere 20 percent received data such as address directories. On the other hand, the takeover of employees was of relatively great importance with just under 43 percent. This was a first indicator that staff play a key role in knowledge management.

When it comes to the ways of gathering data and information, the survey has mixed results. As expected, traditional media are among the most popular information sources with 85.7 percent, while academic literature is only used up to 65 percent. The most widely used source of knowledge is one's own parliamentary group or party, at 94.3 percent. This corresponds with current research, because although Members of Parliament often portray themselves independent and autonomous actors, they usually belong to an established party and are not fully independent. The working lives of MPs "represent, therefore, [a] collaborative endeavor" (Orton et al., 2000, p. 216). Another very important thing to note here, at 80 percent, is the personal staff.

Fig. 2 Preservation of knowledge in the event of staff changes. (Source: own dataset)



Regarding the main functions of knowledge management, Mustajärvi (2003) lists, among others things, organizing personal work, structuring databases, email organization, paper document archives, and improving cooperation within the MP’s team. This theoretical concept can also be found in practice, but there does not seem to be a uniform procedure. In the long term, it could also be problematic that around 45 percent still primarily use analog archives. Only 11 percent pass their data on to their parliamentary groups for further processing. This is regrettable, since the services of the parliamentary groups are used by up to 88 percent. As previous research on the South African Parliament has shown, many MPs lack awareness, not to mention a strategy for KM (Boltmann & Bankole, 2017). This also seems to apply to the Bundestag, because 45 percent of the respondents do not have a fixed system for updating their databases, but only do this on an ad-hoc basis when needed. Furthermore, every employee is responsible for maintaining knowledge independently. As a result, 62 percent of the MPs see a problem here, especially in staff changes, and do not have a solution yet, as you can see in Fig. 2.

Finally, here is a look at the information offered by the Federal Government, the Bundestag, and its administration. The scientific service in particular has a central role here. This is an independent department of the Bundestag which, independent of the government and parties, provides the members of parliament with scientific knowledge on request. More than 97 percent of the participants make use of it several times per month. The number of the monthly inquiries to the federal government is also very high, at around 88 percent. Forty percent of those questioned are satisfied with the government’s responses in this regard, a fact that can certainly be explained by party affiliation.

In view of the rather long time required for knowledge work, 11.6 h on average, it can be said in summary that the need for a structured KM is certainly present. Therefore, in the next section, some considerations will follow as to how economics can provide support.

4.2 Suggestions for Optimization and Further Need of Research

Parliaments are knowledge-intensive institutions. Political ideologies, conflicts of jurisdiction, the unwillingness to share knowledge and much more can hinder the development of a corresponding knowledge culture. Boltmann and Bankole accordingly conclude their analysis, that in “there is a less-than-positive view of Parliament’s ability to create and sustain a knowledge management culture” (2017, p. 1006). Nevertheless, I am confident that economic and more specifically management science can be of assistance here. Even if the concept is not directly applicable, politicians are in a certain way managers. They are managers of their own office, managers of their technical department, and managers of their constituency.

A successful knowledge management system for decision and policy making requires a holistic approach, which minimizes the possibilities of serious cognitive or judgmental bias (Hart, 1986). Therefore, the information and computer technologies should be intensified to ensure a steady and neutral flow of information (Grover & Davenport, 2001). There are already promising approaches here, but much more focus should be on networking. A difficulty here is that such an initiative by the central party apparatus could be seen as jeopardizing the independence and autonomy of MPs by placing members under greater scrutiny (Orton et al., 2000). To what extent this situation can be resolved remains to be seen. At the same time, the management of the employees must be intensified by introducing fixed responsibilities and structures. The fact that only the MPs and not their employees were interviewed for this investigation is certainly a weakness and must be corrected in future work.

As it is difficult to capture and transform elements of tacit into explicit knowledge, the KM “process requires total interaction and interchange of information between colleagues to ensure the dissemination, sharing, and appropriation of knowledge” (Mendes et al., 2004, p. 3). During the research process, I did not observe any form of information audit being conducted by the central party group. An audit could identify the strengths and weaknesses of information sourcing and could use and help to promote best practice (Orton et al., 2000). This, nevertheless, must be the objective of future research, too.

5 Conclusion

This paper wanted to provide insight into how Members of the German Bundestag could use their individual knowledge in terms of policy making and, building on that, how knowledge management tools could help to achieve strategic outcomes as well as societal goals (Boltmann & Bankole, 2017). The main theses that knowledge management is carried out inadequately or unsystematically, and that the loss of

knowledge is very high due to the short electoral periods, has been confirmed. At this point, nevertheless, I would like to remind you of the limited significance due to the small sample size.

MPs require knowledge to make policy decisions, understand current social contexts and envision future trends and challenges (Felfoldi & Donoso, 2012). The need for a political KM is becoming obvious, when considering the poor political regulation of at least part of the 2007/2008 financial crisis. I propose that there was insufficient understanding and knowledge which at least slowed down the control process, if not made it more difficult. Let us not to forget that incorrect regulation led to this extent of the crisis in the first place (Goodhart & Tsomocos, 2019; Borio et al., 2020). But this will be the focus of future research, as well.

Being an MP is in many ways a unique career choice in that he or she has little control over the policy areas in which he/she may become involved and must become an expert in response to requests from his/her party, constituency, public, and media. Therefore, information needs are frequently reactive, and information searching can be hurried, unsystematic, and uncritical (Orton et al., 2000). Knowledge management could provide valuable support here and I see this paper as a first step towards developing a future model. The next steps for this will be to carry out more case studies and to concentrate on specific policy areas.

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The Principlism Method Applied Utilitarianist in Mathematical Calculations for an Ethical Decision



Liviu-Adrian Stoica and Alina-Elena Turcescu

Abstract Part of the extremely studied concept of ethical management is the ethical decision-making process within an organization designed to determine how the members of the organization should proceed in order not to violate already established ethical codes or generally accepted moral principles. In order to be able to count the morality of an action by evaluating its effects on the beneficiaries, they usually resorted to primary arithmetic calculations in which the consequences on the beneficiaries receive positive or negative values of 1, 2, 3 by reference to few moral principles or institutional rules. The model proposed by us will no longer have to choose the priority of one principle over another based on unclear criteria. We propose a model of calculations that is made by reference to moral values that are supposed to be respected in an organization and, correlatively, the impact evaluated in figures of compliance or non-compliance with these moral values. The proposed mathematical formula is complex and allows quick calculation regardless of how many variables are involved. Also, the impact is then calculated separately from a financial, intellectual, moral, educational, and psychological point of view.

Keywords Ethics · Principlism · Decision · Math

1 Introduction

In the middle of the last century, Rawls (1951, p. 187) asked himself: “Is there a well-founded decision-making procedure which is strong enough to determine the manner in which competitive interests are to be awarded and that in which, in cases of conflict, we must give priority to one preference over another? Furthermore, can

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the existence of this procedure, as well as its well-founded nature, be established by rational means of research?" Ethical decision, as part of the broader concept of ethical management of an organization, has selected over time several major directions and also a series of alternatives to them: the two-level utilitarian method of Hare (1981), moral casuistry, the principlism method, the ethical matrix, Christian morality as a form of principlism, ethical narrative, methodological pluralism, the manner of some questions we have to answer, the ethical OPIS, etc. We will detail only those that are of interest and from which we will start to describe a new model of organizational ethical decision, taking schools as an example.

Moral case law is a model of ethical decision that appeals to paradigmatic cases and the analogy with them for a new ethical situation we face. It is dependent on social consensus on the paradigmatic cases, definitions, and ethical meanings of a cultural society at a given historical moment and not on one ethical theory or another. Therefore, one of the limits of this approach is, in the opinion of thinkers such as Beauchamp and Childress, or as Muresan (2009, p. 200) states "raising social prejudices to the rank of ethical conclusion." In addition, the analysis of the situation we face, which allows us to make a final reviewable decision at any given time, is done using a kind of flair, to *phronesis* (practical wisdom), which cannot be constituted in an algorithm. Additionally, this kind of *phronesis* is the one responsible for misunderstanding some gestures of the others. Many companies today have forbidden even the mere appearance of unethical behavior in their Ethics codes. These appearances, for example, could be objects of misunderstandings sometimes and some authors reject this appearance standard, like Kaptein (2018) noticed that for Luban (2001, p. 26), the problem is that appearance is a "conceptual accordion that can expand as widely as suits the eyes of the beholder" while the beholder has not analyzed the observed behavior properly.

Distinguishing between appropriate rules and moral rules, Hare's (1996) preferential action utilitarianism differs from simple action utilitarianism in that the preferences of the people involved are compared, taking into account that the rule that has the expectation of satisfying the highest preferences has priority if it is respected. Usually, moral decisions are made intuitively, meaning that we do not calculate the consequences and preferences, but we relate the action we evaluate to the moral rules and principles that we have internalized over time. Moral debts at this level are called by Hare (1981) *prima facie* debts, which means prohibitions or moral obligations that are not absolute, but support exceptions, are not strictly hierarchical, but can be outclassed in various situations, and remain valid even if they can be violated. Codes of ethics contain such *prima facie* debt.

There is, however, a second level of ethical decision, that Hare (1996) named the critical level, for which we have to make key decisions related either to the introduction of a new moral rule or the elimination of rules that no longer correspond. This level is the one that updates the ethical codes of organizations; also, it is the one where it is necessary, in the author's opinion, to apply preferential action utilitarianism. This method follows the evaluation steps as it follows: first, the class of actions we are considering (not just a particular action) is determined; then, we determine the persons or groups that are affected by the action. In this way, we find

out what the consequences of the act are and we give weight to these consequences depending on the degree to which they satisfy the preferences of the people involved. After this, the probability of such consequences to happen is estimated and the expectations of satisfying the above-mentioned preferences are calculated. These expectations are compared by calculating the balance of satisfaction and dissatisfaction of preferences and, finally, the moral decision that was chosen is the one that results in the greatest satisfaction of the preferences of as many of the actors involved as possible.

If Hare (1981) had taken into account only the maximization of the utility and the satisfaction of those involved, this would have been, in his opinion, only the demonstration of the opportunity of that action, not its morality. The actions we call moral, following ethical decisions such as those described above are opportune, but, in addition, they become moral debts, such as they cover a whole range of acts, not just individual and accidental ones; they are coercive, imposed by the organization or society; they produce interpersonal goods but not personal goods, which are socially important and involve internalization through education. However, when Hare talks about preferences and consequences for the involved actors, what kind of consequences does he refer to? What is their essence? He does not specify. We can be affected by psychological or intellectual preferences and by professional or moral preferences. These are not specified, and as such we have to think about them unlabeled. This, however, makes it difficult to try to count the impact in numbers. In the actual literature, the analysis of the action is taken from very few aspects on a very basic level which made us extend it so that we can take into account all the moral values and almost all identifiable points and direction of analyzing the actions and actors. We will continue to see the presentation of a possible problem in an educational institution in the light of established ethical decision methods, such as Hare's utilitarianism, principlism, ethical matrix, and then to present the mathematical approach we propose to draw the necessary conclusions.

2 Problem Identification

As an example, let us suppose that the action we are judging is to expel from class a student who is in some way disturbing the smooth running of that class. Between the countless orders and laws of the relevant Ministry, there is this implicit clarification, but, in fact, the codes of rules of schools do not provide a ban on doing so, and many teachers do not even believe that this ban exists. In order to proceed according to Hare's model, we must first classify this action in a category of facts, and we do so considering that these are acts that limit the student's access to education. Then, we determine the people or groups involved and we will consider that it is about the students, their parents, teachers, and the school management. The consequences of the presented gesture are the following:

Table 1 Degree of satisfaction / dissatisfaction (*D*)

Student	<i>D</i>	Parents	<i>D</i>	Teacher	<i>D</i>	Leadership	<i>D</i>
Loses the lesson	-2	Suffering	-3	Satisfaction	+2	Weak teachers	-1
Something bad happens to him	-3	Reprimand	-2	Quiet	+3	Confrontation of parents	-2
Doing a bad deed	-3	Infringement of rights	-2	Consequences if something bad happens to the student	-3	Grounded	-3
Dignity touch	-1						
Isolation from group	-1						
The joy of not making the class	+2						
Total:	-8	Total:	-7	Total:	+2	Total:	-6

Source: Author’s own research based on the proposed example

- For the student: He loses the part of the lesson he did not attend, he can leave school being unsupervised and do bad deeds or even suffer something, he can feel isolated from the group and will be able to experience the feeling of his dignity being stripped off in front of the group, he could be glad that he had escaped that hour.
- For parents: They will suffer if the child suffers something bad, they will suffer consequences from reprimand to receiving a fine if the student does something bad while he is not present in class, they will feel their rights violated because the son (daughter) does not participate in classes.
- For the teacher: The satisfaction that he punished the student’s behavior, silence during class, negative consequences if the student suffers something or does a bad deed.
- School leadership: Dissatisfaction that teachers do not control the students, dissatisfaction with possible confrontation with revolted parents, punishment if it ends badly.

The determination of preferences results from the positive, negative, desirable, and undesirable nature of the actions felt by those involved. The degree to which the consequences satisfy the preferences of those involved can be imagined as follows, considering from 1 to 3 that 1 is weak, 2 is moderate and 3 is strong, with positive or negative signs, as they are presented in Table 1 with their grade evaluation.

Further on, the probability is estimated to be from 1 to 5, where 1 is very unlikely, 2 is unlikely, 3 is likely, 4 is very likely, 5 is almost always, and is multiplied by the degree of satisfaction/dissatisfaction, taking into account that those intended consequences are conditioned and may or may not occur, the value of the probability given to a consequence on one actor will also determine the value given to the related consequence on another actor.

For example, the probability of a student getting hurt while staying out of class is estimated at 2, based on the survey on multiple teachers asked about their classes; if the student suffers something bad, the suffering that the parent feels is sure to exist, so it is assessed at the value of 5, but because it is likely that the student will suffer something only from the value 2, we have to estimate the probability of the parents suffering at the value of 2. We reach this conclusion by interviewing a few parents that went through this experience with their children been expelled from the class because of their disrespectful attitude towards the teacher's class.

The probability that the actions identified in our example will happen is presented in Table 2, where R represents the results of Degree of satisfaction (D) multiplied with Probability of it happening (P) ($R = D \times P$).

In the last stage, all the calculations obtained are summed up, in our case being a total result of -38 , and in terms of positive or negative results for each party involved, we have only one with a positive value, namely the teacher. This result shows us that the teacher's action to expel a student from class is not advisable and, in fact, violates the rules in force. It is a simplistic and simplified example designed to illustrate how the Hare method is applied. What we note is that Hare (1981) considers the evaluation of situations from an ethical point of view by referring to the actors' understood consequences as being their preferences, expectations, and probabilities for them to occur, and not by referring to values or principles: as Hare (1996, p. 14) said "...since in actual cases we never know enough and never have enough time to think about it, it is very hard to be sure that this is a case in which we ought to depart from the principle. . . This, I think, would be a sound attitude, and fundamentally a utilitarian attitude. . ."

Principlism referred to as a method of moral evaluation in bioethics by Beauchamp (2001) is not an ethical theory and does not appeal to any. It starts from the establishment in the American environment of four fundamental principles that must be observed in the specified field: respect for autonomy, benevolence, avoidance of harmful actions, justice. In Europe, through the Center for Ethics and Law at the University of Copenhagen, these four are different: respect for autonomy, dignity, integrity, and vulnerability. These principles are then specified, meaning that by taking into account the particular context and circumstances, they are transposed into specific rules of conduct. At a third level, it goes even further towards particular rights, virtues, and particular moral judgments. It should be noted that the proposed principles are not absolute, there may be exceptions to compliance and are not hierarchically organized so that anyone can outperform the other.

In simple cases, the facts are simply confronted with the established rules and principles, and in the case of moral dilemmas, the principles are weighed and the coherence of the system of principles is maximized. Weighing is performed to eliminate normative conflicts, balancing the relevance for that case of each principle which can lead to non-compliance with one of the principles in that particular case. Maximizing coherence is a necessary step precisely in order to be able to choose between various competing specifications, keeping one and eliminating another from the calculation, and the coherence ensured must be within the system of general moral beliefs of people. If we try to exemplify the principle using the same situation

Table 2 Probability of it happening (*P*)

Student	<i>P</i>	<i>R</i>	Parents	<i>P</i>	<i>R</i>	Teacher	<i>P</i>	<i>R</i>	Leadership	<i>P</i>	<i>R</i>
Loses the lesson	5	-10	Suffering	2	-6	Satisfaction	4	8	Weak teachers	4	-4
Something bad happens to him	2	-6	Reprimand	2	-4	Quiet	5	15	Confrontation of parents	3	-6
Doing a bad deed	2	-6	Infringement of rights	5	-10	Consequences if something bad happens to the student	2	-6	Grounded	2	-6
Dignity touch	3	-3									
Isolation from group	2	-2									
The joy of not making the class	4	8									
Total:		-19	Total:		-20	Total:		17	Total:		-16

Source: Author's own research based on the proposed example

as in the case of the Hare (1981) model, we will be able to find that the principle of autonomy could become competing at least with the principle of avoiding harmful actions, even if Beauchamp (2001, p. 57) and Childress said: “We aim to construct a conception of respect for autonomy that is not excessively individualistic (neglecting the social nature of individuals and the impact of individual choices and actions on others), not excessively focused on reason (neglecting the emotions), and not unduly legalistic (highlighting legal rights and downplaying social practices).”

If you kick out a student who is disturbing the class, it could be considered a gesture in accordance with the teacher’s autonomy to freely decide, which means to choose in order to properly exercise his teaching profession. At the same time, however, the gesture seems to be in conflict with the observance of the other mentioned principle because, without a doubt, being excluded is something harmful that you should refrain from. In this case, we must resort to weighing. The greatest relevance seems to be the autonomy principle because the school is meant to teach you and you are meant to learn, and the main role, in this case, is to ensure that the climate is the right one for teaching–learning in the classroom. Equally, however, if we look from the system coherence point of view with the value system of contemporary people, the principle of avoiding a harmful gesture seems to be much closer to satisfying this requirement. In this case, even the procedures described by the people with principles, become concurrent and relative to the very ethical theory to which you adhere even unconsciously, although their intention was precisely to get rid of the dilemma related to one or another of the ethical theories. If, instead of this approach, we took into account all the principles to which an institution can adhere, without eliminating one of them in particular concrete cases, and measured the impact on all from several points of view, the result would probably have been less dilemmatic.

Another approach designed specifically for a certain field is the ethical matrix. Created by Mepham (2005, 2015) and Mepham et al. (2006) in 1994 at the Center for Applied Bioethics at the University of Nottingham, the ethics matrix is considered by the author as an ethical analysis framework for deciding the ethical acceptability of new biotechnologies in the agri-food industry, not an ethical decision-making procedure. It is inspired by principlism and designed to be used not by specialists in ethics but by ordinary people. It starts from 3 *prima facie* principles that are not ranked and considered to be, for example, welfare, autonomy and justice, and these are concretized in criteria that can be analyzed in terms of the consequences on those involved. The matrix can be quantified with values from -2 to $+2$, but it is not necessarily demanded because the author insists on a global qualitative analysis on the matrix to guide us in our decisions, and not on the resulting final values. Using our example again, we could have a matrix of the following type as presented in Table 3 with the identified results and associated values.

Table 3 Ethical matrix

	Welfare	Autonomy	Justice
Student	He loses the information taught, but can relax (-1)	He has no freedom of choice whether or not to sit for class (-2)	It is unfair not to be able to attend classes like other students (-2)
Parents	They do not feel comfortable knowing that the son (daughter) does not attend classes (-2)	They do not have the freedom to choose to have their son/daughter attend all classes as they would like (-2)	They feel wronged that their son or daughter does not exercise the right to education (-2)
Teacher	He feels relaxed, but also avenged, and can teach the lesson (+2)	He has the freedom to choose who and if he attends his classes (+2)	He feels entitled to make such a choice and considers that the choice made means justice (+2)
Leadership	He does not feel comfortable knowing that teachers do not control the atmosphere in the classroom (-2)	Is not free to decide anything about the situation, preferring for students to sit in class (-1)	It is neutral because it is unfair for the student not to attend classes, but it is unfair for the teacher not to be able to support his classes quietly (0)

Source: Author's own research based on the proposed example

3 Problem Adaptation

After analyzing Donald (2012), Bentham (1834), Kaptein (1998), Laasch and Conaway (2015) and McNamara (2019) in the model we propose, the calculations are made by reference to moral values that are supposed to be respected in an organization and, correlatively, the impact, the consequences evaluated in figures of compliance or non-compliance with these moral values. In other words, it is a combination of Hare's (1996) utilitarian model with the principlism one combined in a different ethical matrix, with the possibility to introduce as many variables and as many nuances and numerous indicators of these variables that become easy to calculate with the help of mathematical formulas. The model is adapted and designed for school organizations. The consequences of an action when it comes to an organization are ultimately relevant from the perspective of the values and principles of the organization, and only in view of them in terms of the impact on individuals as such. Ultimately, the organization establishes those values that can bring back efficiency, profit, credibility, and the rules and regulations of conduct based on these values.

What matters ethically in the case of an organization is the extent to which it achieves the (moral) goals for which it exists, but the goals can only be achieved if the values by which it operates are respected. When one or more institutional values are undermined, disrespected by the conduct of the actors involved, the organization erodes or even loses credibility, and this leads to its inefficiency or even its disappearance from social life. The statement that the measure of organizational ethics is the degree of achievement of goals is not cynical, because it is an illusion

that there could be an effective organization that does not establish its values in accordance with moral principles accepted in society. The concept of corporate social responsibility (CSR), defined as coordinated businesses aiming at a more sustainable world, talks about the efficiency of these businesses. Nijhof and Jeurissen (2010) draws attention to this fact when they say that this at least requires that managers should show commitment to certain social values, be able to defend it in good and bad times and prepare all employees to deal with the inherent dilemmas of bearing different responsibilities. Therefore, we cannot talk about efficiency in an immoral setting. The idea that, for example, a company pursuing financial profit can achieve this goal by acting immorally is also an illusion. At some point, losing credibility with customers, for example, will lead to bankruptcy. Moratis (2018) evokes statistics like a survey among consumers from ten of the world's largest countries showed that some 81% thought that firms have responsibilities going (far) beyond creating shareholder value, with 31% thinking that firms should change the way they operate to align with greater social and environmental needs. In the article published by Wilson et al. (2021), it is shown that consumers learn to detect and penalize misleading tactics.

We consider the reporting to the rules of the institution, as Hare (1996) does, unsatisfactory. Of course, the rules of an organization derive from the very values or principles to which the organization adheres. However, not reporting to the rules, but directly to the values, eliminates the disadvantage of being in the situation to ask yourself if a certain rule should not be eliminated and a new one should take its place before deciding how we stand with the morality of the deed we judge. In other words, aware that the rules are more changeable than values over time, depending on new contexts, precisely as a result of an ethical decision that we had to make, we will not refer to them. The same value can be applied by different rules. Changing a rule does not mean that the value behind it will change as well. But the rules are less stable, depending on the very particular concrete conditions of the respective environment. In addition, the codes of conduct of an institution that have rules and derive, of course, from the values of the institution are and must be only highlights, concrete examples of acting in the given context, in such way that not every employee has to become a small ethical philosopher to be able to act.

When new contexts decide new understandings of values or even change them, the rules will change or enrich as well. Ethical leaders are the ones who, in Kaptein (2019, p. 1143) opinion, "create new ethical norms, standards, principles, or values." but because those who create new ethical norms are called moral entrepreneurs in sociological literature, Kaptein (2019) noticed that in the definition of ethical leadership, which consists of two components, the moral person and the moral manager, should add to the moral entrepreneur. About these kinds of persons, Kaptein (2019, p. 1143) said that "leaders base their arguments on principles that they believe are right and good for society," which means that ethical leaders first have a certain vision on principles and values, and then eventually change the norms and the rules. If so, the question is why not make a moral analysis for an ethical decision directly on values, not on rules? The values we will take into account cannot be inter-conflicting, meaning there is no question of taking one into account as a

matter of priority and eliminating the other, but together they must be respected, while an adjustment coefficient is introduced to show the relevant part of each value for that organization. It is understood that for each organization their relevance may be different, and this fact shows the specificity of each organization. In this way, performing calculations related to the values of the consequences on the actors involved, there is no need to resort to contentious principled steps of weighing the principles (values) and maximizing the coherence of the value system, steps that do not have precise indications or rules of application, but rather intuitive rules.

We will no longer have to choose the priority of one principle over another based on unclear criteria. We also wonder why are four principles proposed by principlism? It is true that they are extremely comprehensive and universal as their authors have set themselves, but we can take as a benchmark as many values that the organization has set out to respect. In addition, each organization may consider any other values that may lead, if met, to the achievement of the organization's goals. Also, in order to take everything into account, the significant ways in which an actor involved can be affected by an action, and not only in general, we also introduce types of classified impact: financial, intellectual, moral, educational, and psychological. In this way, we can follow the concrete way in which an actor can be affected, which can be the basis for any subsequent analysis of remedial measures that can be taken. Of course, following the calculations made by the model proposed by us, a certain ethical decision emerges. But this is not the end of the analysis because this decision must be passed through the filter of the consensus of the people involved in the organization. Without this consensus established by the agreement of the majority of the representatives of the parties involved, any ethical decision becomes without a final and sterile. We consider the goals of the organization and the agreement of those involved to act in a unitary way in order to achieve those goals. Recently, Kristjánsson (2021) spoke in his published article about the importance of building an individual and collective *phronesis* due to which the focus has remained mostly on the construct at the level of individual decision-making but, until education can confer such an ethical level for everyone, ethical decision-making remains a difficult task in the hands of those who represent ethical management.

4 Mathematical Methodology Approach

In order to determine the calculation of the level of moral values on the actors involved, a unit of measurement in *PM* points (measurement points) and an adjustment coefficient are applied to the related variables, according to Table 4, consisting of moral values identified by us for the proposed example in order to obtain a uniform calculation. The adjustment coefficient as a moral value is given by the connection between the moral value and its impact on the actor and is used to transpose the moral values into measurable and approximate mathematical values in units of measurement.

Table 4 Moral values

No.	Moral values (<i>Mv</i>)	Adjustment coefficient (<i>Ac</i>)
1	Impartiality and objectivity	0.5
2	Independence and professional freedom	0.9
3	Moral, social, and professional responsibility	0.8
4	Moral and professional decency	1
5	Confidentiality and respect for the private sphere	0.87
6	The primacy of the public interest	0.66
7	Respecting and promoting the legitimate interest of the educable	0.4
8	Compliance with general and field-specific legislation	0.8
9	Respect for personal autonomy	0.9
10	Intellectual honesty and fairness	1
11	Decent and balanced attitude	0.5
12	Tolerance and encouragement of diversity	0.2
13	Self-exigency in the exercise of the profession	0.5
14	Involvement in the democratization of society	0.2
15	Interest and responsibility in relation to one’s own professional training, in increasing the quality of teaching activity and the prestige of the pre-university education unit/institution, as well as of the specialty/field in which it carries out its activity	0.67
16	Respect for the dignity of the person	1

Source: Author’s own research

Observation: The moral values listed in Table 4 can and might differ from each example analyzed by removing or adding new moral values according to the example that fit the necessities of actions in an organization made by the actors involved.

To express the computational value of a moral value *v* (*VMv*) on the actor involved, we propose the formula:

$$VMv_v = IR_v \times NP_v \times AC_v, \text{ where :} \tag{1}$$

v, represents the moral value, according to Table 4

IR_v, relative impact of moral value *v*

NP_v, damage level of moral value *v*

Ac_v, adjustment coefficient of the moral value *v*, has the values according to Table 4

Observation: the PM measurement points are considered as the unit of measurement of the calculation.

The following formula is used to calculate the relative impact of a moral value *IR_v*:

Table 5 Link between impact and probability

Impact / Probability (<i>IR</i>)	Non-existent (1)	Unlikely (2)	Likely (3)	Very Likely (4)	Existing (5)
Minimum (1)	1	1	2	3	4
Weak (2)	1	2	2	3	4
Medium (3)	2	2	3	4	4
Important (4)	3	3	4	4	5
Maximum (5)	4	4	4	5	5

Source: Author’s adaptation from Stoica (2013)

Table 6 Damage level of moral value

Losses	Results	NP
Minimal	Minimum chances of affecting the actor	1–10
Low	The actor is affected to a small extent	11–20
Medium	The actor is affected	21–50
High	The actor is greatly affected	51–65
Total	The actor is irreparably affected	66–100

Source: Author’s adaptation from Stoica (2013)

$$IR_v = I_v \times P_v, \text{ where :} \tag{2}$$

I_v , the impact produced by the moral value v
 P_v , probability of applicability of moral value v

Take into account the fact that the impact has values between 1 and 5, 1 representing minimum impact and 5 maximum impact and the probability of occurrence of the moral value on the actor in the analysis takes values from 1 to 5, where 1 represents the lack of moral value and 5 its absolute existence in the analysis performed on the actor involved. Table 5 shows the calculation of IR_v according to the possible influence values.

The values for the relative impact IR_v are from 1 to 5, where 1 is non-existent and 5 is existing, 0 meaning that there is no impact. The NP_v damage level of a moral value v is given by the correlation between the dispersion of the impact surface and the consequences on the actor. There are values by loss categories and corroborated with the relative impact approximates the real mathematical value of the moral value on the actor involved. A sampling of the injury level is shown in Table 6.

The value of an NP damage level corresponding to a moral value is between 1 and 100. It is given by the estimated value through the statistical analysis on the actors involved and the type of their recovery. Value 1 meaning an almost non-existent damage that can be ignored and 100 representing a maximum damage with irreparable repercussions.

To calculate the value of consequence of the action for an involved actor from the moral point of view we use the formula (MCV_a):

$$MCV_a = \sum_{v=1}^{15} VMv_v \times e_v, \text{ where :} \tag{3}$$

MCV, consequence of the action in terms of moral values
a, actor involved according to the identification in the analysis
e, represents the value of the existence of the moral value in the analysis, having the absolute values 0 or 1, 0 for inexistence and 1 for presence.

For a more efficient analysis, the type of impact on the actor is taken into account in terms of aspects, and it is considered significant from a social and individual approach, namely the financial, intellectual, moral, educational, and psychological impact—Classified Impact *IC*. It is also expressed in *PM* measurement points, which represent standard and final units of measurement for evaluating the mathematical approach. A clarification about psychological impact must be made here. If the other forms of classified impact are aspects usually considered quantifiable, the psychological impact could be suspected as not being subject to a mathematical calculation. But it is so important, especially for those members of the organization who are devoted and have high levels of the conscientiousness, that it cannot be circumvented, even if the quantification risks are subjective. Zheng (2015) showed that applying trait activation theory and a resources-based stress (*COR*) theory, we explained how (via low levels of valued work conditions or resources) and when (primarily among individuals approaching the high end of conscientiousness) low levels of ethical leadership affect team cohesion and emotional exhaustion.

IC is calculated according to the actor’s damage in terms of moral values, representing the amount of *MCV* for each financial, intellectual, moral, educational, and psychological classification. To calculate the value of the classified impact on an actor (*IC_a*), the following formula is proposed:

$$IC_a = \sum_{j=1}^5 MCV_j, \text{ where :} \tag{4}$$

j, represents the classified impact

The extended and complete Classified Impact formula is:

$$IC_a = \sum_{j=1}^5 \sum_{v=1}^{15} I_v \times P_v \times NP_v \times AC_v \times e_v \tag{5}$$

For the evaluation of a decision, the decision value (*DV*) of all the actors involved is calculated, representing the sum of the classified impact of each actor:

$$DV = \sum_{a=1}^n IC_a, \text{ where :} \tag{6}$$

n , represents the number of actors involved.

5 Practical Example of Mathematical Approach

Based on our initial example with the teacher expelling a student from the class, we use the proposed methodology to calculate the impact of the decision taken by the teacher as follows in Table 7. The values displayed in the table were obtained and analyzed tracking the teachers' questionnaires, as well as the interviews with the parents, based on the case of the student that was expelled from the class and then, the final parameters were obtained by adjustment. As an example, following the discussions with the parents, if for a share of them the impact was either maximum or minimum but for the average it was a normal impact, we allocated the average as the impact on parent level. The values in the table were assigned on the same principle for all the actors identified. We randomly interviewed 12 teachers, 16 students, 7 parents, and 4 college directors.

M_v , Moral value, from Table 4

A_c , Adjustment coefficient from Table 4

Table 7 Practical example

M_v	A_c	Student			Teacher			Parents			Leadership		
		IR_v	NP_v	VM_v	IR_v	NP_v	VM_v	IR_v	NP_v	VM_v	IR_v	NP_v	VM_v
1	0.5	4	60	120	4	50	100	4	55	110	4	80	160
2	0.9	1	40	36	5	80	360	3	40	108	5	80	360
3	0.8	1	20	16	4	60	192	3	20	48	5	80	320
4	1	3	40	120	4	60	240	4	40	160	4	60	240
5	0.87	2	10	17.4	3	40	104.4	2	20	34.8	3	20	52.2
6	0.66	1	5	3.3	4	50	132	2	10	13.2	4	50	132
7	0.4	1	5	2	4	60	96	3	35	42	5	55	110
8	0.8	1	1	0.8	5	80	320	4	80	256	5	100	400
9	0.9	3	60	162	4	70	252	4	80	288	4	80	288
10	1	2	20	40	4	40	160	4	40	160	4	50	200
11	0.5	2	40	40	5	50	125	4	50	100	5	50	125
12	0.2	1	5	1	4	30	24	4	30	24	4	30	24
13	0.5	1	1	0.5	4	30	60	2	10	10	4	60	120
14	0.2	1	1	0.2	2	10	4	1	1	0.2	3	30	18
15	0.67	1	5	3.35	4	40	107.2	3	40	80.4	4	50	134
16	1	2	60	120	4	60	240	4	60	240	5	80	400

Source: Author own research based on proposed example

Table 8 Financial values of moral value for each actor

Financial		Student			Teacher			Parents			Leadership		
M_v	A_c	IR_v	NP_v	VM_v	IR_v	NP_v	VM_v	IR_v	NP_v	VM_v	IR_v	NP_v	VM_v
1	0.5	1	0	0	1	0	0	1	0	0	1	0	0
2	0.9	1	0	0	1	2	1.8	1	0	0	2	10	9
3	0.8	1	0	0	2	20	16	1	0	0	3	40	36
4	1	1	0	0	4	60	240	1	0	0	4	80	320
5	0.87	1	0	0	1	0	0	1	0	0	1	0	0
6	0.66	1	0	0	1	0	0	1	0	0	1	0	0
7	0.4	1	0	0	2	10	6.6	1	0	0	2	20	13.2
8	0.8	2	20	16	4	60	192	3	50	120	5	80	320
9	0.9	1	0	0	1	0	0	1	0	0	1	0	0
10	1	1	0	0	1	0	0	1	0	0	1	0	0
11	0.5	2	40	20	4	60	30	3	30	15	5	80	40
12	0.2	1	0	0	1	0	0	1	0	0	1	0	0
13	0.5	1	0	0	1	0	0	1	0	0	1	0	0
14	0.2	1	0	0	1	0	0	1	0	0	1	0	0
15	0.67	2	20	26.8	4	60	160.8	3	50	100.5	4	70	187.6
16	1	4	80	80	5	80	80	4	80	80	5	100	100

Source: Author’s own research based on the proposed example

IR_v , Relative impact from Eq. (2)

NP_v , Damage level from Table 6

VM_v , Moral value from Eq. (1)

After the obtaining of each value of moral value, we adjust the equation by introducing the existence of the moral value with values of 0 just for the student (in our case and this example) for the Moral values 4,6,7,10 and 16 and for the Parents for Moral value 14, so the *MCV* becomes:

$$MCV_{student} = 517.25$$

$$MCV_{teacher} = 2516.6$$

$$MCV_{parents} = 1674.4$$

$$MCV_{leadership} = 3083.2$$

(The *MCV* values are calculated based on Eq. (3))

The classified impact based on the five categories is presented in Table 8 for the Financial.

In the case of financial evaluation, we obtain:

$$MCV_{student} = 142.8$$

$$MCV_{teacher} = 727.2$$

$$MCV_{parents} = 315.5$$

$$MCV_{leadership} = 1025.8$$

The explanation is as it follows: student can lose the daily money from his parents for disturbing the class, the teacher can get a salary penalty for expelling the student,

the parents can lose money by needing medication for the student to recover the lost hours, the leadership can hurt the school's prestige in front of other parents because of the teacher's decision. In the current studies, you cannot determine the detailed analysis of an action and current consequences and therefore we proposed the current model.

The mathematical model we propose is a much more precise way of being able to make an ethical decision without necessarily being an ethicist. One of the objections to the method of the ethical matrix that is inspired by bioethical principlism is that it only compares the consequences of the case with some basic principles that are briefly explained. As it looks, it is not an ethical decision-making procedure, but rather a tool that helps to make moral decisions in public debates rather than in institutions with precise values and rules. Likewise, principlism is a kind of guide to moral evaluation, not a decision algorithm. The complex mathematical calculation method that we propose, based on the conformity with the values of the respective institution, offers a much more exact perspective on the impact and its value dimension on each actor involved, as well as a whole. In this way, depending on the current priority interests of the institution, we can see which is the preferable ethical decision without having to adjust principles or see if the principle of coherence is respected. Moreover, we can find out, as it was presented, what is the impact of a gesture only through the prism of a certain aspect of interest: financial, psychological, moral, etc. And all this without having to be an ethicist. A clear and common-sense reason is enough. Also, following an ethical decision as a result of mathematical calculations, we can establish clear rules of conduct accepted in concrete situations. It is a kind of reversal of vision: we start from values, which are much more stable and general, in order to establish rules that are changeable and dependent on the needs of the institution, and not the other way around, as things have been understood so far.

6 Conclusion

This calculation example showed us how we can find out which is the value of the impact of an action on each actor involved, both from different aspects taken into account such as financial, moral, psychological, intellectual, educational, as well as from the perspective of agreed institutional moral values. The higher the resulting values, the greater the impact in that area. In this way, we can assess the extent to which institutional moral values are respected by members of the organization through their actions, but also how serious or even unacceptable the situation is. The more serious the situation is, the more it requires counteractive intervention because sometimes people simply do not realize how great the impact of their actions is on others. The use of these formulas has the advantage of not limiting the number of variables that can be introduced, which is important because the organizational ethical environment is a complex one that cannot be reduced to just a few ideas or principles.

The mathematical analysis developed for the study proposes a new approach on quantifying the impact of a decision on the actors involved based on the moral values identified or derived from the action itself. All the mathematical approach can be used into an informatic application, that does all the validations and calculations for a faster analysis and score results without the urgent need for ethicists to make them. The set of moral values can be adapted based on the organization needs and the decisions taken by employees can be evaluated from the moral point of view, interpreted by the equation results and used for future adjustments of the rules for a better practice in the society. The scope of the study was to offer a better perspective of decisions made from the ethical point of view and also to limit the damages created for the people involved in the action. Such easy-to-apply tools can become very important, especially in Central and Eastern Europe, where public and private corruption that affects general social behavior is maintained and, like Takacs Haynes and Rašković (2021) noticed, little is known about the cognitive and behavioral mechanisms in ethical decision-making.

In order to continue the research to optimize the calculations, the values of the parameters can be adjusted, as well as the number of moral values that were used and identified within the analyzed action. In addition, based on the result of these calculations, a set of decisions can be defined, following a moral and ethical perspective.

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Part IV
Eurasian Business Perspectives: Marketing

Neuromarketing: A Review Regarding Marketing Field



Cem Karayalçın

Abstract Neuromarketing is a growing topic in marketing literature. Furthermore, businesses also started to use neuromarketing-related results in their marketing decisions. Accordingly, it is crucial and relevant to make a research regarding neuromarketing topic in the marketing area. The main objective of this study is to provide an evaluation of neuromarketing topic regarding its relations with marketing field that will generate key insights. A literature review was conducted for this study and articles containing “neuromarketing” topic were included in the review. The articles were chosen from top-rated marketing journals according to Google Scholar’s ratings. The criterion to be included in the review is explained in the paper accordingly. The results showed important insights such as neuromarketing topic has begun to rise after 2010; neuroscience methods such as electroencephalography (EEG), functional near-infrared spectroscopy (fNIRS), functional magnetic resonance imaging (fMRI), and other important methods have been used in marketing field; neuromarketing-related methods are applied in the context of different industries such as food, cleaning, personal care products and so on. In conclusion, neuromarketing can be classified as a trending topic in marketing field which is evolving and providing unique results. Both academicians and marketing practitioners are interested in neuromarketing which makes the topic important for marketing literature and businesses.

Keywords Neuromarketing · Neuroscience · Marketing

1 Introduction

Recently, research in neuroscience has been increasing rapidly because of exponential technological advancements. Informative, diverse, and rich results of neuroscience methods provided an avenue for multidisciplinary studies. One of the important

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areas that uses neuroscience methods is marketing field. Containing elements from the words “neuroscience” and “marketing” linguistically, neuromarketing can be described as a phenomenon that uses neuroscience methods to provide insights into marketing-related subjects. For better and efficient marketing programs, marketers have started to use neuromarketing. Neuromarketing enables marketing practitioners to investigate the cognitive processes of customers that provide additional insights regarding consumer behavior. Furthermore, academicians have also been putting more emphasis on neuromarketing subject. A considerable number of articles have been published in highly regarded journals on neuromarketing topics recently (e.g., Gountas et al., 2019; Meyerding and Mehlhose, 2020). As a result, it is important and timely to make a research regarding neuromarketing topics in marketing field. Accordingly, the main aim of this study is to make an evaluation of neuromarketing topic and its relevance with marketing area by conducting a literature review. Previous studies (e.g., Lee et al., 2018) published review articles regarding neuromarketing topics with the help of Google Scholar; however, by concentrating on the top-rated journals according to the Google Scholar’s “marketing” subcategory, it is believed that this study will contribute to the related field by providing unique results. Moreover, recent papers (e.g., Rawnaque et al., 2020) also conducted cross-sectional studies in neuromarketing subject but the current paper has no time restrictions regarding the articles reviewed. As a result of this comprehensive approach, it is hoped that this study will add additional insights to the literature. The reviewed articles were from highly respected journals and the criteria for the article selection will be elaborated in the methodology section. The results of the study enlighten the literature by summarizing and giving some important key insights in the context of neuromarketing and marketing field.

This paper is divided into four parts. The first section presents a brief description of neuromarketing and main methods used in neuromarketing. The next section explains the methodology of the study. The third section shows the results and discussion part of the study. In the last section, general conclusions and limitations of the study will be provided.

2 Neuromarketing and Main Methods

Before moving on to neuromarketing concept, it is important to define neuroscience and make a clear conceptualization of neuromarketing. For the purposes of this study, consumer neuroscience is also treated as neuromarketing, as neuromarketing is also sometimes known as consumer neuroscience (e.g., Harrell, 2019). In general, neuroscience is the concept of studying human nervous system, which aims to comprehend the biological basis of human behavior (Plassmann et al., 2012). In that regard, it can be seen that neuroscience is closely related to marketing field that also has tight connections with human (consumer behavior). Neuromarketing can be defined as the multidisciplinary field that seeks to reach diverse insights regarding marketing-related topics—especially in the context of consumer behavior—by using

the tools and methods of neuroscience. The first use of neuromarketing term can be traced back to 2002; an advertising company called BrightHouse used the term neuromarketing in a press release that the firm will use the fMRI method for marketing research purposes (Fisher et al., 2010). The main aim of neuromarketing is to develop a theory to understand consumer behavior by adapting the theories and methods that come from neuroscience (Plassmann et al., 2012).

As mentioned before, recent technological developments helped the enhancement of neuroscience that resulted in the increased interest in neuromarketing topic. In the marketing field, human behavior is an important and complex subject. Understanding the process of consumer behavior and decision-making of customers is also crucial but difficult in particular. Accordingly, on the basis of Ariely and Berns's (2010) study, Boksem and Smidts (2015) explained the main two reasons why neuromarketing gained popularity over the last years as: First, compared with traditional methods, the data obtained in neuromarketing is less complex (the conscious answers from customers may not show what customers actually want and/or expect) and this allows to obtain more accurate results with smaller sample that makes neuroscience methods cheaper than traditional methods; second, neuroscience methods enables marketers to achieve information that may not be possible to acquire by traditional methods. This is because customers may not know what they actually want and there might be some hidden information in customers' brains that they are not actually cognitively aware of. Therefore, it can be said that methods used by neuromarketing can surpass traditional methods from a pure goal-oriented marketer's perspective. The ethical issues raised by neuromarketing are a crucial subject that is out of the scope of this study. This study aimed to investigate neuromarketing topic academically since the topic is a growing topic in marketing field.

There are several different methods used in neuromarketing. The methods can vary according to the factors and their intended use. It is important to note that studies showed the methods may also explain different marketing concepts than explained below. Nevertheless, the main methods used in neuromarketing can be summarized as follows (Venkatraman et al., 2015, Hamelin et al., 2017; Meyerding and Mehlhose, 2020):

- *Implicit measures*: The main aim is to understand consumers' preferences, attitudes, and information processing regarding the concepts' unconscious level by implicit association task (IAT). IAT allows to obtain affect and memory-based information from consumers.
- *Eye tracking*: It is one of the most convenient methods to capture response. The modern eye tracking tools enable to identify the position of the cornea and pupil enabling to acquire information regarding attention and affect of consumers.
- *Biometrics*: This method measures the physiological response regarding an external stimulus such as heart rate, breathing frequency, skin conductance

response (electrodermal response). Biometrics informs about attention and affect components of consumers.

- *EEG (Electroencephalography)*: EEG gives information regarding the cortical brain regions by showing the electrical signals. It enables to explore unconscious brain activation and reveals consumers' affect and attention-based data.
- *fMRI (Functional magnetic resonance imaging)*: This method measures blood oxygenation level in different areas of brain. With the help of fMRI, the areas in the brain with increasing blood oxygenation level can be located and this gives information on attention, affect, memory, and desirability-related concepts from consumers.
- *fNIRS (Functional near-infrared spectroscopy)*: This technique is also related to brain activation measurement that aims to map blood oxygenation level in local brain areas. It is said to have some advantages compared to fMRI such as lower cost, portability, and can be used in moving subjects.
- *Facial expression analysis*: The main aim of this method is to analyze the consumer's face to capture emotional reactions. Tools such as GfK-EMO Scan can be used in this method, which is a facial recognition software using webcam, designed to measure emotional responses of customers.

3 Methodology

Regarding the method of the study, one of the ways to make an analysis and obtain conclusive results with respect to neuromarketing topic in the marketing field is to analyze the articles containing neuromarketing topic that are published in highly regarded marketing journals. In Web of Science (WoS) database, there are around 500 articles including neuromarketing topic. In order to pool a more appropriate number of studies, certain criteria needed to be met to be included in the study. The literature review was done until the end of January 2021. There was not time limitation to be included in the study. Therefore articles that were published before February 2021 were included in the study. As another criterion, articles containing 'neuromarketing' topic from the top 20 marketing journals according to the Google Scholar's marketing subcategory metrics h5-index based rankings were included in the study. In line with previous studies that used the help of Google Scholar (e.g. Lee et al., 2018) and WoS (e.g., Robaina-Calderin and Martin-Santana, 2021), the current paper also considered these avenues to conduct the literature review. Accordingly, since Google Scholar ranks the journals on the base of h5-index, it was appropriate to use this approach in the literature review. Based on the above criteria, 20 articles (including descriptive studies) were found as a result of WoS search which are related to the context of the study. Articles were analyzed by summarizing and interpreting the related studies' content in a methodical order.

4 Results and Discussion

To begin with, the main empirical articles (around 15% of the articles were published between 2010 and 2014, 85% were published between 2015 and 2020) and their results will be summarized. Berns and Moore (2012) tried to predict cultural popularity by using fMRI method. The study focused on music industry and participants listened to unknown artists' music while having fMRI scan. The results suggested that neural responses to the goods may actually predict cultural popularity. Reimann et al. (2010) applied fMRI technique to analyze the brain activity regarding the effect of esthetic package design on choice responses. The product category in the experiments is mostly grocery products. They found that esthetic package design affects the speed of consumers' choice responses and the related brain activity was observed. In another study using fMRI method, Hsu and Cheng (2018) aimed to explore brain activity to show whether gender has an effect on word-of-mouth activities after a product harm crisis. The findings showed that males' product quality perceptions were constant while females had diverse brain activation regarding product quality perceptions.

Apart from fMRI method, there are also papers that used EEG. Daugherty et al. (2018) replicated Krugman's (1971) study and aimed to observe brain waves to test the effectiveness of advertising. The product category related to advertisements were from clothing, telecommunication, and insurance. They found that participant neural activity was different to each product category meaning neural activity is related to advertising effectiveness. Gountas et al. (2019) focused on social marketing messages (anti-binge-drinking campaign) and tested whether EEG can describe cognitive and affective engagement related to emotions, memory, avoidance, or risk assessment regarding brain activation. The results suggested that EEG is capable of showing brain activation related to the effectiveness of social marketing messages. In a similar contextual study about corporate social responsibility, Lee (2016) investigated customer empathy in response to corporate social responsibility messages using EEG by selecting coffee as the product category. The research concluded that EEG explained the neural mechanism regarding empathy and corporate social responsibility messages. EEG method is used also in destination marketing. Bastiaansen et al. (2018) explored the effectiveness of destination marketing content in movies and found out that EEG is an important and valuable method for this purpose. Lastly, in another movie-related study, Boksem and Smidts (2015) investigated brain responses to movie trailers as a predictor of individual preferences and general commercial success. The paper revealed that EEG results provide additional results compared to stated preference measures that showed the relations between neural measures and individual and population preference.

Apart from EEG and fMRI methods, recent studies also employed different techniques. By using fNIRS method, which can be considered as a new method in neuromarketing, Çakir et al. (2018) aimed to investigate the relations between neural activity and purchase behavior of customers. Based on food, cleaning, and care products in the experiment, the study concluded that neural measures are

explanatory in the purchase decisions of customers. Meyerding and Mehlhose (2020) also employed fNIRS method to test the feasibility of the method based on experiments containing food and drink product categories. The results suggested that fNIRS method is also appropriate to test the relationship between brain activity and brand-label-related decisions. Another recent neuromarketing method was used by Hamelin et al. (2017), which is facial expression analysis. Their research explored the effect of advertising on individual attitudes toward driving. It was found that facial expression analysis which was conducted with GfK-Emo Scan is an effective neuromarketing method to measure emotional reaction to marketing stimuli. Lastly, based on the subject of storytelling styles and their effectiveness regarding attitude change and retention, Hamelin et al. (2020) used not only facial expression analysis in their study but also included data from eye tracking and galvanic skin responses. The authors considered these neuromarketing methods as a type of biometrics data. The findings of the study showed that the neuromarketing methods were applicable, and affective story was more effective at changing respondents' attitudes, while cognitive style had long-lasting attitude changes of participants.

In general, it can be said that neuromarketing topic has been rising after 2010 in the marketing field. Especially after 2015, the interest in the topic intensified. The increasing attention to neuromarketing topic is observed across continents including countries such as Turkey, United States, Germany, Taiwan, Australia, and so on. Considering the topics related to the marketing field, a variety of different topics have been considered regarding neuromarketing such as consumer preference, attitudes, choice responses, brand elements such as package design, word-of-mouth, product quality perceptions, advertisements, destination marketing, commercial success, purchase behavior, brands, and storytelling. Furthermore, corporate social responsibility and more social marketing-related topics have also received interest.

Regarding the product categories, it is observed that diverse goods and services are related to neuromarketing. Music and movies are examples from the entertainment industry; clothing as an example of retailing; insurance from service industry; drink, food, cleaning, personal care products, and so on. In summary, fast-moving consumer goods (FMCG) steps forward. Lastly, one can also observe different types of methods regarding neuromarketing. The most commonly used method in neuromarketing is EEG. Moreover, apart from fMRI method, EEG and other new methods such as fNIRS and facial expression analysis are preferred recently. Although employing one type of method is the general tendency, incorporating multiple methods in order to achieve one specific goal is also observed.

5 Conclusion and Limitations

Societies have witnessed substantial technological improvements recently. These developments contribute to the emergence of multidisciplinary areas. One of the fields that has undergone growing advancements and created multidisciplinary areas

is neuroscience. Neuroscience contributed to various areas and one of them is marketing, resulting in the concept of neuromarketing. The main aim of this study was to make an evaluation of neuromarketing topic considering its relations with marketing field. The results of the present study showed that neuromarketing is growing and receiving attention in marketing field all around the world; including diverse marketing topics and various methods applied to different kinds of product categories. To sum up, in marketing field, it can be said that neuromarketing is a trend and important topic providing unique insights, which is receiving attention from both academicians and marketing practitioners. If neuromarketing continues to rise, it is hoped that it grows by considering the benefits of customers, companies, and society.

This study is not the first and will not be the last study to investigate neuromarketing topic based on published articles. Like in every research paper, there are some limitations of the study providing future research recommendations. Firstly, the literature review was done based on certain criteria resulting in including only some of the journals out of many highly respected journals. Future research can include diverse journals regarding the related topic. Secondly, this study only included articles containing the “neuromarketing” topic in the selected journals. Researchers can include other keywords regarding the topic of the articles such as “consumer neuroscience,” “structural brand imaging,” etc. to make a much more comprehensive analysis. Lastly, in order to evaluate neuromarketing topic regarding marketing field, this research conducted a literature review; future studies may include data from business life that will provide additional insights.

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Innovative Financial Indicators: Marketing ROI



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Abstract Since return on investment (ROI) is an accounting ratio, there are innumerable variants both in the theoretical literature and in practice. In the ever-changing competitive environment of business, typical of our times, the cost of doing business has increased. In times of economic constraints, the cost of marketing activities is usually reduced. The lack of accountability has undermined the credibility of marketers. As a result, there has been a significant increase in the demand in the marketing field for concrete numerical data demonstrating the efficiency and effectiveness of marketing activities. We will use ROI as an example to show how a financial indicator with a history of more than one hundred years has evolved and been renewed. For this purpose, we have prepared an overview of the economic history and the history of management. Although it is a relatively simple indicator, its definition is subject to considerable uncertainty in some cases. One problem in marketing is that sometimes the return on marketing efforts cannot be clearly quantified, we can only estimate the ROI. If the determination of ROI is subject to uncertainties, it is worthwhile to perform parallel calculations.

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Keywords ROI · Marketing · Financial indicators · Return on marketing investment · ROMI

1 Introduction

Our research group focuses on the relationship between organizational data assets and (strategic) decision support. For years, our research group has been looking at how classical decision support methods and tools have evolved and where they are today. The current focus of our research is on ROI and the Balance Scorecard. Our main research question is how to make the link between the existing data assets of organizations and the input data needs of strategic decision support methods. One part of this research is the evolution of the methods used today. Where they started, where they have come from, and what problems they have helped solve. What input data are required, how measurable is this data, how accessible are they in the organizations' databases. In our study, we look at the evolution of the ROI metric and the marketing ROI (MROI) metric that evolved from the ROI metric.

According to Hannon (2005), data are the heart of business, without transforming them into information, good decisions cannot be made. According to research by Bersin and Zao-Sanders (2020), businesses today are accumulating more data than ever before, yet 60–73% of the data mass is never analyzed or used. Gualtieri and Yuhanna (2016) also point out a problem: although the data are available, the majority of decision-makers are not really able to interpret and use them properly. In this paper, we investigate whether the input data requirements of MROI computation methods found in theoretical works (Silva et al., 2020; Krizanova et al., 2019; Shay & Van Der Horst, 2019; Fu et al., 2018; Rogers & Sexton, 2012; Lenskold, 2003) can be extracted from the existing data of organizations. We point out that while the ROI metric can be quantified from existing accounting data, there are measurability problems for the MROI that evolves from ROI. The quantification of MROI proposed in the sources processed requires data that can only be extracted from the organizational data set determined by accounting and tax rules by developing a specific measurement procedure. Thus, the measurement of a KPI developed for a practical marketing issue can only be ensured in the practice of organizations by developing a separate measurement procedure.

To this end, we present studies on the classical ROI and its critics, as well as the content and measurement problems of MROI. The basic idea, the essence of which is presented in “[Hawkers' Attitude on Environmentally-Friendly Food Packaging Practices in Night Market](#)” can nowadays be applied in areas where it is much more difficult to measure numerical values, such as human resources and marketing. In “[Skills Shortages in Post-transition Economies](#)” of this paper, we present the content, interpretation, and evaluation problems of marketing ROI from a historical and critical perspective. Authentic sources, both contemporary and modern, have been processed.

The wave of corporate mergers in the first decades of the twentieth century created huge companies that were divided both vertically and spatially. Corporate

leaders faced the problem of how to advance the interests of the corporation against the goals of individual organizational units, which were sometimes the exact opposite of those of the corporation. The previous organizational framework, centralized functional management, was proving increasingly inadequate to reconcile individual interests. Management accounting (responsibility accounting), based on the principle of responsibility and the divisionalized organizational form going back to Alfred Sloan, Pierre du Pont, and Donaldson Brown, provided the solution (Loft, 1991). Three types of accounting and responsibility units are distinguished, depending on which areas are the responsibility of the division managers:

- Cost center responsible for operating costs
- Profit center responsible for the profit results
- Investment center responsible for the financial result in addition to the operating profit.

One of DuPont Company's greatest innovations, which still resonates today, was the development of a measure of return on invested capital, ROI (Return on Investment), and its associated system of ratios (Chandler, 1995; Kaplan & Atkinson, 1998).

2 Classical ROI

One of the central issues in business management is profitability. It is, therefore, no coincidence that numerous good and not so good ratios and ratio systems have been created to measure the profitability of companies. One of them is the classic ROI (return on investment), a ratio developed by Donaldson Brown in 1912 (1914 or 1919 according to others) (Loft, 1991; Chandler, 1995), and its extended, modified, and refined versions have been used in many ways for analytical purposes. The literature is also not homogeneous when it comes to recommendations on ROI. Toit and co-authors refer to ROI as a simple-to-define and easy-to-understand method for return on investment (du Toit et al., 1990), implying that it is interpreted at the project level rather than the firm level in the book. The intended use of ROI is also not uniform: there are companies that use it for pre- or post-investment evaluation, while in decentralized companies it is used as a performance management tool to compare the performance of business units and evaluate managers based on this comparison. In addition, it has become common for its value to be calculated for specific business units of the company, such as R&D activities, marketing, and human resource management. Its use is widespread not only in the "traditional" manufacturing industry, but also in other sectors and industries such as IT, tourism, or healthcare.

Thus, it has undergone numerous transformations since its birth. In the beginning, it was used to analyze the profitability of a company, primarily to meet internal information needs (e.g., to prepare financial decisions). For this reason, its value was initially clearly determined based on quantifiable information, accounting and

financial data and statements. Numerous versions of ROI have proliferated, and today's literature recommends it for more than just determining a company's profitability. However, this has led to a "softening" of the ratio. According to Botchkarev and Andru (2011), the widespread use of ROI has meant that it often appears like a mixture, which can lead to a lack of accuracy, and it is not free from bias.

Since ROI is a management accounting metric, there are countless versions both in the theoretical literature and in practice. It covers several areas of application. It is used to measure the profitability of individual processes (e.g., research, market acquisition, learning), any job offers, or any performance improvement solution (hereafter, programs) (Phillips & Phillips, 2005). ROI is generally a metric of efficiency that compares the net return of a program to its net expenditure (Dearden, 1969).

$$\text{ROI} = \frac{\text{Net benefits (Benefits} - \text{Disadvantages)}}{\text{Disadvantages}} \quad (1)$$

The content of the ROI Indicator, its interpretation and in some cases its criticism, can be found in numerous literatures. See, for example, the following works (in chronological order): Dearden (1969), Fisher and McGowan (1983), Fisher (1984), Engler (1987), Jacobson (1987), Phillips and Phillips (2005), Botchkarev and Andru (2011) and Meng and Berger (2012).

The widespread use and popularity of ROI can be explained mainly by the fact that at that time it was the first ratio suitable for studying the profitability of decentralized companies, moreover, it was relatively simple to determine, and the result obtained was easy for management to understand. Due to the increasing complexity of enterprises and the changes in financial stocks and reports, accounting and financial information systems, the inadequacies of ROI have become increasingly apparent. It has become increasingly tedious to determine the correct value of ROI. Consequently, there are hardly any companies left that use ROI in its original form and instead use a modified, improved version. Given these facts, it is no accident that ROI has come under criticism despite its many advantages and widespread use (see, for example, the work of Harcourt, 1965; Dearden, 1969; Solomon, 1971; Fisher & McGowan, 1983; Fisher, 1984).

When ROI is used as a measure of profitability, its advantages, disadvantages, and limitations should be considered. ROI as a measure of a company's profitability also has limitations and disadvantages, which are listed below:

- Although it is a simple ratio, it can only be used if the specific characteristics of the company are considered (Dearden, 1969).
- If used carelessly, it can produce misleading results even in relatively simple cases if it is not used for the purpose for which it is intended, namely, to determine profitability (Jacobson, 1987).
- When comparing firms, it can be particularly misleading if there is no verification that the firms' performances are truly comparable before starting the calculations.

It is usually not enough that firms produce the same product for the same market; other firm-specific characteristics that affect the value of ROI must also be known (Jacobson, 1987).

- Even though it is a relatively simple ratio, in certain cases there are many imponderables to determine it, for example, in the case of a multinational company operating on several continents (Dearden, 1969).
- Although ROI is a good metric to measure the profitability of a company (if used properly), business decisions must not be based on a single metric, but it is more useful to build a system of metrics and make them consistent for decision making. This is even more true for long-term decisions (Botchkarev & Andru, 2011).
- When determining ROI, we must always pay attention to the fact that in several cases we can reach the result only through certain simplifications and assumptions. These simplification conditions and assumptions must always be presented simultaneously with the result of ROI. Moreover, they must be considered when interpreting the obtained result (Botchkarev & Andru, 2011).
- If the determination of ROI is subject to many uncertainties (this may be the case even in the traditional ROI), it is worth performing parallel calculations (Botchkarev & Andru, 2011).

ROI as a measure of profitability may have further limitations in large, decentralized firms. ROI is often used in decentralized companies to assess the profitability of individual departments and thus compare, albeit indirectly, the performance of department managers. Dearden pointed out the limitations of this method as early as 1969. Dearden (1969) stated that the main problem with comparisons based on ROI and management based on these comparisons is that the departmental level ROI can only be increased at the expense of decreasing firm performance ROI, which means that if managers are encouraged to increase departmental profit, this will decrease overall firm performance. Furthermore, the inconsistency between departmental goals and corporate goals will further exacerbate ROI constraints. Dearden divides these constraints into two groups: technical constraints and implementation constraints. The first category includes those factors that may cause inconsistencies between business unit goals and corporate objectives, as business unit managers may be encouraged to engage in “unprofitable” activities. The second group includes the conditions that arise from the fact that in many cases it is not possible to accurately measure the effectiveness of business unit managers (Dearden, 1969). ROI may have further limitations depending on its scope, whether it is evaluating the effectiveness of human resource management or a marketing campaign.

3 ROI in Marketing

The demand for marketing evaluations has increased significantly. According to Liang and Frösén (2020, p. 545) “the use of marketing controls as a means of influencing, managing, and improving both individuals and firm performance has received extensive scholarly attention.” The environment in which businesses operate daily is difficult to predict. The economic and other factors that affect it are changing extremely rapidly, and business processes are also becoming more complex. There are more and more tasks that are the responsibility of management. At the same time, managers are expected to follow the right strategy to lead the company to achieve its goals. In addition, costs, including marketing costs, are constantly rising. Planning can reduce uncertainty as we get a course of action for future events. According to Preißner (1999), if we plan, we can manage the future more easily.

In the case of marketing and sales planning, the environment is less predictable compared to the other business activities. The reason for this is the behavior of customers in the B2C sector. In the case of consumer behavior, we often talk about rationality, although these cases are unique and quite subjective. For this reason, the importance of marketing planning is even greater here. Of course, there is also a strong need for rationalization of organizational purchases in the B2B market, i.e., a cost reduction measure. The marketing processes within the company should be continuously tracked and measured to work efficiently and react quickly.

Ehrmann (2004) summarizes the factors that have recently increased the importance of marketing planning in companies. According to him, on the one hand, there is a rapid change in environmental and market factors, rapid technical and technological development. On the other hand, the business processes to be coordinated are becoming more complex and the tasks of managers are also becoming more numerous. Competition in different industries has increased, and the role of marketing in business strategy is greater than ever. In the development of marketing evaluation, Ambler and Roberts (2008) distinguish between the financial metrics and indirect measurements. Financial metrics are often used to directly evaluate the effectiveness and efficiency of a marketing campaign. In Ryal's (2008) direct value approach, ROI indicators can be used to determine direct returns. However, in the field of marketing, there are the so-called psychographic factors, i.e., the reasons why consumers choose certain products, which makes measurement more difficult. Ryals (2008) also identified indirect value, which is the additional value that comes from the customer relationship. For this reason, indirect measurement should be used in parallel with direct measurement.

It is a constant problem for management to show how marketing fits into financial ratios (Ganesan, 2012). In the case of marketing evaluation, marketing controlling includes both direct and indirect measurement tools, and marketing ratios and ratio systems play an important role. In the case of marketing controlling instruments, an attempt has been made to summarize the set of instruments, but it is so diverse that a claim to completeness is hardly possible (Köhler, 1996; Reinecke, 2006). The tasks

and the instruments assigned to them are organically linked, so that the principle of systematization is the same.

Köhler (1996) systematizes marketing controlling instruments according to the methodology of strategic and operational marketing planning. According to this, qualitative tools are mostly used to support strategic marketing planning, such as the business environment and customer portfolio, strength-weakness analyzes, scenario techniques, benchmarking, and the development of early warning systems. Quantitative data is often combined with a qualitative approach, which has led to the development of portfolio techniques based on various scoring assessments. There are also purely quantitative tools, such as multi-period economic calculations and long-term budget planning for marketing projects. According to Köhler (1996), the data needed for operational marketing planning comes mainly from the company's accounting system. This is especially true for estimating the costs of a marketing mix. For example, in a company, if we increase the price of a product, it will lead to a change in the demand for the product. This change can be derived from market research studies and expert opinions.

Balanced scorecard (Kaplan & Norton, 1996) is a comprehensive tool for implementing strategy and monitoring results. It is a system of metrics that not only reflects the financial perspective, but also includes the perspective of customers, internal business processes, and employee development opportunities. In marketing controlling, the focus is on the customer. For example, one of the strategic goals of a company may be to increase customer loyalty, which is closely related to customer satisfaction and profitability. This has an impact on market share, which already covers a financial perspective.

According to Reinecke and Janz (2007), like Amshoff (1993) and Weber and Schäffer (2005), marketing controlling tools include methods and procedures that ensure the efficiency and profitability of market-oriented management. Thus, these methods and procedures consist not only of controlling instruments but also of the practical experience of enterprises. In our opinion, the system develops itself (self-developing) considering the experience of corporate practice, which is why the range of marketing controlling instruments is so diverse and therefore different from other controlling systems. According to Reinecke and Janz (2007), it should not be determined in advance whether a marketing instrument belongs to the strategic or to the operational instruments. As an example, they cite assortment analysis, which has a long-term strategic function in high-tech B2B markets or in the pharmaceutical industry, whereas in food retailing it is a short-term, daily routine task, so we would list it here as an operational instrument. A mix area also has a strategic and an operational level, including selection analysis. A method is called strategic if, from the buyer's perspective, it is likely to have a significant impact on the long-term direction of the company's potential relative to the competition. And tools that support short-term routine activities, such as annual budget planning, should be classified as operational. Reinecke and Janz (2007) also include marketing mix activities, even though this ultimately contains both strategic and operational elements. Finally, the various indicators (such as marketing ROI or ROMI) are also marketing controlling instruments.

Among the indicators used to quantify marketing activities, marketing ROI or in other words ROMI is considered relatively new. It evaluates the efficiency of investments, the return on investment in marketing. However, marketing is different from investment in the usual sense because there are no tangible assets, and the cost cannot be accurately determined. Of course, the total cost of a marketing communications campaign is given, but the problem arises as to which costs can be uniquely assigned to the given investment. It would be easier if it were defined what exactly the alternative costs include in the case of marketing activities. The formula ROI for marketing is like the formula used for the return on other activities. The market reaction is analyzed on the basis of turnover and profit.

$$\text{MROI} = \frac{\text{[Incremental financial value gained as a result of the marketing investment} \\ \text{– cost of marketing investment]}}{\text{Cost of marketing investment}} \quad (2)$$

One weakness of the indicator is the measurement of facts. A marketing action can be interpreted as a separate project. It is, therefore, possible to consider each action as a separate cost. The measurement of the denominator of the indicator is thus solved. However, the impact of each action is difficult to measure, so the separate measurement of revenue—and thus the measurement of the numerator of the indicator—cannot be guaranteed (Eldenburg et al., 2020; Sedgley & Jackiw, 2018). Frösén et al. (2016) emphasize that there is no “one-size-fits-all” solution for marketing controlling for all companies. The system should be tailor-made and cover the company and its environmental influences.

The goal is to achieve a positive ROI value. This model is usually used after a marketing investment, such as a marketing communications campaign, when it is worthwhile to study its impact. In some companies, a threshold is set that must be achieved by the marketing department, otherwise the justification for the investment may be questioned. In corporate practice, the marketing budget for a given year is calculated based on the results of previous years. However, the effects of individual marketing campaigns add up, making it difficult to separate individual marketing investments. Integrated marketing communications are about reaching consumers across multiple channels simultaneously. The impact may not be felt until years later, when consumers buy the products, they know from advertising. Therefore, environmental changes and the time value of money should also be considered when calculating the MROI ratio (Gallo, 2017). One marketing campaign may have an impact on another. In such a situation, ROI can be calculated for both cases, but these values show an accumulation. We agree with Michopoulou and Moisa (2019) that measuring marketing performance with ROI is still in its infancy because the knowledge or tools of a definitive method for measuring ROI are not yet widely available in the marketing field.

4 Conclusion

Both Belz (2004) and Reinecke (2006) criticize the method of marketing metrics based on the use of ratios. They focus their criticism on two arguments. First, they reject the view that marketing activities can be controlled with metrics. Second, they reject the one-way information based on metrics because the attention is no longer focused on customer-oriented marketing solutions. For example, the value of MROI can be increased if the denominator, i.e. the cost of marketing investment, is decreased. Ambler (2005) stated that the maximum return on investment is achieved by spending less rather than trying to achieve the maximum profit. However, in the long run, minimizing marketing costs can lead to a decrease in revenue.

Belz (2004) identifies the dangers of marketing metrics as follows:

- The result is always the consequence of something and not the cause.
- Numbers and measurements dominate and push marketing content into the background. These measurements signify extrinsic motivation that supports internal focus.
- Measurements shorten the time horizon and make it impossible to interpret marketing from an investment perspective.
- Measurements support quantitative interventions because companies want to achieve set goals. Quantitative targets and costs are assigned to these.

Considering the critique of Belz (2004) and Reinecke (2006), it is striking that in certain situations in business practice, ratios play a different role than the originally desired function, depending on what is being measured: operational, short-term effects or strategic dimensions. The strategic approach seems in certain cases to serve individual interests rather than focusing on the long-term interests of the company. By using ratios, the marketing activities of the company can be evaluated according to economic efficiency criteria.

The use of ratios is essential for demonstrable success in marketing, as they are a useful tool for evaluating marketing activities and a building block of a comprehensive controlling system. However, we believe that it is necessary to use other methods besides ratios to demonstrate success in marketing. The methods based on financial and accounting tools refer to the past and do not contain information that would affect future results in the long term (Seggie et al., 2007). Nevertheless, according to Li (2010), the existence of these data is necessary so that past performance can be evaluated to improve future strategy and implementation.

In future research, we aim to work on developing measurement solutions that lead to optimal measurement costs. Our focus is on leveraging existing datasets from companies, i.e., datasets that do not cost money to create but are underutilized. In the future, we will integrate our research on marketing ROI into a balance scorecard model that makes the best use of companies' resources.

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Part V
Eurasian Business Perspectives:
Small- and Medium-Sized Enterprises
(SMEs)

Analysis of the Relationship Between Strategic Networking and Performance Among Croatian Service Sector SMEs



Bojan Morić Milovanović, Zorica Krželj-Čolović, and Zoran Bubaš

Abstract The aim of this study is to analyze the impact of strategic networking on SMEs' performance in the Croatian service sector. Data were collected from 136 SMEs using an e-mail questionnaire. Multiple linear regression was used as an analytical method to test the proposed hypothesis and sub-hypothesis. The results indicated that strategic networking has a significantly positive effect on financial and non-financial business performance. The external environment has a positive impact on service SMEs' strategic networking. Moreover, the results revealed that the interaction with the external environment positively affects strategic networking—performance relationship. It is recommended that SMEs operating in the service sector need to strive to embrace strategic networking because it provides them with higher performance results and a more competitive position in the external environment. Finally, the study contributes to the existing knowledge and theory on the impact of strategic networking on business performance of SMEs, primarily by focusing on the service sector context in a small and open economy such as Croatia.

Keywords Strategic networking · External environment · Performance · SMEs · Service sector · Croatia

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1 Introduction

With a share of 65.5% in the GDP of European Union, the service sector has a significant impact on the EU economy. Luxembourg (79.2%), Malta (75.6%) and Cyprus (72.8%) were among the first countries whose service sector share in GDP exceeded 70% (World Bank, 2019). In Croatia, the service sector accounts for 58.8% of GDP and the share of the SMEs service sector is over 90% (CEPOR, 2020). In the region, the share is similar for Slovenia (56.6%), Montenegro (58.7%) and Bosnia and Herzegovina (55.7%), while the ratios are slightly higher in Italy (66.3%) and lower in Serbia (51.2%) (World Bank, 2019). Gomes-Casseres (1994) considers networking a crucial activity in the service sector because competition between groups of companies (as compared to single companies) is easier to overcome to survive in a turbulent market.

The largest number of SMEs in Croatia is in the service sector. Because of their numbers, it is challenging to remain competitive in the market so investing in network relationships could enable them to be more competitive and gain competitive advantage over other firms (Balaeva et al., 2012). Service sector SMEs are encouraged to network with current competitors and exchange resources and knowledge. Instead of competing in the market as “single players”, they could compete as “big players”, thus strengthening their competitive advantages and achieving better business results (Krželj-Čolović et al., 2016). Moreover, SMEs networking provides their owners and managers with a wide range of opportunities, such as cost and risk reduction leading to improved performance (Johannisson, 1986). Furthermore, it allows firms to share information and in turn more effectively predict market uncertainties that affect their performance.

The effects of strategic networking on business performance are especially important for SMEs in the service sector. Ehsan et al. (2017) reveal that the strategic business network can positively influence SMEs’ business performance however it is still not clear which factors in particular might affect entrepreneurs’ strategic business network. While analyzing strategic networking among service SMEs operating in a lagging economic context, Moric Milovanović et al. (2014) find positive relationships between strategic networking and business performance, where research results showed for example reputation to be the most important antecedent of strategic networking. Same results were obtained by Moric Milovanović et al. (2020) while exploring the role strategic networking has for the success of SMEs operating in the manufacturing context. By using these findings, we aim to explore commitment, trust, reputation, communication and cooperation as factors which might affect the SME business performance, expressed both as financial and non-financial, in small open economy’s service sector environment.

Stam et al. (2013) suggest that there are important differences in business environments between SMEs which might affect the SMEs networks’ performance and survival, and further research needs to explore contextual boundaries of strategic business networks in different countries and industries. Therefore, it is imperative to examine how SMEs survive and perform in a different business environment.

Finally, it is expected that there will be a fit between the strategic business network, business environment and business performance (Batjargal, 2010; Batjargal et al. 2013). The aim of this paper is to examine the relationship between strategic business networking and business performance among SMEs operating in the Croatian service sector. Moreover, the paper provides some new insights by exploring external environment's moderating role (Asad et al. 2020) on the strategic networking–performance relationship.

This paper is organized as follows: Sect. 1 presents Introduction with a review of relevant literature of effects of strategic networking on SMEs business performance. Section 2 gives the overview of set hypotheses and sub-hypotheses with literature review. Section 3 presents methodology which is used in this paper while Sect. 4 presents the results obtained. Section 5 provides an overview of the findings of the research and the implications for further research.

2 Literature Review and Hypotheses

2.1 *Strategic Networking and Business Performance*

According to Hallberg (1999), SMEs represent a heterogeneous group with a wide range of sophisticated skills operating in different markets and environments. Due to their heterogeneity, SMEs have a wide range of networking capabilities and activities with the main purpose to exchange resources and strengthen their competitive advantage (Johannison, 1987; Vasiliska et al., 2014; Krželj-Čolović, 2016; Carson et al., 2004; Antoldi et al., 2011; Lama & Shrestha, 2011). Strategic networking represents firm's long-term oriented relationships and interactions with various market players aimed at exchanging valuable information and resources which are outside the firm's control (Sedmak et al., 2011). Strategic networking can be analyzed as a unidimensional and as a multidimensional concept, therefore in this paper we will analyze the influence of strategic networking on business performance as both uni- and multidimensional concept. Relevant literature lists commitment, trust, reputation, communication and cooperation as the most common antecedents of strategic networking, that is these antecedents represent main building blocks when observing strategic networking as a multidimensional concept (Moric Milovanović et al., 2020).

Morgan and Hunt (1994) define relationship commitment as an exchange between partners who genuinely believe in an ongoing relationship with one another. They exert maximum efforts to maintain the relationship and ensure that it endures indefinitely. Due to their chronic lack of resources, commitment motivates SMEs to build and maintain partner relationships because it encourages efficiency, and because it is a foothold for enhancing further network cooperation.

Strategic networking is developed mainly from personal ties, and these connections are built based on trust (Porrás et al., 2004). From a networking point of view, trust is based on repeated interactions between actors, their exchange of resources

and expectations, which further strengthen the relationship by embracing the network's accepted behavioral norms. Thus, the community of individuals who trust one another in social relations subsequently constitutes strategic networking, and is an essential compound that holds the network together (Sengupta, 2011).

Reputation is one of the main firms' (owner) attributes operating in strategic network. It is a set of firm characteristics which are essential prerequisites for fostering business relationships (Weigelt & Carnerer, 1988). As a critical factor for any collaboration, reputation is one of the key indicators of sustainable businesses and provides them with a strong foothold positioning in the market.

Both formal and informal communication stimulates strategic networking among SMEs allowing them to better know each other, to facilitate the exchange of information, to manage market expectations, and in turn to achieve mutually shared goals and objectives (Jonsson & Zineldin, 2003). Song et al. (2006) find that enhancing harmony and filling-in of information gaps leads to communication efficiency. Therefore, in order for strategic networks to be successful, it is imperative that SMEs are able to develop and maintain a smooth communication process, high quality of information exchange, harmony between parties and avoid any potential harmful gaps in the communication channel (Stanko et al., 2007).

For the above to be achievable it is necessary that SMEs cooperate with each other, especially to ensure that multiple network members work cohesively. According to McCosh et al. (1998), cooperation may involve a formalization level, a clear definition of deliverables and a single authority who serves as a network manager. Wincent (2005) views cooperation as a joint planning mechanism for managing complementary activities with the purpose of garnering superior performance. Stated differently, by investing in joint efforts, SMEs are able to develop such competences which they would not be able to develop on their own (Human & Provan, 1997).

Therefore, following hypotheses are proposed:

H1: There is a positive relationship between strategic networking and the performance of service SMEs.

H1a: There is a positive relationship between commitment and performance of service SMEs.

H1b: There is a positive relationship between trust and performance of service SMEs.

H1c: There is a positive relationship between reputation and performance of service SMEs.

H1d: There is a positive relationship between communication and performance of service SMEs.

H1e: There is a positive relationship between cooperation and performance of service SMEs.

2.2 *Strategic Networking and Financial Performance*

Because of the substantial costs associated with business failure, for a long time academic research has been focused on analyzing various factors tied with business performance. This is especially true in the SME business contexts due to their size and limited resources available at their disposal forcing them to continually search for potential cost reductions. Eckenhofer (2011) emphasizes that participation in strategic networking reduces costs. Moreover, analyzing the relationship between networking and SMEs financial performance, Omwono et al. (2016) concluded that there are positive effects between networking and financial performance, thus supporting earlier views that networking is vital for high business growth.

From these findings we can frame the following hypotheses as that:

H1.1: There is a positive relationship between strategic networking and the financial performance of service SMEs.

H1.1a: There is a positive relationship between commitment and financial performance of service SMEs.

H1.1b: There is a positive relationship between trust and the financial performance of service SMEs.

H1.1c: There is a positive relationship between reputation and financial performance of service SMEs.

H1.1d: There is a positive relationship between communication and financial performance of service SMEs.

H1.1e: There is a positive relationship between cooperation and financial performance of service SMEs.

2.3 *Strategic Networking and Non-financial Performance*

When assessing the performance of SMEs, Van der Stede and Chow (2006) state that relying only on financial performance indicators is not appropriate because non-financial performance measures are better utilized when compared to financial performance measures. Moreover, many authors concluded that strategic networking positively impacts SMEs' non-financial measures of performance (e.g. Donckels & Lambrecht, 1995; Larsson et al., 2003; Saleh & Ndubisi, 2006).

Hence, we propose the following hypotheses:

H1.2: There is a positive relationship between strategic networking and the non-financial performance of service SMEs.

H1.2a: There is a positive relationship between commitment and non-financial performance of service SMEs.

H1.2b: There is a positive relationship between trust and non-financial performance of service SMEs.

H1.2c: There is a positive relationship between reputation and non-financial performance of service SMEs.

- H1.2d: There is a positive relationship between communication and the non-financial performance of service SMEs.
- H1.2e: There is a positive relationship between cooperation and non-financial performance of service SMEs.

2.4 Strategic Networking and External Environment

The external environment represents various factors which are not under the firm's control and come from outside the organization. External environments are usually defined in terms of their environmental complexity, turbulence, hostility and dynamism (Naman & Slevin, 1993; Gupta & Govindarajan, 1994; Jarillo & Martinez, 1990; Wiklund & Shepherd, 2005). Environmental turbulence is characterized by high degrees of uncertainty and unpredictability, hostile environments are characterized by a high level of competitiveness, while environmental dynamism represents the degree, velocity and predictability of the market changes (Mason, 2006; Covin & Slevin, 2006; Wiklund & Shepherd, 2005). As stated earlier, since firms are not able to have an influence on various competitive pressures coming from their external environment, Lee et al. (2001) determined that it is important for SMEs to form linkages with other firms through strategic networking activities in order to offset any of such negative effects. In their research Moric Milovanović et al. (2014, 2020) highlighted the importance of the external environment, especially hostility, for the strategic networking process.

Therefore, we suggest the following hypotheses:

- H2: There is a positive relationship between the external environment and strategic networking of service SMEs.**
- H2a: There is a positive relationship between turbulence and strategic networking of service SMEs.
- H2b: There is a positive relationship between hostility and strategic networking of service SMEs.
- H2c: There is a positive relationship between dynamism and strategic networking of service SMEs.

2.5 External Environment as a Moderator

For SMEs it should be easier to adapt to the changes in the external environment when engaging in strategic networking activities. Park et al. (2002) indicate that strategic networking is more likely to be formed by strong firms, at least during the times of market instability. On the other hand, weak firms could through network relationships, that is reducing certain levels of competition, identify opportunities, gather needed resources to exploit these opportunities, achieve certain competitive advantages and increase efficiency. Asad et al. (2020) find that the environment in which firm operates plays a moderating role, where the primary reason behind the

unstable performance of SMEs is the dynamic and challenging environment of their businesses. Therefore, effective management of networking activities, both in domestic and international markets, significantly contributes to SMEs' success and serves as a source of competitive advantage for achieving superior performance (Kusumawardhani et al., 2009).

Accordingly, we suggest testing the following hypotheses:

H3: The external environment moderates the strategic networking-performance relationship of service SMEs.

H3a: The external environment moderates the strategic networking-financial performance relationship of service SMEs.

H3b: The external environment moderates the strategic networking-non-financial performance relationship of service SMEs.

3 Research Method

3.1 Sample

A random sample of independent small- and medium-sized firms operating in the service sector (financial services, communication and transportation, retail and wholesale, tourism and hospitality) was selected from the database of the Croatian Financial Agency (Fina). A total of 1000 SMEs (half were small firms up to 50 employees, while the other half were medium-sized firms with up to 250 employees) were contacted in December 2019 and January 2020, of which 136 responded and correctly filled out an e-mail questionnaire, meaning a response rate of 13.6%. Small firms (<49 employees) represent 57%, while medium-sized firms (50–250 employees) represent 43% of overall respondents. When looking at the industry sector, 40.4% of the firms operated in the financial services sector, 10.3% in communication and transportation, 33.1% in retail and wholesale, and 16.2% in tourism and hospitality. Respondents' demographics show that 49% of the respondents were firm owners, 25% directors, and 25% managers, while 78% of respondents had more than seven years of work experience with the firm. Table 1 shows more detailed sample demographics.

3.2 Variables, Measures, Model and Analysis

For the purpose of this research, authors have used the same model as used by Morić Milovanović et al. (2014), that is the aim of the authors was to further test the model at different period of time and on a different sample.

Strategic networking (SN) was measured by using commitment, trust, reputation, communication and cooperation as antecedent variables. Allen and Meyer's (1990) scale was used for assessing commitment (Cronbach's $\alpha = 0.95$), Garbarino and

Table 1 Demographics; firm and entrepreneurs' characteristics ($n = 136$)

Variable	Frequency	Percentage	Variable	Frequency	Percentage
<i>Size</i>			<i>Education</i>		
Micro	50	36.76%	High school	20	14.71%
Small	52	38.24%	Bachelor	85	62.50%
Medium	34	43.25%	MBA/Master	27	19.85%
<i>Role</i>			<i>Experience</i>		
Owner	67	49.26%	<1 year	2	1.47%
Director	34	25%	1–4 years	12	8.88%
Management	35	25.73%	5–7 years	16	11.76%
<i>Gender</i>			>7 years		
Male	87	63.97%		106	77.94%
Female	49	36.03%			

Source: Authors' own work

Johnson's (1999) scale for assessing trust (Cronbach's $\alpha = 0.87$), Hansen et al. (2008) scale for assessing reputation (Cronbach's $\alpha = 0.81$), Sivadas and Dwyer's (2000) scale for assessing communication (Cronbach's $\alpha = 0.78$) and Eriksson and Pesamaa's (2007) scale for assessing cooperation (Cronbach's $\alpha = 0.71$). All three scales were based on a seven-point Likert-type questions. The strategic networking score has a mean of 5.31, a standard deviation of 0.92 and a Cronbach's α value of 0.77.

External environment (EE) was measured using modified Naman and Slevin's (1993) scale for assessing turbulence (Cronbach's $\alpha = 0.74$), hostility (Cronbach's $\alpha = 0.50$), and dynamism (Cronbach's $\alpha = 0.64$), based on a seven-point Likert-type questions, where external environment score has a mean of 4.38, a standard deviation of 1.04 and a Cronbach's α value of 0.75.

Business performance was measured with a modified instrument developed by Gupta and Govindarajan (1984) where respondents indicated on two different seven-point Likert-type scales the importance that the stated performance indicators have for their business and the degree of satisfaction with these performance indicators. The business performance score has a mean of 4.81, a standard deviation of 1.18 and a Cronbach's α value of 0.88. To better understand performance implications, we looked into financial and non-financial performances separately using the same methodology. Financial performance was measured with the following indicators: sales growth rate, operating profit, and profit to sales ratio, while non-financial performance was measured by using market share, market development, and new product development as non-financial indicators. Financial performance has a mean of 4.87 and a standard deviation of 1.32, while non-financial performance has a mean of 4.74 and a standard deviation of 1.16.

A non-response analysis applying ANOVA tests was performed by comparing all relevant variables (firm's size, industry, respondents' demographics, etc.) The analysis showed no significant differences between early and late respondents. Stated differently, non-response bias or missing-value bias was not present in the study.

Harman’s one-factor test analysis was performed to address the potential of common method variance bias, and it yielded distinct factors for Eigenvalues greater than 1, showing that none of the factors accounted for a majority of the covariance. Therefore, we can state that common method bias was unlikely to be a severe concern in this study. Multiple linear regression was used as an analytical method to test the proposed hypotheses and sub-hypotheses. Further robustness tests for testing for the absence of multicollinearity, heteroscedasticity and autocorrelation have been conducted to ensure linear regression assumptions were not violated. Durbin-Watson statistic, maximum Cook’s distance and variance inflation factors (VIF) were well below critical values. Moreover, when we added firm size, respondents work experience with the firm and respondent’s education as control variables in our multivariate analysis, our results did not change, meaning that the results were robust to adding these additional variables.

4 Results

Tables 2, 3 and 4 display the means, standard deviations and correlation coefficients of the observed variables. Correlations of all variables are relatively modest, ranging from -0.085 to 0.415 for main level variables (Table 2), 0.103 to 0.514 for external environment antecedents’ variables (Table 3), and 0.118 to 0.621 for strategic networking antecedents’ variables (Table 4).

To be more specific, the correlation between SN and performance is 0.415, SN and financial performance is 0.405, and between SN and non-financial performance

Table 2 Means, standard deviations and correlation coefficients (main elements)

	Mean	S. D.	1	2	3	4	5	6
1. Performance	4.81	1.18	1.00					
2. Financial performance	4.87	1.32	0.957**	1.00				
3. Non-financial performance	4.74	1.16	0.938**	0.798**	1.00			
4. Strategic networking (SN)	5.31	0.92	0.415**	0.405**	0.384**	1.00		
5. External environment (EE)	4.38	1.04	-0.082	-0.085	-0.061	0.240**	1.00	
6. Interaction (SNxEE)			0.129	0.175*	0.053	-0.025	0.127	1.00

Notes: * $P < 0.05$; ** $P < 0.01$

Source: Authors’ own work

Table 3 Means, standard deviations and correlation coefficients (EE antecedents)

	Mean	S.D.	1	2	3	4
1. Turbulence	4.64	1.39	1.00			
2. Hostility	4.68	1.21	0.514**	1.00		
3. Dynamism	3.82	1.25	0.484**	0.506**	1.00	
4. Strategic networking (SN)	5.31	0.92	0.103	0.212*	0.285**	1.00

Notes: * $P < 0.05$; ** $P < 0.01$

Source: Authors' own work

is 0.384. The correlation between SN and the external environment is 0.240. When looking at the correlations between antecedents of external environment and SN, it can be noticed that only hostility (0.212) and dynamism (0.285) have significantly positive correlation coefficients.

When observing the correlation coefficients between antecedent variables of SN and performance (Table 4), it can be concluded that only commitment as the antecedent of SN does not have a significantly positive correlation coefficient with performance, including both financial and non-financial performance aspects, while all other antecedents have significantly positive correlation coefficients. Moreover, it can be noted that reputation and cooperation have the highest correlation coefficients with performance.

Table 5 provides the results of hypotheses testing, where each column represents the result of the different hypothesis test. Column 1 provides an answer to hypotheses 1 and 3, column 2 to hypothesis 1.1 and sub-hypothesis 3a, column 3 to hypothesis 1.2 and sub-hypothesis 3b and column 4 provides an answer to hypothesis 2. As reflected in Table 5, strategic networking has a significantly positive effect on the business performance ($\beta = 0.600$, $P < 0.01$), financial business performance ($\beta = 0.661$, $P < 0.01$) and non-financial business performance ($\beta = 0.535$, $P < 0.01$) which provides support for hypothesis 1, hypothesis 1.1 and hypothesis 1.2. External environment has a positive influence on strategic networking ($\beta = 0.212$, $P < 0.01$), supporting hypothesis 2. Regarding the interaction (moderation) effect of external environment on the strategic networking—business performance relationship, including both financial and non-financial performance, there is a significantly positive effect on business performance ($\beta = 0.179$, $P < 0.05$), and financial performance ($\beta = 0.256$, $P < 0.01$), supporting hypothesis 3 and sub-hypothesis 3a. However, there is no effect on non-financial performance, meaning there is not enough evidence to support sub-hypothesis 3b.

Table 6 provides results of the sub-hypotheses testing where from the second order variables (antecedents) that conceptualize strategic networking, reputation has a significantly positive effect on business performance ($\beta = 0.592$, $P < 0.01$), financial business performance ($\beta = 0.618$, $P < 0.01$) and non-financial business performance ($\beta = 0.561$, $P < 0.01$) which provides support for sub-hypothesis 1c, sub-hypothesis 1.1c and sub-hypothesis 1.2c. Cooperation has a significantly positive effect on business performance ($\beta = 0.242$, $P < 0.01$), financial performance ($\beta = 0.300$, $P < 0.01$) and non-financial business performance ($\beta = 0.182$,

Table 4 Means, standard deviations and correlation coefficients (SN antecedents)

	Mean	S.D.	1	2	3	4	5	6	7	8
1.Performance	4.81	1.18	1.00							
2.Financial perf.	4.87	1.32	0.957**	1.00						
3.Non-financial p.	4.74	1.16	0.938**	0.798**	1.00					
4.Commitment	4.12	1.75	0.131	0.118	0.141	1.00				
5.Trust	6.20	1.08	0.278**	0.276**	0.246**	0.381**	1.00			
6.Reputation	6.21	0.80	0.488**	0.468**	0.455**	0.265**	0.547**	1.00		
7.Communication	5.54	1.19	0.370**	0.358**	0.343**	0.312**	0.473**	0.621**	1.00	
8.Cooperation	4.47	1.38	0.407**	0.413**	0.356**	0.452**	0.412**	0.448**	0.600**	1.00

Notes: * $P < 0.05$; ** $P < 0.01$

Source: Authors' own work

Table 5 Analysis of main elements

	Performance	Financial performance	Non-financial performance	Strategic networking
	β	β	B	β
Strategic networking (SN)	0.600** (0.100)	0.661** (0.099)	0.535** (0.102)	
External environment (EE)	-0.244 (0.089)	-0.281** (0.111)	-0.193* (0.091)	0.212** (0.074)
Interaction (SNxEE)	0.179** (0.082)	0.256** (0.091)	0.089 (0.083)	
R^2	0.235**	0.245**	0.179**	0.058**
Adjusted R^2	0.218**	0.228**	0.161**	0.051**
D-W	1.939	1.869	2.006	2.270
VIF	<2	<2	<2	1
Max Cook's distance	0.182	0.176	0.136	0.105

Notes: * $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$. Standard errors are presented in the parenthesis
 Source: Authors' own work

Table 6 Analysis of strategic networking antecedents

	Performance	Financial performance	Non-financial performance	Strategic networking
	β	β	B	β
Commitment	-0.063 (0.057)	-0.086 (0.065)	-0.031 (0.058)	
Trust	-0.019 (0.102)	-0.003 (0.114)	-0.042 (0.103)	
Reputation	0.592** (0.149)	0.618** (0.168)	0.561** (0.152)	
Communication	-0.013 (0.106)	-0.031 (0.119)	0.005 (0.108)	
Cooperation	0.242** (0.085)	0.300** (0.095)	0.182* (0.086)	
Turbulence				-0.059 (0.068)
Hostility				0.094 (0.079)
Dynamism				0.197** (0.075)
R^2	0.290**	0.282**	0.239**	0.093**
Adjusted R^2	0.263**	0.254**	0.210**	0.072**
D-W	1.978	1.913	2.061	2.208
VIF	<2	<2	<2	<2
Max Cook's distance	0.303	0.216	0.314	0.096

Notes: * $P < 0.05$; ** $P < 0.01$. Standard errors are presented in the parenthesis
 Source: Authors' own work

Fig. 1 Interaction effect of External environment (EE) and Strategic networking (SN) on Performance. (Source: Authors' own work)

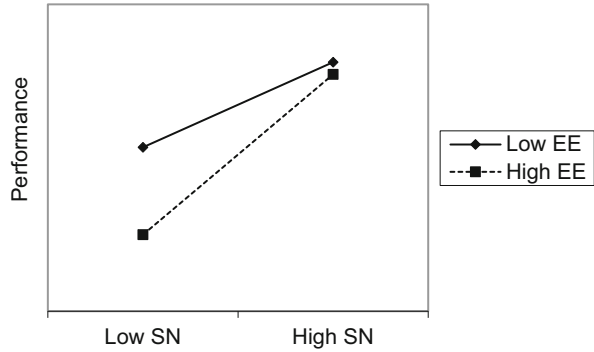
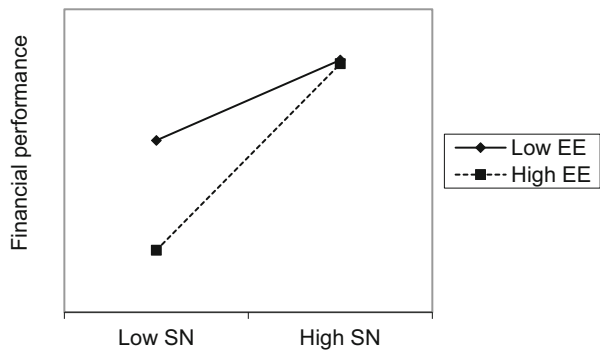


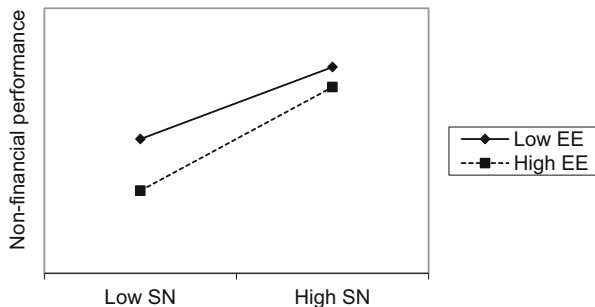
Fig. 2 Interaction effect of External environment (EE) and Strategic networking (SN) on financial performance. (Source: Authors' own work)



$P < 0.05$), which provides support for sub-hypothesis 1e, sub-hypothesis 1.1e and sub-hypothesis 1.2e. From the second order variables (antecedents) that conceptualize external environment, only dynamism has a significantly positive effect on strategic networking ($\beta = 0.197, P < 0.01$), which supports sub-hypothesis 2c.

To better understand and interpret the observed interaction effects, we plotted the interaction effects of the external environment and strategic networking on business performance, including financial and non-financial performance. In doing so, we fixed the contingent variable, external environment, at high and low levels, that is as one standard deviation above or below the mean, respectively. The corresponding plots are represented in Figs. 1, 2 and 3. Consistent with hypothesis 3 and sub-hypothesis 3a, Figs. 1 and 2 confirm that the interaction effect exists. In contrast, Fig. 3 does not provide evidence that the external environment moderates the relationship between strategic networking and non-financial performance. Moreover, Figs. 1, 2 and 3 further confirm the positive relationship strategic networking has on business performance, thus providing additional support for hypothesis 1, sub-hypothesis 1.1 and sub-hypothesis 1.2. However, what is somewhat surprising is that firms operating in a more stable environment (low EE as displayed in figures) attain higher performance with increased strategic networking.

Fig. 3 Interaction effect of External environment (EE) and Strategic networking (SN) on Non-financial performance. (Source: Authors' own work)



5 Conclusion

This research highlighted the importance strategic networking has for the business success of Croatian service sector SMEs. Analysis showed, expectedly, that strategic networking positively affects business performance measured in terms of both financial and non-financial indicators, supporting the proposition that service SMEs can further develop their competitive advantage and strengthen business sustainability by engaging in long-term oriented networking activities. However, when looking more closely into the antecedents of strategic networking, results showed that only reputation and cooperation have positive effects on business performance. When looking at the effects of the environment in which the firm operates, it can be concluded that the external environment and more precisely the environmental dynamism plays an important role for service SMEs trying to enter and form strategic networks. Furthermore, this research showed that external environment moderates the relationship between strategic networking and business performance, where this relationship is more expressed when the firm operates in a more stable and predictable environment (low external environment).

5.1 Implications for Future Research and Management

There are several findings produced by this study which could have implications both for further research related to the field of strategic networking, and for the industry professionals and policy makers focused on the field of small- and medium-sized enterprises. This study contributes to the existing body of literature by analyzing the impact of strategic networking on performance of SMEs' operating in the service sector of a small and open economy, and by examining to what extent external environment contributes to the above-mentioned relationship. Furthermore, this research extends the existing literature by incorporating both the financial and non-financial measures of performance and by investigating their nuanced relationships with each of the strategic networking antecedents, providing a broader and more holistic view of the overall strategic networking—performance relationship.

Considering implications for managers, this research provides insights into why and how SMEs should conduct activities related to strategic networking. More specifically, research indicates that reputation and cooperation represent key elements which service SMEs' management should have in mind when trying to develop and maintain strategic relationships. Moreover, due to the hostile nature of the environment in which service SMEs operate in, management should pay close attention to the changes in the industry structure and competitors' behavior. This because it has significant and direct effect on their strategic networking activities and more importantly on the relationship between strategic networking and business performance. Therefore, management of service SMEs need to consider the importance of external environment, and strategic networking antecedents, more precisely reputation and cooperation, when devising their domestic and international business strategies.

5.2 *Limitations*

This research has certain limitations related to the sample size, rate of return, design of variable measures based on respondents' subjectivity and relying on only one firm representative for information gathering. The sample size is relatively small since only 1000 SMEs operating in the Croatian service sector were contacted, with a 13.6% rate of return which raises concerns if the obtained findings could be generalized to the entire industry. Moreover, when looking at the sample breakdown by industry sector, it could be argued that the sample is somewhat skewed toward the financial and retail/wholesale sectors since 40.4% of the respondents operated in the financial services sector and 33.1% in retail and wholesale sector. Furthermore, since 49% of the respondents were firm owners and 78% of respondents worked for more than seven years for the firm, one could argue that respondents could be potentially personally biased toward the assessment of their firm's performance and external environment their firm operates in. Therefore, future research should be designed in a way to include a larger number of firms in the sample size, to include several representatives from each firm in order to provide better insights into the nuances of the impact of strategic networking on the business performance of service SMEs.

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Assessing the Effects and Policy Interventions Amidst COVID-19 Crisis: Focus on Georgian SMES



Ketevan Rizhamadze and Anna Ābeltina

Abstract This article explores the manner in which the COVID-19 crisis has affected SMEs in Georgia. We posit that SMEs are highly susceptible to such economic shock and the major victims of the COVID-19 outbreak are SMEs. The article explores this conjecture by scrutinizing real-time data and reviewing the available literature, official reports and policies. Throughout the research, an exploratory methodology was adopted and empirical evidence was derived from collecting the information from Georgian SMEs via a focus group and online survey. The data reported here appear to support the assumption that SMEs are most acutely affected, and revenues have dropped drastically since the outbreak of the COVID-19 pandemic. The evidence from this study suggests that industries that rely highly on external trade were the most affected by the COVID-19 crisis. These enterprises are facing the greatest obstacles obtaining finance, logistical challenges, demand disruptions, reduction in sales and profit. In the article, we argue that SMEs will face various hindrances in the long run, and policy interventions should be sensitive to the different types of SMEs. Policymakers can apply these real-time data to their strategic policy interventions to support the organizations that are most affected by the crisis.

Keywords COVID-19 · SMEs · Crisis · Management · Georgia

1 Introduction

The sudden onslaught of the pandemic has appeared as an external shock and it is leading to a recession unparalleled to any other economic crisis in the contemporary history. The global outbreak of novel coronavirus (COVID-19) has harshly affected

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the national and international economy in an unprecedented way. By March 2020, more than 190 countries were affected and it became international public emergency and the virus was assessed as a pandemic by World Health Organization (WHO, 2021). Even though it is challenging to properly evaluate the impact and disruption caused by the pandemic, it is apparent that it represents an external shock (OECD, 2021). Worldwide trade, national and international economy was greatly affected by the measures aimed to stem the spread of the virus. The impact of COVID-19 on the economy is the subject of research and surveillance across the globe. Leading consulting firms envisage substantial alterations in the structure of the world economy and assume that the disruption brought by the pandemic will have a profound impact on all businesses and industries. The economic downturn is inevitable as credit liquidity will deteriorate, customer demand will decrease, and unemployment rate will increase (Deloitte, 2020). Large companies are the major drivers of economic activity, international trade and competitive environment. However, the role of SMEs is also significant in the job creation and in the entrepreneurship (Pedauga et al., 2021). The drastic effects of the crisis have hugely hit Small- and medium-sized enterprises (SMEs). SMEs represent 99% of all businesses in the EU and make a pivotal contribution in Europe's economy. Small-and medium-sized firm's employee more than 100 million people and it accounts for more than half of Europe's GDP (European Commission, 2021). Due to restrictive measures and lockdowns, among other problems, SMEs have faced the challenges associated with decrease in demand, supply chain disruptions and financial liquidity (Juergensen et al., 2020).

The importance and originality of this study are that it explores the impact of the COVID-19 pandemic on Georgian SMEs and assesses the policy implications implemented in response to the crisis. The aim of the study is to take a deeper look at recent economic disturbances and to trace the development of the crisis. Additionally, the study attempts to explore the policy implications towards the recovery from the disruption instigated by the pandemic. Moreover, the paper investigates the measures that were enforced to mitigate the negative effects of the crisis and identifies the major challenges faced by SMEs operating in Georgia. The aftermath of COVID-19 and ways of overcoming the crisis has become a question of great interest in a wide range of fields. However, there has been no detailed investigation on the major obstacles faced by the Georgian SMEs amidst to pandemic. The importance and originality of this study are to obtain real-time data from the representatives of SMEs. The findings of the study should make an important contribution to the field of entrepreneurship and should assist policymakers in working on the policies that will assist SMEs in reducing business losses and surviving through future crisis. This paper argues that financial aid, deferred taxes and support from government tend to be the most effective assistance for SME's in the face of pandemic and external economic shocks.

The current study recognizes that the major challenges caused by COVID-19 are decrease in sales and exchange rate fluctuation, in addition to logistical problems. Another important finding is that in mitigating the negative effects of external shocks, online platforms ensure continuity in production and market exchanges.

The upsurge in online-platform use is remarkable in the more developed and technologically-advanced countries, with easier access to infrastructure and connectivity and more widespread use of the internet. This study supports evidence from previous researches according to which the most effective and vulnerable sectors of the Georgian economy are tourism, real estate and automotive sectors. It is hoped that this research will contribute to a deeper understanding of the crisis and will equip policymakers, politicians and entrepreneurs with knowledge about how best to address SMEs problems related to this vital matter and lead to action.

The methodological approach taken in this study is mixed methodology. A combination of research approaches is used in the data analysis. Data are collected via organizing focus group and online survey. Target population for the study is SMEs operating in Georgia. The focus group session was held online and interviews were taken remotely in the month of January 2021 alongside online survey. Secondary and primary data is collected through books, articles, online publications and official government reports.

This paper is divided into several sections. The first section begins by laying out the theoretical dimensions of the research. The second part of the paper is concerned with providing general information and essential information about crisis management and impact of COVID-19 on SMEs. Section three deals with research goal and research hypothesis. Section four addresses the methodology applied throughout the study. Section five analyses the results of online survey and focus group discussions undertaken during the study. Section six and seven presents the findings and conclusions of the research.

2 General Overview

Global preparedness for biological threats was extremely weak, and companies were neither prepared nor have further plans to overcoming the obstructions. On December 31, 2019, in the city of Wuhan, in the People's Republic of China, the disease caused by a new SARS-CoV-2 virus COVID-19 started spreading rapidly across the world. Yokohama's strategy and plan of action for a safer world, designed by 155 countries, states that disaster prevention, mitigation, preparedness, and relief are four major elements in crisis management. In addition, in the guidelines, it is emphasized that the world is increasingly interdependent and that all counties shall act together with common interests and shared responsibilities to save human lives (UNDRR, 1994). Particularly, the emergence of a global economy complicates the containment of the effects of any disaster within one country's borders. In addition, irrespective of its wealth or influence, no nation is advanced enough to completely avoid disasters negative effects. Disasters do not segregate between rich and poor countries as it attacks every country worldwide, nevertheless developing countries suffer the most (Coppola, 2015).

Social distancing and lockdowns limited external activities and consequently, the purchases by customers dropped. Due to the disruption of transportation and labor

shortages, SMEs have faced logistical problems. In addition, customers confronting with the work ambiguities and financial restrictions, numerous SMEs have faced an abrupt decline in demand, reduction in production and diminished levels of international trade. As a matter of fact, SMEs function in the businesses characterized by an elastic demand and as a cause of lockdown measures, customer demand decreased substantially (Schumacher, 2020). The shift in business models was also remarkable, and we saw that the different platforms like transportation and delivery paid an essential role in providing essential services to consumers during the lockdowns (Rani & Dhir, 2020). SMEs started amending operating models and diverted their activities to digital technologies for future sustainability. The social media tools were avidly used in promoting the products and services and in building customer loyalty (Winarsih et al., 2021). SMEs involved in international trade and operating in the industries of construction will face capital deficiencies alongside financial insufficiency and digital hurdles. Consequently, redesigning the budgets and better cash flow management will be imperative for their sustainability (Song et al., 2020). Due to pandemic, as SMEs income reduced and their competitiveness lessened, for overcoming these hardships, financial assistance and educational assistance towards digital transformation need to be ensured (Sriyono et al., 2021). Due to their small size and their relatively flat hierarchical structures, SMEs are regarded as a more flexible and adaptable than larger organization (Levy & Powell, 1998). Conversely, SMEs are generally less resilient and they will need more time to get back to normal operations following the crisis (OECD, 2021). The high reliance on technologies is seen as an opportunity for digitalization and sustainability, notably in the areas of biotechnology and genetics (Juergensen et al., 2020). In addition to that, due to the importance of mental and physical health, the employers encourage employees to take care of themselves and look after their health conditions in order to implement properly assigned roles and responsibilities (Zutshi et al., 2021). In response to pandemic crisis, Enterprise Europe Network (EEN) provided assistance to member countries by providing personal protective equipment and medical equipment (European Commission, 2021). The importance of cloud computing is highlighted by many researches alongside utilizing technology and innovation. The cloud system could be a good option for SMEs that is less expensive and affordable (Akpan et al., 2020).

3 Crisis Management and COVID-19 Impact on SMEs in Georgia

Small- and medium-sized enterprises play a central role and are an important source of economic activity in the Georgian economy. Roughly 723,000 companies are registered in Georgia, out of which around 25% are active (USAID, 2017). The National Statistics of Georgia provides the following thresholds and definitions for SMEs: Small enterprises are entities of any organizational-legal form which do

not exceed 50 employees and annual turnover of 12 million GEL and medium firm's employee fewer than 249 employees with annual turnover of 60 Million GEL (National statistics office of Georgia, 2020). The National Statistics of Georgia estimates that SMEs provide more than 67% of employment and 61.5% of gross value added (National statistics office of Georgia, 2021). However, they are struggling to grow as enterprises are clustered in comparatively low value added sectors like trade and real estate (OECD, 2021).

In recent years, Georgia has improved the business environment for all enterprises, including SMEs. Administrative policies were simplified, tax liability was reduced, free trade was eased and privatization was endorsed. The SMEs policy environment is regarded to be well-developed and encouraging in Georgia. As a result, in the ranking conducted by World Bank, Georgia stands at number 7 globally for the ease of doing business. The ease of business ranking measures aspects of business regulation affecting small domestic firms located in the largest business city of 190 economies (World Bank, 2020). For the purpose of improving access to credit and credit information system, the Georgian government has introduced some policies to encourage lending and borrowing. However, access to finances still remains a major obstacle and constraint for SMEs (OECD, 2021).

The vicious spread of COVID-19 brought upon a global shutdown and crashed markets. Covid-19 is particularly severe shock as it affects both supply and demand. It has effect upon limited production, disrupted supply chains and on the social distancing, uncertainty and job loss. On January 30, 2021 COVID-19 has been declared a global pandemic by World Health Organization (WHO, 2021). In December, the U.K. rolled out the first coronavirus vaccines, making it the first country to introduce vaccination. However, ambiguity about the timing when the virus can be stopped complicates predicting economic outlooks, in addition, there is no analogous historical case globally. Pursuant to several analysts, the scale of the negative impact of the virus on the world economy may be similar to World War II. In the Global Health Security index (GHS, 2020), in the rankings of preparedness for epidemics or pandemics Georgia, ranks 42nd out of 195 countries (ghsindex, 2021).

While analyzing business sector in Georgia and comparing 2018 with 2019, in 2019 the increase in turnover by small-sized enterprises is remarkable, especially in wholesale and retail trade and in manufacturing, as illustrated in Fig. 1.

While analyzing business sector and comparing 2018 with 2019, in 2019 the increase in turnover by medium-sized enterprises is also noticeable, especially in wholesale and retail trade, construction and in manufacturing as showed in Fig. 2.

The total labor force of Georgia has increased from 2017 till 2019. However, a slight decrease from 2019 to 2020 is remarkable. The exports of goods and services have also increased from 2017 to 2019, and the ease of doing business score has improved in 2019. In addition, we see an increase in unemployment rate from 14.4 till 14.7% from 2019 to 2020 and decrease of GDP capita, as demonstrated in Table 1.

In the previous years, the hotel business in the tourism industry was the most dynamically developing subsection in Georgia. The pandemic has affected the

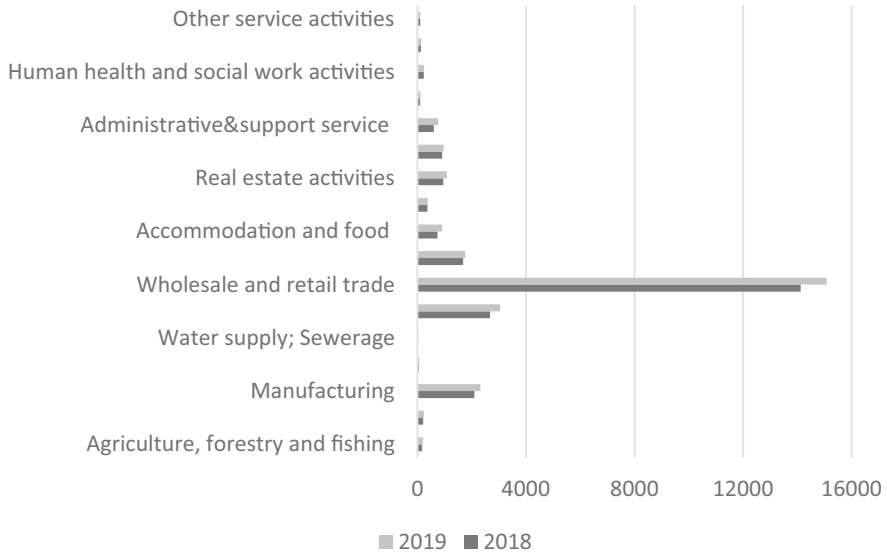


Fig. 1 Business Sector in Georgia 2018, 2019, small-sized enterprises. (Source: Compiled by authors based on the data of National Statistics Office of Georgia)

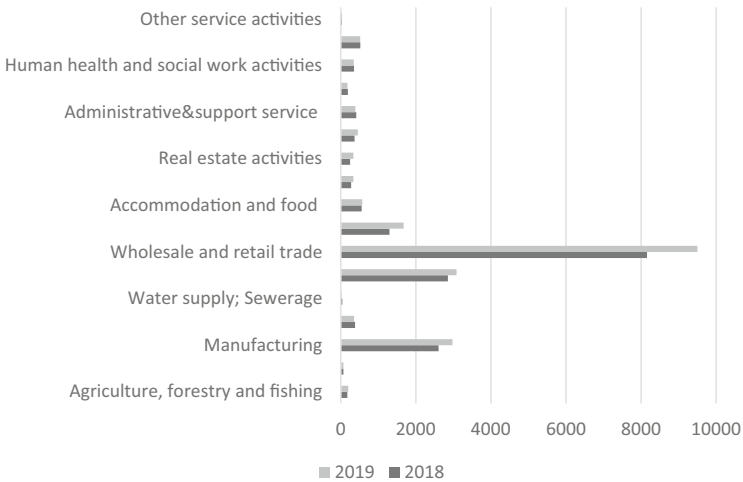


Fig. 2 Business Sector in Georgia 2018, 2019 medium-sized enterprises. (Source: Compiled by authors based on the data of National Statistics Office of Georgia)

Georgia’s economy in an unprecedented way. The sector from which Georgia gains more than 30% of its GDP and 45% of its exports is tourism, and the widespread of the virus triggered suspension of tourism and related activities. Other sectors were also influenced due to containment measures like retail, services, entertainment, etc. As a result, Georgia’s economic position is weakening and fiscal situation is

Table 1 Economic indicators of Georgia

Economic indicators	Year 2017	Year 2018	Year 2019	Year 2020
Labor force	2,051,071	2,040,890	2,032,911	2,022,124
GDP per capita (US\$)	4357	4722,8	4697,7	
Exports of goods and services (% of GDP)	46.5	50.6	54.8	
Ease of doing business (0 = lowest performance to 100 = best performance)	83	83.5	83.7	
Unemployment, total (% of total labor force) (modeled ILO estimate)	13.9	13.8	14.4	14.7

Source: World Bank (2021)

deteriorating (Czura, 2020). Unluckily, Georgia's strong record of economic reforms and improved living standards, it is being endangered by the shock of COVID-19. According to World Bank analysis, between 2005 and 2019, the country's economy increased at 5.3% per annum, and poverty rate dropped from 30 to 14% in 2019. Nonetheless, the past gains could be reversed, and poverty rate could go up by 2.8% as more jobs, and income cuts would be expected as a result of pandemic (World Bank, 2021).

By introducing containment and infection tracking measures comparatively early compared to other countries during the first wave of the COVID-19 outbreak, Georgia displayed a low infection rate and announced de-confinement measures gradually (Czura, 2020). The second wave of the pandemic in Georgia gained pace since September 2020. Infection rate was highly increased and new cases surpassed 4000 for several weeks. Hospitals were experiencing the patient overload. There was a need of introducing new set of containment measures. Due to new lockdown and restraint actions, the number of active cases reduced meaningfully by the end of December (IMF, 2021). In terms of policy responses to support SME finances during the crisis, the overwhelming emphasis in Georgia has been on easing the banking sector regulations. In Table 2, actions that were implemented by the government to mitigate the negative economic impact caused by COVID-19 are addressed.

Pursuant to data, most sensitive sectors were exempted from paying property and income taxes until November 2020, hotels with 4–50 rooms received bank loan interest rate co-financing for 6 months, and Tbilisi City Hall exempted open cafes (SMES) from paying rents in 2020. In addition to that, high rate of unemployment is remarkable in industries of trade, construction, hotels and restaurants, entertainment and recreation, also in segments of transportation, which are linked to tourism (Nadaraia et al., 2020). According to the data illustrated in Table 3, the analysis conducted by TBC capital, the most affected and vulnerable sectors of the Georgian economy are tourism, real estate, and automotive sectors. However, FMCG, pharmaceuticals, and telecom industry remain relatively resilient. The hotel revenues are expected to decrease by 85, 35, and 0.5% in 2020, 2021, and 2022, respectively.

The negative impact is substantial on the airlines, oil and gas, production and sales of household durables, hotels and restaurants, distributors, automobiles, and real estate industries. Whereas relatively stable industries include food and staples

Table 2 Measures implemented by the government of Georgia amidst COVID-19

Area	Measures taken
Funding utility bills	Electricity bills covered for over 1.2 million subscribers and natural gas 670,000 subscribers. Program budget: 170 M GEL
Subsidizing currency exchange difference	The State subsidized currency exchange difference for importer companies purchasing 9 basic food products from March 15 through May 15, 2020. Program budget: 14 M GEL
Credit repayment deferral	All personal loan repayments were deferred by 3 months. Approx. 600,000 debtors took advantage of the opportunity
Assistance to employees	Employees, who have lost their jobs or are on unpaid leave received 200 GEL per month. About 350,000 people qualified. Program budget: approx. 450 M GEL
Assistance to employers	Employers received tax cuts: for 6 months, salaries not exceeding 750 GEL were exempt from income taxes. Program budget: 250 M GEL
Assistance to self-employed persons	Self-employed persons were given one-time assistance in the amount of 300 GEL. Program budget: 75 M GEL

Source: Compiled by the authors based on the report of Government of Georgia (2021)

Table 3 Expected impact of COVID-19 on various sectors of the Georgian economy

Vulnerable industries	Stable industries
• Airlines	• Communications
• Oil and gas	• Food and staples retailing
• Hotels	• Healthcare
• Restaurants	• Pharmaceuticals
• Entertainment	• Household and personal products
• Transport, automobiles	• E-commerce
• Real estate	• Software and IT services

Source: Elaborated by the authors based on report of TBC capital Nadaraia et al. (2020)

retailing, healthcare, pharmaceuticals, household and personal products, e-commerce, software and IT services (Nadaraia et al., 2020).

4 Research Goal and Research Hypothesis

Following research paper draws attention on examining the impact of COVID-19 on the Georgian economy and SMEs. This research takes a closer look at this region's economic dynamics and scrutinizes the policy responses to the crisis caused by the pandemic. The main aim of the research is to examine the impact of the COVID-19 crisis on SMEs in Georgia. More specifically, this research aims to deepen the knowledge of what were the major obstacles faced by the SMEs during the pandemic and what could be the possible solutions to the problems. Policymakers can utilize

these real-time data sources to help inform their strategic policy interventions to assist the firms most affected by crisis events. The objective is to evaluate the impact of COVID-19 outbreak and to suggest policy recommendations to help SMEs in reducing business losses and survive through the crisis. Following research questions are elaborated: *In the face of the impact of the epidemic, governments at all levels and financial institutions have announced relief measures. Which policy is the most effective for SMEs in Georgia? What are the most significant problems faced by Georgian SMEs during the outbreak? What measures need to be enforced to mitigate the negative effects of the crisis?*

5 Research Methods

This research draws on a sample of SMEs from Georgia. Exploratory methodology with extensively reviewing the available literature, including policy documents, research papers, and reports in the relevant field, was adopted throughout the study. For the purpose of enriching empirical value, data are collected from micro, small, and medium-sized enterprises operating in Georgia. Secondary data are collected through books, articles, online publications and official government reports, as well as via focus group and online survey. Focus group consisted of 12 participants and represented various industries, namely: information technologies, pharmaceuticals, construction, tourism, etc. The focus group session was held online and interviews were taken remotely in the month of January 2021. We were searching for more open feedback rather than assessments of possible results as in a quantified research method. A focus group also allowed participants to express clearly their ideas and share feelings that do not typically come out in a quantified questionnaire. Since there was open conversation between the group members, topics and discussions were freer flowing. The focus group was divided into three sections, one section included some general questions about industry, other section concentrated on scrutinizing the problems faced by the organizations during the COVID-19 outbreak, and the final section was related to obtaining more insights about possible policy implications and ways of overcoming the crisis. The purpose of the focus group was to assess the impact of COVID-19 on SMEs operating in Georgia.

We reached out to potential survey participants through a variety of social media platforms such as Facebook, and LinkedIn, including e-mails, and invited them to participate in the discussions and in an online survey. Online survey was divided into sections on particulars (industry background information) and impact assessment (economic, social) and on problem identification. The survey included closed-ended and binary questions. In addition to that, Likert scale was utilized. This technique gave us an opportunity to expose degrees of opinion that could make a genuine difference in understanding the feedback. Open questionnaire was used and all respondents were posed the same question in the similar sequence. The survey was administered online in January 2021 and the questionnaire was created and

designed via online survey development website. Survey questions were qualitative and were used to get concrete and general responses. The principal aim was using a simple language, avoiding the use of technical terms and abbreviations as well as only asking questions that were relevant to the participant. Questions were stated in plain, simple language and complicated sentence structure or uncommon words were avoided. Participation in the focus group and online survey was completely voluntary and no monetary compensation was proposed to the participants. Focus group consisted of 12 participants and represented the industries in the following manner: information technologies—2 persons, pharmaceutical sector-2 persons, public sector-2 persons, construction sector-2 persons, tourism-2 persons, financial sector-2 persons. Target population for the online survey was SMEs operating in Georgia, with population size of 120, confidence level of 95, the acceptable margin of error 5 and with the sample size of 92. The survey included ten questions and response was obtained from 93 participants.

6 Findings

The potential participants of the survey were identified via company register databases and were reached out through a mixture of social platforms. The survey included ten questions and response was obtained from 93 participants. The first set of questions aimed at elaborating on the hypothesis that financial aid, deferred taxes and support from government shall be the most effective assistance for SMEs. As Fig. 3 demonstrates the most troublesome financial problem faced by SMEs during the outbreak of COVID-19 was payment of loans and salaries.

The results are in line with the research conducted by PWC Georgia. According to the findings, out of 1938 businesses, 28% of interviewed companies comment that they have already faced liquidity challenges and 79% of respondents mention that additional financing was needed. In addition to that, as the study results indicate, the most affected sectors during the pandemic were accommodation, food service,

Fig. 3 Financial problem during the pandemic.
(Source: Compiled by authors)

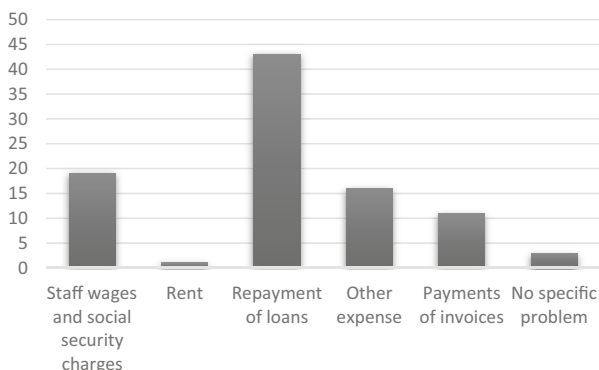


Fig. 4 Other problems during the pandemic. (Source: Compiled by authors)

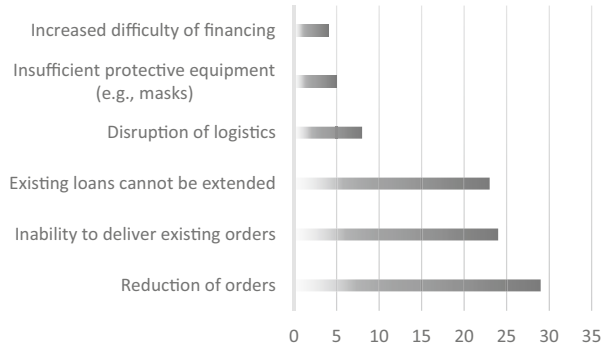


Table 4 Major challenges caused by pandemic

Percentage	Challenges caused by COVID-19
53%	Decrease in sales
13%	Fluctuation of exchange rate
13%	Logistical problems
6%	Increase in prices of raw materials
6%	No significant challenges
5%	Late payments from customers
3%	Difficulties in abiding protective and security measures
1%	Other

Source: Compiled by authors, based on the survey data of GCCI (2020)

transportation, wholesale and retail trade. Decreased demand, cash collection shortages and changes in customer behaviors triggered liquidity challenges of the companies (PWC Georgia, 2020).

Moreover, from Fig. 4 we can see that drop-in demand is regarded as a major challenge caused by epidemic and that SMEs have to overcome fluctuation in customer demands. The results obtained from the analysis prove that the higher the uncertainty the demand drops and sales decrease.

Major challenges caused by COVID-19 are decrease in sales and exchange rate fluctuation, in addition to logistical problems. Other problems mentioned by the participants are identified in Table 4.

Chamber of Commerce and Industry of Adjara conducted a survey to assess the impact of pandemic in Adjara region. The survey involved 250 small- and medium-sized businesses entrepreneurs operating in the most popular holiday coast in Georgia. The study covered the period from March 23, 2020 to March 28, 2020. The most acute problem identified by the participants were the following: drop-in sales and revenues –42%, tax and bank liabilities –18%, inventory purchasing problems –9.2%, utility bills –5.6%, liabilities to employees –6%, and different types of problems –10% (CCIA, 2020). The impact of COVID-19 on the local

employment market is also interesting to observe. Here we see that the demand for talent in information technology, online commerce and delivery services are increased. According to date of Insource (Insource, 2020) total vacancies announced in March were 2355 of which:

- 592 vacancies in sales
- 891 vacancies in logistics
- 122 vacancies in marketing and PR

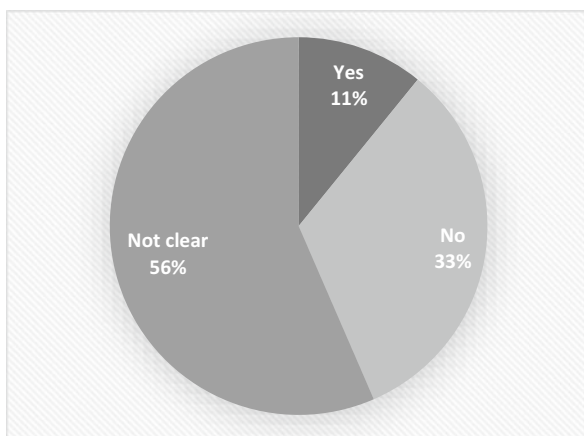
Since the outbreak of the pandemic in April, the site has seen almost three times as many, 733 vacancies, of which the highest demand is in the field of logistics and delivery—251 vacancies, and the lowest in the field of marketing and PR—28 vacancies. During the month of May, the number of vacancies announced via jobs.ge and LinkedIn are distributed as follows: 626 vacancies in logistics, 406 vacancies in sales, and 424 vacancies in administrative positions (Insource, 2020).

It is apparent from Fig. 5 that for the majority of SMEs have no clear strategy in the context of a layoff. 11% of respondents stated that their organization contemplates a layoff, whereas 33% specified that dismissal of current employees is not envisaged.

Another study, conducted by UN Women includes the responses obtained from 1069 interviews. One-third of men and women who were employed before the pandemic has lost their jobs, and around one-third of both men and women indicated that work hours were reduced (UN Women, 2020). In June 2020, The Georgian Chamber of Commerce conducted a survey to evaluate the impact of the COVID-19 pandemic on businesses in Georgia. One thousand five hundred and fifty-three business entities, mainly Small and medium entrepreneurs, participated in the study. According to study results:

- 43% of companies reduced the salaries
- 32% of companies pay the same salary without any staff layoff

Fig. 5 Staff layoffs.
(Source: Compiled by authors)



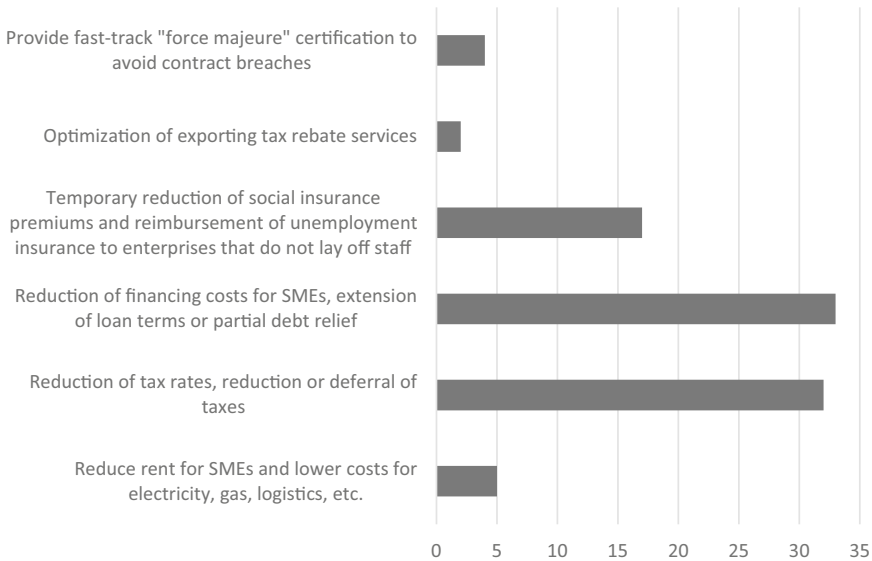


Fig. 6 The most effective policy measures in response to COVID-19 crisis. (Source: Compiled by authors)

- 20% of companies issued unpaid holidays
- 5% of companies implemented staff layoff

In the face of the impact of the pandemic, governments at all levels and financial institutions have announced relief measures. As can be seen from Fig. 6, the majority of respondents consider that reduction of financing costs for SMEs, extension of loan terms or partial debt relief tends to be the most effective policy measures amidst the crisis.

The majority of the respondents express an interest in remote work, however, they lack appropriate skills and experiences. From May till June 2020, the demand for remote work has increased from 0.33% till 17%. Financial assistance still remains the main necessity required by the business (Table 5).

What is interesting about the data in Fig. 7 is that a notable portion of work was undertaken virtually during the first two phases of pandemic and especially during the lockdowns.

From Fig. 8, it can be seen that by far the cooperation with a remote team member is carried out via various video conference tools. The notion that the online platforms can play a role in mitigating the negative effects of future shocks causing severe disruptions to physical economic activity tend to be appropriate within the context of our respondents.

What is striking about the Fig. 9 is that the main reasons for establishing virtual teams in organizations were COVID-19 pandemic.

Table 5 Type of assistance required by business

Type of assistance needed for SMEs	Percentage
Financial assistance/ Grant	22%
Preferential loan	18%
Deferred taxes	13%
Assistance in the sales	9%
Subsidizing utilities, salaries	8%
Deferment of loans and interest	7%
Promoting local products	6%
Assistance in finding partner abroad	5%
Assistance in attracting investments	4%
Purchase of personal protective equipment	3%
Assistance not required	3%
Other	2%

Source: Compiled by authors, based on the survey data of GCCI (2020)

Participants of focus group have expressed their concern about non-preparedness of countries worldwide amidst to pandemic and have stated that the higher the uncertainty caused demand decreases and sales drops in the initial phases. However, after some time, the stability in market demand in sales was noticeable. Participants have indicated that the most important financial problem that they have faced to COVID-19 outbreak was payment of salaries and loan payment. Representatives of tourism industry have indicated that they had bookings for the whole summer period in 2020, and the customers have canceled all reservations, leaving them without any revenue. The major obstacles that they have faced were obtaining finances and reduction in demand and sales. For some firms, payment of loans and logistical problems were pivotal. In terms of staff layoff, firms that continued working (except tourism industry) did not implement any layoff and made every possible effort to maintain the staff. However, during the confinement measures, they had to follow government regulations and to put on hold their businesses. The majority of respondents consider that financial aid, deferred taxes and support from government is the most effective assistance that could be offered to SMEs:

- Reduced costs of rent, electricity, gas, logistics for small and medium enterprises—2 persons
- Financial aid, deferred taxes and support from government—5 persons
- Partial debt relief for small and medium enterprises—3 person
- Extension of loan terms for small and medium enterprises—2 persons

The COVID-19 pandemic has shifted the work patterns and from face-to-face interactions employees had to move to remote and hybrid forms of collaboration. During the discussions, the participants stated that they adopted to the situation quickly, however additional expenses were needed for arranging technical support and assistance. They strongly shared the position that online platforms can play a role in alleviating the negative effects and that it can ensure continuity in production

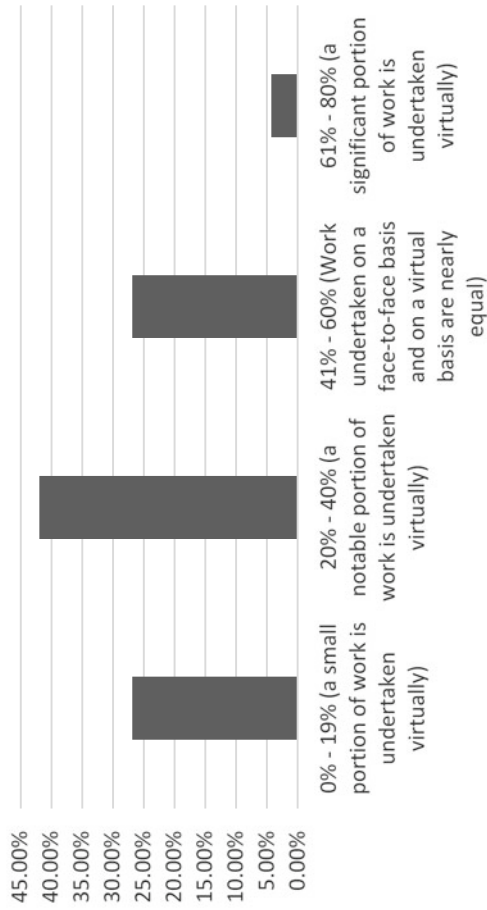


Fig. 7 Traditional work vs. remote work. (Source: Compiled by authors)

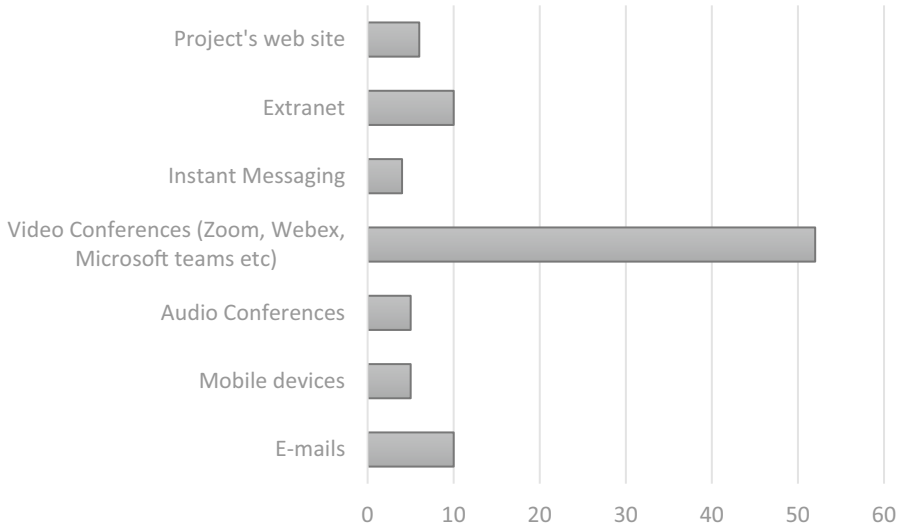


Fig. 8 Video conferencing tools. (Source: Compiled by authors)

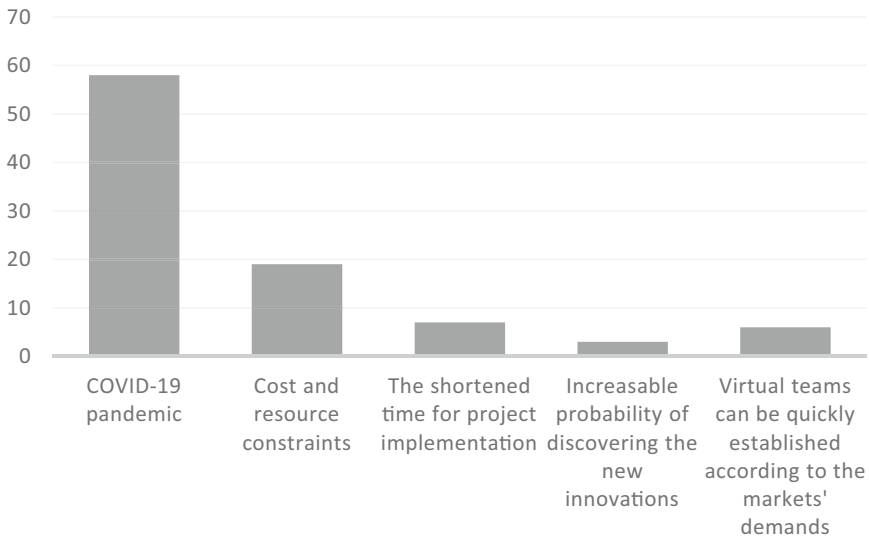


Fig. 9 Main reasons for establishing virtual teams. (Source: Compiled by authors)

and market exchanges while respecting physical distancing measures. However, as one participant stated: “the mounting demand for e-commerce is evident however, businesses have struggled to adapt and scale-up their operations online due to lack of human and financial resources” the other participant added that: “little assistance was

provided by the government and managers faced alone the problems associated with the transition to digital space and trade.” In addition, as representatives of IT sector specified: “digitalization must be emphasized and supported by government in the long run and policy reforms and support to build the capacity in this direction is crucially important.”

7 Key Findings

Countries across the globe started thinking about the possible effects of the crises, and the widespread of the virus raised the questions related to challenges and problems and possible ways that small- and medium-sized enterprises could respond to unprecedented circumstances.

- SMEs face liquidity concerns and tightened financial constraints. Majority of these SMEs will have to upgrade their digital infrastructure, enabling online sale channels, teleworking, etc. Thus it would call for employees to be re-trained appropriately.
- New start-ups may emerge in areas such as medical research, medical supplies and equipment.
- Long-term and increased investments in digital technologies will be required.
- Governments should take responsibility for ensuring digital preparedness for future shocks and therefore adopting policies that improve access to infrastructure and connectivity. In addition, countries will need to invest in information and communication technologies, and thus ensuring sturdier regulations, enriched workers skills and institutional culpability.
- The lockdown and physical distancing measures imposed in many countries have accelerated the shift towards a more digital world, and online platforms have become a valuable tool.

Facing the consequences of the COVID-19 pandemic, which go far beyond the crucial element of public health, the Georgian government has to be prepared and to implement short- and long-term measures in order to mitigate the social and economic impact of the outbreak. Table 6 presents the suggestions of the measures that could be implemented:

For better crisis management in the future, it is suggested to SMEs to construct a plan and have a fund reserve system in place, so that when a crisis happens, quick and reactive response could be ensured. In addition to that, SMEs should defend the interest of their employees and should divert activities towards being socially accountable (Liu et al., 2020). Rapid pace of technological development, has made many businesses highly automated. Reliance of technology became even more evident during the outbreak of pandemic. For entrepreneurs, it could be seen as an opportunity to work remotely and it could improve efficiency, however high automation decreases jobs and employment prospects (Polas & Raju, 2021).

Table 6 The measures to mitigate the social and economic impact of COVID-19

Short-term measures	Medium/long-term measures
<ul style="list-style-type: none"> • Attracting foreign financing • Easing financial conditions for banks 	<ul style="list-style-type: none"> • Elaborating of a new economic model • Identify and support sectors with the production capacity: for local market and for export markets
<ul style="list-style-type: none"> • Enhancing hospital capacity • Supporting strategically essential sectors 	<ul style="list-style-type: none"> • Attracting foreign direct investments • Implementing reforms in education system with active participation of private sector
<ul style="list-style-type: none"> • Financing utility costs for vulnerable population • Providing social assistance 	<ul style="list-style-type: none"> • Increased investments in digital technologies • Comprehensive effective vaccine management
<ul style="list-style-type: none"> • Reducing tax rates or deferring taxes • Temporary reduction of social insurance premiums and reimbursement of unemployment insurance to enterprises that do not lay off staff • Providing fast-track “force majeure” certification to avoid contract breaches 	

Source: Compiled by authors, based on report of Galt and Taggart (2020)

8 Conclusion

The COVID-19 pandemic has created a significant economic shock and has influenced the global economy in an incomparable way. In addition, Economic downturn is unparalleled to any other economic crisis in recent history. However, for each region and country, the depth and duration of the recession will depend on certain economic features, contexts, and exposures. This paper analyses the impact of COVID-19 outbreak on SMEs operating in Georgia for the purpose of exploring the ways in which policymakers and practitioners can utilize the data. Present study results highlight numerous problems faced by SMEs due to the pandemic. In addition, prior studies have noted that due to the pandemic and lockdowns, SMEs have harshly been affected. The results of this study show that the major problems for organizations were payment of loans (46.24%), staff wages and social security charges (20.43%). Moreover, nearly 32%/26% of respondents noted a decline in sales and inability to deliver existing orders, respectively. Additionally, for the purpose of overcoming the challenge some organizations are considering employees lay off (11%), whereas for the majority of firms the future is ambiguous (57%). The most interesting finding was that SMEs were rapid in adopting digital communication tools and video conferencing has become a new work norm, and majority of respondents (52%) have been using various video conference tools like Zoom, Webex, Microsoft teams, etc. The most obvious finding to emerge from the analysis is that COVID-19 pandemic was the main reason for establishing the virtual teams in organizations.

The crisis will have a major and long-lasting effect on entrepreneurial and innovative activity for years to come. This study provides important insights into the uncertainty caused by the crisis and offers some recommendations to managers in mitigating the drastic effects of economic shock. Utilizing a real-time data to investigate this topic tends to be the added value of the research. As the findings and analysis of the research reveal, SMEs have been meaningfully affected by the shocks caused by the pandemic. Countries have responded to the crisis by offering recovery measure like tax deferrals and relief, unemployment benefits and income support. Nevertheless, the consequences of these measures will be noticeable only in the medium and long term. The aftermath of the COVID-19 pandemic might give a new impulse and the transition towards digitalization. After the confinement measures are alleviated, policies will need to refocus towards the renewal and growth for those SMEs that survived, shifting to more structural policies aimed at promoting innovation, internationalization, and networking. Some SMEs may struggle to implement digital initiatives due to prevailing financial concerns following the crisis, and the need to re-train staff accordingly and need for additional finances will be noticeable.

The research ensures some practical applicability and theoretical implications. Nevertheless, study encompasses several research restraints. It is pivotal to note that the findings of the study cannot be extrapolated to all SMEs. This study is unable to encompass the entire industries due to its sample size. Moreover, study findings and results do not rule out the influence of other factors. It is essential to bear in mind the likely bias in the responses. These results therefore require to be interpreted with cautiousness.

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Part VI
Eurasian Economic Perspectives: Finance

The Technological Impact in Finance: A Bibliometric Study of Fintech Research



Mamadou Dosso and Ahmet Faruk Aysan

Abstract This paper is a review of research work done in FinTech that included technological innovation in finance in area such as the credit market (including Peer-2-Peer lending), insurance with a blockchain-assisted smart contract and payment systems (including cryptocurrencies). The paper provides a bibliometric review of FinTech in finance based on the published articles and journals in the Scopus database relating to 1,717 publications available between 1960 and 2021 onward. Furthermore, various software such as Biblioshiny for graphs and tables, Microsoft Excel to carry out frequency analysis, and VOSviewer for data visualization design illustrate technological impact in finance. This paper details the results utilizing standard bibliometric measures such as authorship, active institutions, citation analysis, document type, geographical distribution, keywords analysis, publication year, source type, source title and subject area. The findings proved that publications in this field are on constant augmentation in the last decades, especially in the previous six years from 2015, since the number of publications skyrocketing, leading by the USA and China, the FinTech study pioneers. The rising research in this area points out the technological impact on financial products and services, which ultimately affects human's lifestyle in the new worldwide digital economy.

Keywords Bibliometric · Blockchain · FinTech · Financial technology · Impact · Innovation

1 Introduction

Notwithstanding that the interaction between Information technology and financial services is well known, “FinTech” is a topic *à la mode* (Thakor, 2020). It is, however, interesting to see the heterogeneity of interpretations that constitutes the

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meaning of FinTech and extract an accurate definition.¹ Essentially, FinTech is defined as the use of innovative technology that provided new and improved services in the field of finance. It is also deemed disruptive technology, and hence one of its main revolutionary features is the absence of intermediaries in the financial transaction within the traditional financial service (Rabbani et al., 2020). Another factor that led to the fast expansion of FinTech is the need for cheaper financial service costs that FinTech tackles to enhance consumer welfare.

The real FinTech twist did happen during the financial crisis. According to Haddad and Hornuf (2019), the global financial crisis was a turning point when many peoples lost trust in the traditional financial system (Abdelsalam et al., 2021) and sought alternatives to secure investments. At this time, digital currencies started emerging to be one of the solutions to overcome the crisis and protect investors interest (Aysan et al., 2021b). Furthermore, the combination of innovative technology and finance, namely FinTech, affects the entire financial sector (Aysan et al., 2021a). In the following main segments are described as (i) credit, deposit, and capital-raising services; (ii) Blockchain²; (iii) insurance including smart contract (Favaretti et al., 2017); (iv) payments, clearing and settlement services, including digital currencies (Thakor, 2020).

Additionally, four main components contributed to the advancement of FinTech. Firstly, it is the lower cost of matching transaction parties utilizing robot-advisory—secondly, the realization of economies of scale by collecting and using big data—Thirdly, perform cheaper and more secure information transmission—lastly, lower verification costs (Fuster et al., 2019; International Monetary Fund, 2019; Jagtiani & John, 2018, Aysan et al., 2021a). Financial products and services' organizational structure switched due to the positive technological breakthrough (Frame et al., 2018).

Several research types have been undergone and published in the academic sphere on various aspects of Information Technology and finance (Ardianto & Anridho, 2018; Fabregat-Aibar et al., 2019; Aysan et al., 2021b, 2021c; Aysan, 2020; Polat et al., 2022; Jędrzejowska-Schiffauer et al., 2019). As far as the authors' knowledge goes, minimal studies are available, and there is a lack of comprehensive research in the FinTech area such as blockchain, cryptocurrency, and financial technology. Therefore, this paper's core objective is to evaluate the progress of FinTech and the need to amplify the study in this emerging field. This paper does so by analyzing the literature review published in the Scopus database. This bibliometric study comprises a total of 1,717 published articles on FinTech from 1960 to March 2021.

To that end, this paper begins by first presenting a literature review on bibliometric analysis and previous research on a related study of FinTech, followed

¹There is even a paper that has reviewed hundreds of papers using the term “fintech,” with the sole purpose of drawing a definition of the term (see Scheuffel, 2016). While the authors do not use that paper for the definition of fintech, it exemplifies the wide range of opinions on this matter.

²There are many sources of information on this technology. See, for example Pilkington (2016).

by a presentation of the method undertaken to conduct this study. Next, the analysis and findings parts followed by the results. Finally, the last part provides a conclusion, limitation, and viewpoint for future investigation.

2 Review of the Literature on Bibliometric Analysis

According to Groos and Pritchard (1969), Bibliometric Analysis (BA) is described as “the application of mathematics and statistical methods to books and other media of communication.” Bibliometric analysis is defined as quantitative and statistical analysis for research publications (Rabbani et al., 2020). BA, more specifically, is the implementation of statistical techniques to analyze both quantitative and qualitative variations in a specific research topic (De Bakker et al., 2005). bibliometric analysis is an appropriate technique for academics attempting to access scientific activity (DuqueOliva et al., 2006). Bibliometric analysis has ever since gained great attention to be a convenient method to disclose research impact and trend (Ahmi & Mohamad, 2019). Additionally, bibliometric analysis includes indicators that academic researchers commonly refer to, such as content analysis, co-citation, analysis, co-occurrence, and keywords analysis (Dias, 2019) or authorship, citations, classification, publication impact and country (Ahmi & Mohamad, 2019).

In this paper, all the 1,717 publications are based solemnly on Scopus as the primary database source to investigate the bibliometric analysis. As far as the author can ascertain, there is no comprehensive study of FinTech using bibliometric analysis that has been undertaken, particularly with a great intention on the keyword “FinTech,” and the considerable scope FinTech represents in the bibliometric analysis.

3 Method

3.1 Data Source and Procedure

In BA, the initial procedure is to define the database used to conduct the investigation (Albort-Morant & Ribeiro-Soriano, 2016). The authors use various documents procured in the Scopus database, including articles, books chapters, conference papers and other types of references available in the Scopus database. The search document section contained “FinTech” as keywords have been used to access the relevant documents within the article title, abstract, and keywords scope. Although the title of an article includes essential information which will most likely draw the reader’s interest (Chen, 2010), the abstract attracts the readers and charm them to read the entire paper. Hernon and Schwartz (2010) asserted that authors should embrace “the art of persuasion”—inducing a reader to read the article in full and hope to be cited in other studies.

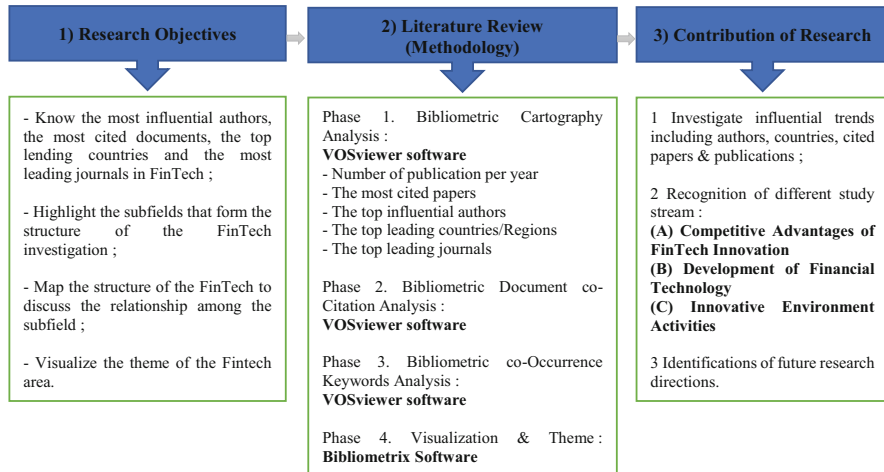


Fig. 1 Study procedure. (Source: Authors own study)

Azevedo et al. (2019) depicted the bibliometric analysis as research that scrutinizes series of publications employing numerical analysis. bibliometric analysis is also used to establish new emerging topics by discovering clusters and demonstrate different areas of ideas that appear in most influential researchers' study. Further, it gives the ground for additional research areas (Fahimnia et al., 2015). For this bibliometric analysis paper, some tools are available which helps to analyze the data. To that aim, the author used (i) Microsoft Excel for frequency calculations and construct the relevant graphs; (ii) VOSviewer to design and to visualize the bibliometric networks; (iii) Biblioshiny software to construct charts citation metrics, and various frequencies. The investigation method is depicted in Fig. 1.

4 Results

This segment based on the data collected from the Scopus database until March 2021, presents the general results, namely, the number of etudes per year, the document and source types, the ten most-cited journals, the ten most-cited papers, the ten most-cited authors, the authorship networks, the keywords analysis, the subject areas, the country productivity, active institutions, and citation analysis. Most of the results are depicted as frequency and percentage. Further, the co-occurrence of the authors' keywords and country productivity are displayed in a map format using VOSviewer. This paper's primary objective is to obtain a comprehensive understanding of the development of FinTech research, which includes all available publications worldwide.

4.1 Total Research Studies by Year

This section outlines the results of publications on FinTech in the Scopus database between 1960 to 2021 (March) (Table 1). The first article, which mentioned the combination of finance and technology giving the FinTech concept, emerged in 1984, but not much advancement on FinTech subject was made in twenty century. The real breakthrough, however, started in 2015. Since then, the growing trend and publication on FinTech have risen considerably every year.

4.2 Document and Source Type

This section is an analysis of the type of documents collected in the Scopus database in document type subset acknowledge articles (864), conference papers (608), book chapters (87), reviews (68), others (64), and books (26) for a total of 1 717 documents (Fig. 2).

4.3 Most Prominent Journals

The subject of FinTech was published in several books, journals, and proceedings worldwide. Table 2 below highlights the ten most prominent sources using the total of citations to establish the most impactful journal in the field of FinTech. H_Index is the number of times other authors cited the author's publications. For instance, an H_index of 11 means that an author has published 11 papers and has been cited at least 11 times. The G_Index improves the H_Index by measuring the overall author's citation performance of a set of articles. The G_Index permits highly cited papers to strengthen low-cited papers. As for the M_Index, is the H_Index divide by the number of years an author has been involved in research. The highest in our table is 1.25. TC refers to Total Citation; NP means Number of Publication, and the average number of citations is TC divide by NP. PY_Start is the year the paper has been published. The highest total citation document is the "Journal of Economics and Business" (254 citations), followed by "Journal of Management Information Systems" (218 citations) and the "Electronic Commerce Research and Applications" (199 citations). Otherwise, the statistical outcome demonstrates that the most influential journal, which accounts for 89.50 citations per document, is the "Business Horizons" followed by the "Journal of Business Economics" and "Review of Financial Studies" with 54.50 and 41.33, respectively. On the other hand, the highest number of documents published in the field of FinTech is the "MIS Quarterly" (286 articles), followed by the "Journal of Management Information Systems" (282 articles) and the "Journal of Financial Economics" (221 articles) (see Table 3).

Table 1 Number of publication by year on FinTech

Year	1984	2008	2010	2011	2013	2014	2015	2016	2017	2018	2019	2020	March 2021
Articles	1	1	2	1	1	3	10	31	111	271	358	782	144

Source: Developed by the Authors based on Scopus

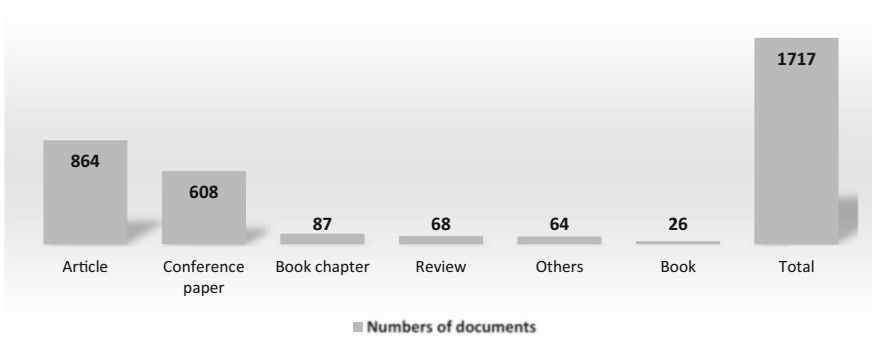


Fig. 2 Document type on FinTech. (Source: Scopus database (March 2021))

Table 2 Most prominent journals publishing FinTech per citation

Journal	H_INDEX	G_INDEX	M_INDEX	TC	NP	TC/ NP	PY_START
Journal of economics and business	5	8	1.25	254	8	31.75	2018
Journal of management information systems	5	7	1.25	218	7	31.14	2018
Electronic commerce research and applications	7	14	1	199	16	12.43	2015
Business horizons	2	2	0.4	179	2	89.5	2017
Financial innovation	7	9	1	159	9	17.66	2015
It professional	5	8	1	155	8	19.37	2017
Electronic markets	5	6	1.25	137	6	22.83	2018
Review of financial studies	3	3	1	124	3	41.33	2019
Journal of business economics	1	2	0.2	109	2	54.5	2017
Technological forecasting and social change	5	10	1.25	105	14	7.5	2018

Source: Scopus (March 2021)

Note: H_Index is the number of times other authors cited the author’s publications. The G_Index improves the H_Index by measuring the overall author’s citation performance of a set of articles. The M_Index is the H_Index divided by the number of years an author has been involved in research. TTC refers to Total Citation; NP means Number of Publication, and the average number of citations is TC divide by NP. PY_Start is the year the paper has been published

Table 3 Most prominent journals publishing FinTech per document

Rank	Sources	Articles
1	Mis Quarterly	286
2	Management Science	282
3	Journal Of Financial Economics	221
4	Ieee Access	220
5	Financial Innovation	207
6	Expert Systems	204
7	Expert Systems With Applications	174
8	Journal Of Management Information Systems	173
9	The Journal Of Finance	165
10	Research Policy	164

Source: Scopus (March 2021)

4.4 *Most-Cited Studies*

This section shows the most-cited papers by the highest citation collected in the Scopus database (see Table 4). TC per year represents the Total Citation an article received per year. The results reveal that the article entitled “Why do businesses go crypto? An empirical analysis of Initial Coin Offerings” (Adhami et al., 2018) has received the highest citation, counting 132 citations or 33.00 citations per year. In this article, the authors explained the Initial Coin Offerings and investigated where cryptocurrencies are lifted in exchange for a token. It is followed by the second most-cited article called “Fintech: Ecosystem, business models, investment decisions, and challenges” (Lee & Shin, 2018), with a total of 128 citations or 32.00 citations per year. Next, the paper “On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services” (Gomber et al., 2018) has a total of 126 citations or 31.50 citations per year.

4.5 *Co-authors Network*

The co-author’s network, with cited references, was investigated to observe the co-author contributions in the author study in FinTech research. The first sample extracted from The Scopus database was of 1,863 cited references from the Scopus database was refined in WOSviewer software to reach publications with a minimum of fifteen citations, giving in 59 publications.

Figure 3 depicts the bibliometric co-author’s network based on FinTech document analysis. Interestingly, the co-author network on FinTech is mainly leading by authors in China and hence pointed out the strong link China has in the subject of fintech that encompasses blockchain, cryptocurrencies, peer-2-peer lending, robot-advisory, and other financial technology instruments.

Table 4 Most prominent studies on FinTech

Rank	Authors	Title	Journal	Total citations	TC per Year	Normalized TC
1	Adhami et al. (2018)	Why do businesses go crypto? An empirical analysis of Initial Coin Offerings.	Journal of Economics and Business	132	33.00	15.58
2	Lee and Shin (2018)	Fintech: Ecosystem, business models, investment decisions, and challenges.	Business Horizons	128	32.00	15.11
3	Gomber et al. (2018)	On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services	Journal of Management Information Systems	126	31.50	14.87
4	Gomber et al. (2017)	Digital Finance and FinTech: current research and future research directions.	Journal of Business Economics	109	21.80	8.37
5	Gabor and Brooks (2017)	The digital revolution in financial inclusion: international development in the fintech era.	Taylor and Francis Journal	91	18.20	6.99
6	Eyal (2017)	Blockchain Technology: Transforming Libertarian Cryptocurrency Dreams to Finance and Banking Realities.	IEEE Xplore Digital Library	90	18.00	6.91
7	Gatteschi (2018)	To Blockchain Or Not To Blockchain: That Is the Question.	IEEE Xplore Digital Library	83	20.75	9.80
8	Gai et al. (2018)	A Survey on FinTech.	Journal of Network and Computer Science	79	19.75	9.32
9	Leong et al. (2017)	Nurturing a FinTech ecosystem: The case of a youth microloan startup in China.	International of Information Management	71	14.20	5.45
10	Ozili (2018)	Impact of Digital Finance on Financial	Inclusion and Stability.	64	16.00	7.55

Source: Scopus (March 2021)

Figure 4 furthermore explains the number of documents published in collaboration with authors from different countries. MCP (Multiple Country Publication) refers to the number of papers produced jointly with foreign authors. At the same time, the SPC (Single Country Publication) relates to the number of documents made

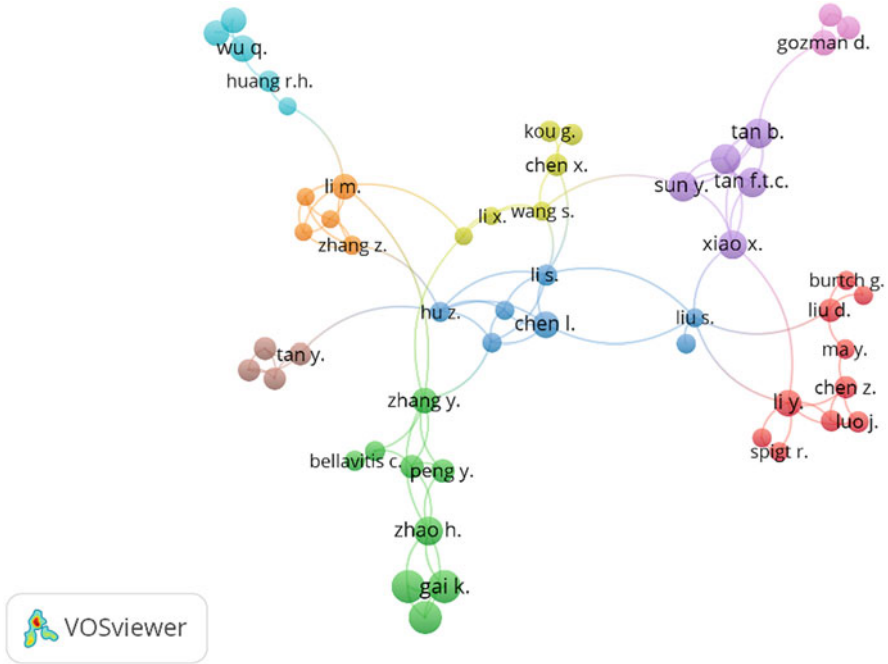


Fig. 3 Co-citation network of cited reference in FinTech documents. (Source: VOSviewer and Scopus 2021))

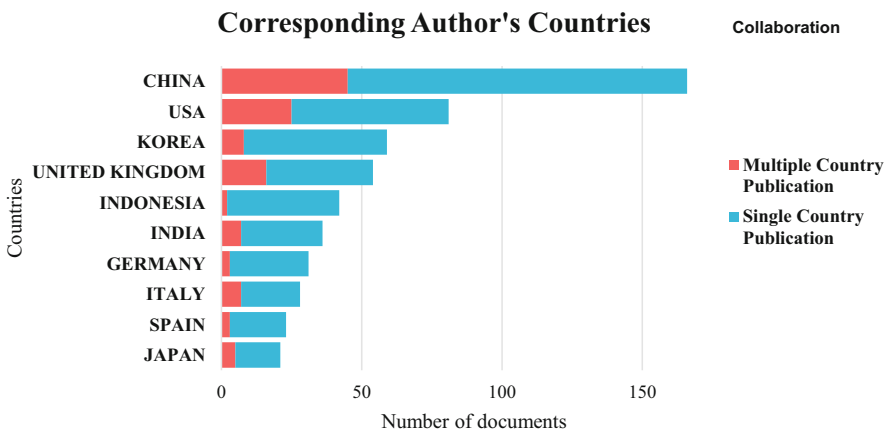


Fig. 4 Countries collaboration on FinTech. (Source: Scopus (March 2021))

by authors nationwide. The highest country in terms of cooperation with foreign authors is China, following by the USA and South Korea comes in the third position. Interestingly, although some countries such as Germany, Indonesia, and South Korea are amongst the top in this list, the ratio of publications/collaborations is

meagre. This ratio demonstrates that those countries are more inclined to work internally. The following section further discusses the words used in the author’s study.

4.6 Author Keywords

The author keywords analysis is the co-occurrence words principally utilized by the author’s study. WOSviewer software again is used to constructing and visualizing the bibliometric network. Figure 5 portrays a network of the author’s keywords generated in WOSviewer. Features such as circle size, color, font size, scale, and colored lines describe the strong relationship between the keywords (Van Eck & Waltman, 2017). The same color shows the related keywords, which are usually classified together. For example, the diagram explains that blockchain, cryptocurrencies, artificial intelligence, bitcoin, machine learning and financial services, which are colored in yellow, are closely connected and commonly co-occur altogether.

Figure 6 shows the most relevant words used by the authors in 1 717 publications. FinTech (596 occurrences) is the most author’s used word, followed by Blockchain (244 occurrences), Financial Technology (84 occurrences) and Machine Learning (76 occurrences).

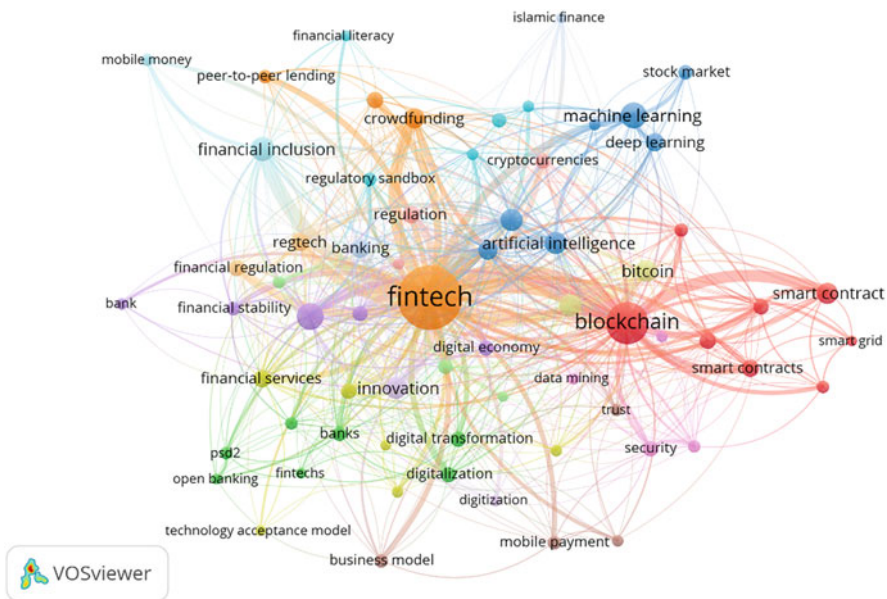


Fig. 5 Co-occurrence of analysis of the author keywords in FinTech. (Source: VOSviewer (2021))

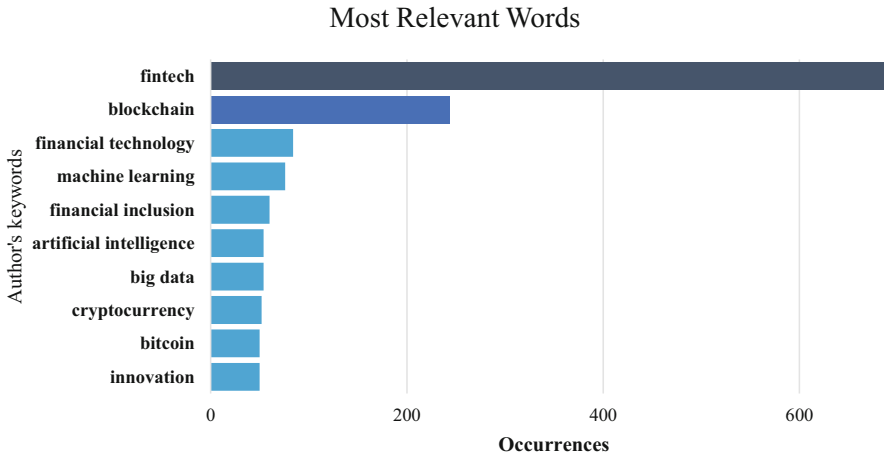


Fig. 6 Co-occurrence of analysis of the author keywords in FinTech. (Source: Scopus (March 2021))

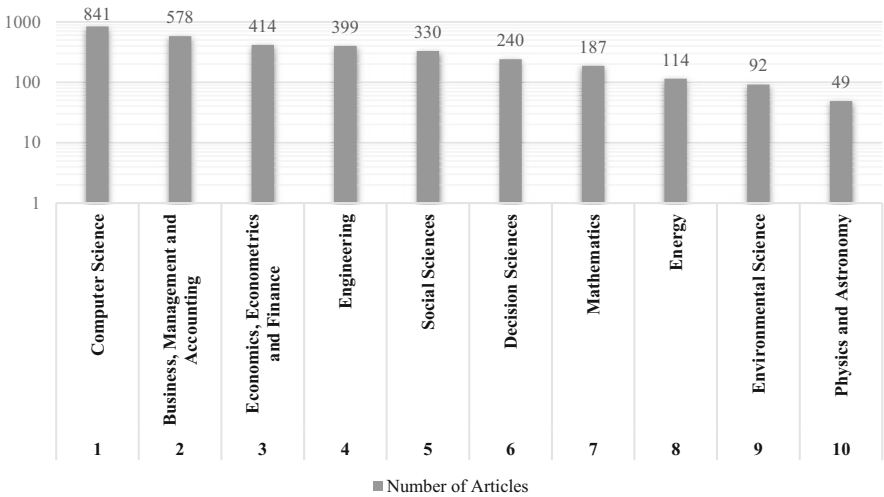


Fig. 7 Subject area in FinTech. (Source: Scopus (until March 2021))

4.7 Subject Area

The paper now analyses the listed published documents in different subject areas as described in Fig. 7. In March 2021, the repartition of the study in FinTech arises principally from computer science (841, 26%), followed by business, management, and accounting (578, 18%). Nevertheless, other subject areas contribute to FinTech studies such as Economics, Econometrics, Finances, and Engineering and social sciences.

4.8 Prominent Countries in Fintech Research

The study of FinTech is conducted in 114 countries worldwide, where the top 10 publishing countries were selected in this paper, as shown in Fig. 8. Based on the result, the largest country which massively contributes in terms of citations is leading by the “USA” followed by “China” and “South Korea.”

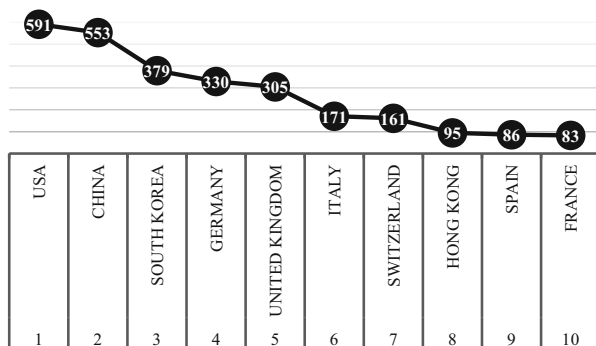
4.9 Active Academic Institutions in Fintech Research

Further analysis showed the most active institution on FinTech, which represents the top author’s affiliation. Strangely enough, the first institution engaging in FinTech is not from the top country (i.e., the USA and China), but from the University of Salamanca, Spain, which produces more publications. It would be interesting to investigate why the most active institution is not from the top leading country in FinTech. However, the co-authorship network might play a role in it. It is then followed by Perkin University, USA, Bina Nusantara University, Indonesia, Soongsil University, South Korea, and Tsinghua University, China (see Fig. 9).

5 Conclusion

This paper investigates the technological impact in finance, a FinTech research between 1960—2021 onward using bibliometric analysis. In this study, the authors’ publications achievements, their collaboration at a macro level, authors from different countries, and journals are assessed. Furthermore, this study examined the co-citation networks of the cited references. This paper outlines existing research by examining previous FinTech literature. Additionally, this paper poses a bibliometric analysis of FinTech research to indicate areas within which

Fig. 8 Top countries on FinTech per citations. (Source: Scopus (until March 2021))



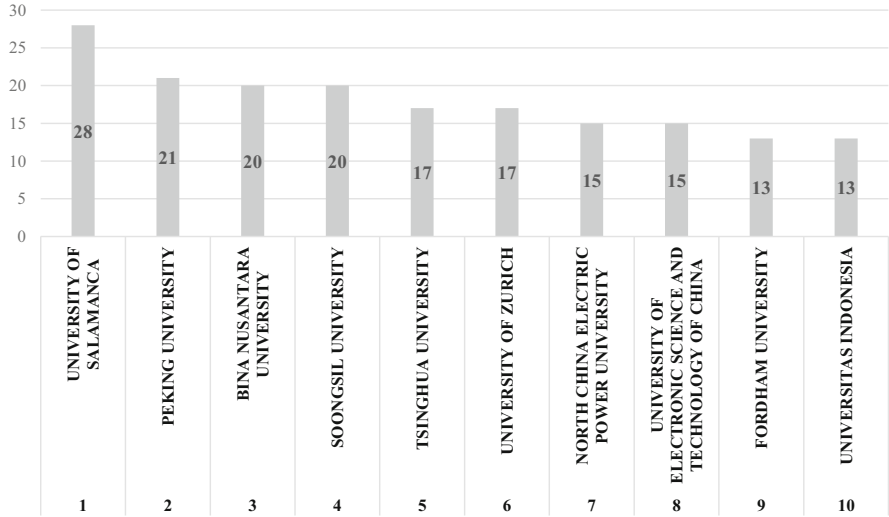


Fig. 9 Most active institution on FinTech (by document number). (Source: Scopus (until March 2021))

investigators are studying FinTech, such as the trend of full documents by year, the document sources type, the most suitable journals for literature review and the most-cited and productive authors of FinTech (Aysan et al., 2021d).

Until March 2021, the country that plays a significant role in FinTech research is China (955 publications). The journal that has published the most on FinTech research is the MIS Quarterly (286 articles). The most productive FinTech author is Li, Jianping (13 documents and 1,274 citations). The analysis indicates that the authors’ keywords in FinTech research disclosed the impact of technology over the financial system globally, from the blockchain to digital payment methods, namely, cryptocurrencies as a competitive advantage and innovation development activities. Bibliometric analysis is a well-known form of meta-analytical research sometimes referred to as “meta-review” of literature (Garfield, 1972; Kim & McMillan, 2008).

This study revealed that FinTech has tremendous potential and shapes how financial services operate. Fintech empowers people to conveniently manage their finances and access various financial products and services choices. The bibliometric analysis of fintech mentioned above is consistent with prior research. Indeed, Anand and Mantrala (2019) highlighted the FinTech disruption and its effects on banking and financial services. Similarly, Aysan et al. (2021b) discuss the Fintech tool, namely the blockchain solution, in resolving the Sustainable Development goals (SDGs) post-covid-19 crisis. Likewise, Akbari et al. (2020) provide a comprehensive bibliometric analysis on sustainable technology by identified five clusters from the co-citation network of references.

The authors’ research has some limitations. One of the limitations is the use of the Scopus database. Although the Scopus database is very comprehensive and convenient, exceeding more than 2,000 documents for analysis, unable WOSviewer to

function, map, and visualize the bibliometric author's keywords and networks. For this reason, the author used FinTech as the only keyword in order not to exceed 2,000 documents.

Another limitation is that the author's research did not include publications from the Web of Sciences—WoS, an extensive database that adds more research papers in FinTech. It is recommended that future research have documents published in other databases. Finally, FinTech is a fast-growing area, especially in finance. However, the term should not be limited only to this field. Still, it should increase in other areas such as science (SciTech) or supply chain (SCTech) as a collection of knowledge is highly demanded and should not be restricted only to technological aspects (Zavolokina et al., 2016).

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The Factors Determining the Specific Nature of Formation of the Capital Structure: Evidence from Maritime Sector



Kristina Puleikiene and Dalia Rudyte

Abstract Under the conditions of global market economy one of the most important management tasks of business companies is to take economically grounded decisions concerning the structure of financing sources. It has been established that differences of formation of capital structure which are namely determined by the specific nature of activity of business companies exist as well. Maritime sector is an important component of the country economy and firm-level factors, and macro factors determine the formation of capital structure of the business companies of this sector to a different significance. The aim of this article has been to present the systematized theoretic conceptions of formation of capital structure by singling out and grouping the factors determining the formation and to establish the impact of the factors in the business companies of maritime sector revealing their relation with the formed capital structure. For the empirical research, the data collected from Bloomberg databases for the year 2010—2019 have been employed in 180 European companies of maritime sector. In this study, a panel data approach as fixed and random effects have been used. The obtained results show that the formation of the capital structure of European maritime companies is positively influenced by the company's factors such as profitability, company size, tangibility and company growth. Among the macro factors, the formation of the capital structure is negatively influenced by the ratio of foreign direct investments.

Keywords Capital structure · Financial Leverage · Firm-level factors · Macro factors · Maritime sector

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1 Introduction

The economic and financial crises, occurring pandemic influencing the global world and separate countries have big impact on business and its results. Financial stability and the problems of the risk of insolvency first of all are related to the amount of borrowed capital in the capital structure of the company. The company ability to increase the company returns maximally, efficiently manage the risk and successfully act in the competitive environment aiming to satisfy the needs of various interested parties depends on the taken capital structure decisions. The maritime sector is strategically important and economically viable for the country. The business companies of this sector form weighty and significant socio-economic contribution on the scale of the whole state.

The business companies of the maritime sector just as any company irrespective of the legal form, activity classification, sector or region finance their activity from the borrowed means and equity. In this way during the formation of the company capital the conception of capital structure appears. The study of capital structure attempts to explain the mix of securities and financing sources used by companies to finance real investment (Myers, 2001). Still, it would be a very narrow-minded viewpoint to understand capital structure as a combination of debt and assets. Therefore, capital structure indicates the set of regulations and stimuli which the company follows and maximally increases the profitability of the company and its long-term value for the shareholders. Thus, in the opinion of the authors of the article, it would be expedient to expand the conception of capital structure in which both the structure of the combination of the borrowed and equity capital and the benefit and significance of capital structure to the company, interested persons and public was reflected. One can state that the decisions of formation of capital structure ought to ensure sufficient financial means guaranteeing the minimal price of the capital and assisting in achieving the goals set by the company. Capital structure is the creation of means and methods of formation of a combination of borrowed and equity capital ensuring that the decisions taken in the company increase the value of the business via the improvement of the company activity striving towards positive impact on the company, sector, public and country.

The majority of the researchers unanimously agree that capital structure is one of the main factors which influences the financial results of the company and its activity. Under the present economic conditions, the necessary basis of development of the whole state is the formation of financially stable companies which can both ensure big business capitalization, increase the profit, protect the interests of the investors and ensure the financial stability of the country and region and increase the economic safety. The company capital determines the appearance of all the other resources and the company when performing its functions uses both the equity and the outside funds.

Striving towards optimal capital structure which minimizes the capital costs and maximizes the company value, it is necessary to take into consideration the sufficiently wide group of interested individuals: both the company owners,

shareholders, investors and to take into consideration the interests of the society striving to ensure the efficiency of the environment protection. Optimal capital structure ought to be of benefit to both company owners, shareholders and other investors and also the society and environment. During generalization, the conception of optimal capital structure can be expanded by including the traits significant to optimal capital structure: it is the combination of loans and share capital that creates a balance between risk and profitability by increasing the price of the company share up to the supreme degree, thus maximizing the business value, ensuring the benefit of the individuals interested in the company and society as well and creating wellbeing to environment in the context of sustainable development. It would be a very narrow-minded attitude to state that one of the main goals of the company is the striving of the company to make profit and maximize the shareholders property, as it would be only the striving of personal interests by ignoring the goals of sustainable development. Sustainable finance system strives towards social and environment responsibility, where the green finance emphasizes the environment protection aspects. Although the companies, society and government have interests of their own, the environment protection efficiency must be reflected in these interests as well.

During the formation of the capital structure, the business companies of maritime sector come across certain particular features, as big borrowed capital is necessary for the company activity of this sector. Paun and Topan (2016) indicate that the maritime industry rests on big investments aimed to organize the ship fleet wishing to haul loads in the whole world. The financing of this industry is a sensitive problem demanding quite large capital. The opportunity of maritime companies to use capital markets gives them a wider spectrum of financing means when the activity has to be financed and especially for the acquisition of long-term assets for borrowed means. Modern ships are very expensive assets, so the maritime companies have a high coefficient of financial leverage and big financial risk (Albertijn et al., 2011; Drobetz et al., 2013).

This paper aims to answer the question of what factors determining the identities and differences of formation of capital structure of business companies can be established in the maritime sector striving for the maximization of the company value. The object of this research is factors determining the decisions of capital structure formation in maritime sector. Previous research has analyzed only the influence of macroeconomic factors reflecting macro factors on the formation of capital structure. However, there is a lack of other macro-environmental factors that may affect the formation of the capital structure of the maritime sector: political stability, the quality of the country's port infrastructure, the country's level of productivity, international trade level, environmental factors. Therefore, these factors will be included in this study when analyzing the impact of factors affecting capital structure. The aim of the research is by systematizing the theoretical conceptions of formation of capital structure to single out and group the factors determining the formation and establish the impact of factors on the business companies of maritime sector by revealing their relation with the formed capital structure. The methods of research are systematizing of literature, comparative analysis of

concepts, regression analysis. For the empirical research, the data collected from Bloomberg databases for the year 2010—2019 have been employed.

The paper proceeds as follows. Section 2 discusses the conceptions of formation of capital structure; the factors influencing the formation of capital structure are presented in Sect. 3, Section 4 presents the analysis of the factors determining the capital structure of maritime sector companies. Section 5 describes the data, the variables and the methodology. Section 6 discusses the empirical results, and Sect. 7 concludes.

2 The Conceptions of Formation of Capital Structure

The decisions of formation of capital structure are substantiated on the theories of capital structure. In the present article, three main modern theories will be singled out: trade-off theory, pecking order theory and theory based on agency cost. Based on the classical trade-off theory, companies need to set a maximum leverage ratio where the optimal level of debt reflects an equilibrium between the bankruptcy costs and the tax benefits of debt (Kraus & Litzenberger, 1973). The companies seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress (Myers, 2001). The trade-off theory makes an assumption concerning indirect positive connection between financial leverage and activity results, as low activity level can increase the risk of bankruptcy. Following the trade-off theory, the company maximizes value by balancing the marginal benefit of debt with marginal costs of debt (Sheikh & Qureshi, 2014; Turner et al., 2015). In the literature, it has been unanimously agreed that the trade-off theory has become prevailing while looking for optimal capital structure (Bolton & Huang, 2017; Kedir & Mekonnen, 2015; Zeitun et al., 2017). The pecking order theory says that the company will borrow rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures (Myers, 2001). According to the pecking order theory, a company first uses internal resources, then issues debts if internal resources are insufficient, and finally releases external capital, which is the most expensive. When a company does not have sufficient internal cash flows for its actual investments and dividend liabilities, the company issues debts. If external financing is required, borrowed rather than equity capital is chosen because the cost of issuing this capital is higher. Thus the debt ratio reflects the cumulative requirement for external financing. Pecking order behaviour follows from simple asymmetric information models (Myers, 1984; Myers, 1999; Myers & Majluf, 1984). Pecking order theory makes an assumption that optimal capital structure (contrary to trade-off theory) does not exist and it states that the company offers priority to finance its investments from the means generated internally and not from external sources (El & El, 2019; Zeitun et al., 2017). According to Jensen and Meckling (1976), theory based on agency cost has focused on costs arising from conflicts of interest between shareholders, executives and debt holders. Thus, capital structure is determined by agency costs, which include both debt and equity issuance costs. It

can be argued that the theory based on agency cost is based on the relationships that arise from a contract within a company. When making investment decisions, the company's managers transfer the risk to the company due to the consequences of these decisions. Managers are more likely to invest in large projects with high expected returns. Such appropriate decisions increase the value of a company, but improper decisions can reduce the value of a company by reducing the value of shares. As a result, shareholders tend to invest in smaller projects with lower returns but also lower risk. Theory based on agency cost states that financing of debts can be employed striving to improve the company activity while resolving the interest conflict between the head and the shareholders. The head can employ the free monetary flows in his/her interests instead of following the interests of the shareholders. Thus, by increasing the financial leverage level, the presence of debt owners can be employed aiming to improve the company activity, reduce the free monetary flows, watch the manager and reduce the expenses of agencies (El & El, 2019). Theory based on agency cost has focused attention on expenses that appear due to the conflict of interests between shareholders, administration and debt owners (Kedir & Mekonnen, 2015). In this way, capital structure is determined by agency expenses which cover both debt and assets security emission expenses. One can state that theory based on agency cost is based on relations, which occur due to the contract in the company. The administration of the company, when taking investment decisions, transfers to the company the risk concerning the consequences of these decisions. The administration is more apt to invest into big projects with big probable returns. Such appropriate decisions increase the value of the company, but inappropriately taken decisions can reduce the company value, as the value of the shares decreases. Therefore, the shareholders are apt to invest into smaller projects with smaller returns, but smaller risk as well (Jensen & Meckling, 1976).

Aiming to maximize the company value, one must take into account lots of factors related to the company activity, its results, the specific nature of the sector and environment of the country. During the analysis, systematization and comparison of various capital structure formation theories, it appears that the scientists do not have a unanimous opinion which of the existing models reflects the company behaviour under the challenges of capital formation where lots of different factors influencing capital structure appear best of all.

3 The Factors Influencing the Formation of Capital Structure

In the present section, the factors determining capital structure that have showed up in the empirical investigations most of all are discussed. The former research indicates that the capital structure of a company is determined by various factors, which are classified into firm-level factors and macro factors (Deari et al., 2019; Hamzah & Marimuthu, 2018; Prahalthan, 2010; Ramli et al., 2019; Sahin, 2018).

The firm-level factors depend only on the indicators of the specific company, and the macro factors are the same for all the companies acting in that market, but their significance can differ substantially.

Profitability is one of the main factors analyzed in capital structure research. The research carried out by Hamid et al. (2015), Gill et al. (2011), Obradovich and Gill (2013), which have analyzed the capital structure impact on the profitability of service and industrial companies of USA, indicates that the capital structure and profitability of a USA company are very closely related. It is due to the fact that in the USA debt interest is taxed. The results indicate that profitable companies are more dependent on debt as the main opportunity of financing. Although the debt interest is deducted from taxes, bigger debt level increases the risk of failure to perform the obligations and that in its turn increases the opportunity of the company bankruptcy. Therefore, the company must consider the opportunity to employ optimal capital structure. Optimal capital structure covers part of the debt, but not 100% of the debt. In other words, that is the “best” ratio of the company debt and its equity, which in its turn will reduce the price of the capital, id est the costs of the financing of company activity. Besides it will reduce the probability of bankruptcy. However, big borrowing coefficient starts to reduce the profitability of the companies, and the tax exemptions start disappearing. Thus, capital structure research gives valuable insights into how strategic decisions concerning the implementation of investments will influence the company value, which is important striving to anchor in the market. As capital structure factor the liquidity of the company is singled out, as liquid companies can perform short-term obligations. Bigger liquidity ensures positive circulating capital, so one can save means for long-term investments (Ahmed Sheikh & Wang, 2011; Hamzah & Marimuthu, 2018). Besides in this case one does not have to borrow from other external sources. The growth of the company as an influencing capital structure factor is analyzed in much empirical research. Part of the empirical research indicates that the companies having big growth opportunities usually have less financial leverage aiming at smaller conflicts concerning the representation of shareholders and bond owners (Akbar & Bhutto, 2009; Sheikh & Qureshi, 2017; Tchuigoua, 2015). The companies having more growth opportunities are less apt to external financing. The reason for this phenomenon is the universally accepted attitude that the companies having sufficient resources for carrying out their activities do not have any logic basis to borrow from creditors. In other words, the companies having big growth opportunities are apt to maintain low debt ratio. However, another part of the research reflects the opinion stating that bigger tempo of growth means bigger demand for means and, under “*ceteris paribus*“, bigger dependence on the financing borrowed externally (Akbar & Bhutto, 2009). The opportunities of growth of a company demand investment for which means are necessary. As equity costs more than a debt, priority is given to a debt. In the opinion of Ramli et al. (2019) bigger growth opportunities indicate the results of healthy business, so it is easier to obtain financing in the competitive market. According to Serrasqueiro and Caetano (2015), companies with bigger growth opportunities must assume important investment projects which generate greater demand for financing. When the internal sources of financing are

expended, for the financing of development opportunities, the companies give priorities more to debts than to external equity. Therefore, the companies with bigger development opportunities increase debts when the internal financing sources are not sufficient. The asset tangibility outlines the company asset structure revealing the domineering of long-term assets in it and also is one of the important company capital structure factors. Sheikh and Qureshi (2017) present insights that companies closely related with creditors can present less pledge, as relations change the physical assets. They also note that insufficiently expanded and inefficient legal systems can hinder concluding debt contracts that ought to be carried out. In the case of failure to perform the obligations, the exaction of pledge can be expensive and long. Muritala (2018) recommends that the asset tangibility ought to be the main factor of capital structure, as it is less probable that the companies owning more tangible assets will be financially encumbered. The size of the company as a factor greatly influencing the decisions concerning capital structure was investigated by many scientists. Following the empirical researches of Prahalthan (2010), big companies have more debts in comparison with small companies and bigger companies are apt to borrow more. It is due to the fact that the bigger the company, the more stable flows of cash and that can reduce the risk of debt usage. Besides bigger companies are more diversified and have less risk to fail to perform their obligations and less probability of bankruptcy than smaller companies. Akbar and Bhutto (2009) agree to it stating that big companies are more diversified, have easy access to capital market, obtain higher credit ratings for debt bonds and pay less rates of debt capital interest. Other investigators indicate that bigger company size gives them an opportunity to accumulate the undistributed profit, so there is smaller opportunity of borrowing, and smaller companies have limited opportunities to obtain equity and are more apt to use bank loans (Ramli et al., 2019; Serrasqueiro & Caetano, 2015). During the analysis of tax impact on capital structure non-debt tax shield is singled out. During the financing of debts, the substitute of tax exemption is non-debt tax shield which is an alternative way to reduce the tax burden when the company for which bigger tax rate is applied ought to use more debts to receive benefit from it (Ramli et al., 2019; Sheikh & Qureshi, 2017).

During the research of the factors determining the behaviour of companies borrowing, the role of the macroenvironment conditions ought to be investigated, as the capital structure formation is determined by macro factors as well. Daskalakis et al. (2017) note that there is a strong relation between capital structure and macroeconomic condition. The occurred global financial crisis in the scientific space has posed the issue concerning the dynamic establishment of capital structure taking into consideration how “quickly” the companies are apt to adapt their capital structure to their long-term goals under different macroeconomic conditions. Scientists have arrived at the conclusion that the ratios of short-term and long-term debts differ taking into consideration their correction pace; the pace of correction of a long-term debt during crisis slows down and the corresponding short-term debt has no influence. As Cristea (2018) states among the most used external capital structure factors the Gross Domestic Product (GDP) is: due to the growth of economy and the growth of GDP accordingly the profit of the companies increases. Deari et al. (2019)

state that it is probable that when in the country bigger economy growth is present, the companies will use bigger level of debt. According to the statement of Bandyopadhyay and Barua (2016) the changes of macro-policy can influence the choice of company capital structure via the interest rate channel. It is expected that the changes of interest rate will influence the company capital structure due to taxation and bankruptcy expenses. Usually, companies are more apt to borrow more when the borrowing expenses are smaller. When we speak about the interest rate when financing debts, tax exemptions are an attractive aspect. It can be useful for business activity, striving to improve the financial activity of the company, as interest expenses are deducted from taxes. Usually companies borrow more, when the borrowing expenses decrease, so the changes of interest rate can also influence the company capital structure. If the situation of a company is stable and profitable, there is a bigger opportunity to perform interest payment. Following the insights of Rehman et al. (2018) the administration of companies cannot control the means of the country's money and fiscal policy, but they influence taking the short-term and long-term company decisions. The impact of inflation on capital structure formation depends on economic conditions. During recession financial leverage will be less related with inflation, but it will be more difficult for companies to return debts. Inflation influences the company financial decisions concerning capital structure, as under high inflation, the creditors are usually discouraged from giving long-term debts (Ramli et al., 2019). Sahin (2018) states that inflation influences capital costs.

After grouping capital structure factors to firm-level factors and macro factors, it is necessary to emphasize that companies can control firm-level factors, but companies cannot make impact on macro factors influencing capital structure, and it is necessary to adapt to them.

4 The Analysis of the Factors Determining the Capital Structure of Maritime Sector Companies

Business companies of maritime sector are also characterized for specific nature. Paun and Topan (2016) indicate that maritime industry is very important for the country economy, it is considered to be a dynamic and cyclical business sensitive to capital and having distinguishing features: very globalized industry, industry sensitive to fuel costs, big asset tangibility, it is characterized for big distribution of long-term assets (ships) and capital. Empirical investigations in such sectors are relevant, as they are a useful means for maritime companies providing important information about capital structure formed by maritime companies and about the factors influencing the capital structure of the companies of this sector. Thalassinos et al. (2012) note that maritime companies are distinguished due to the big volume of financing, as the main activity demands it, and due to the intensity of the owned assets. Alexandridis et al. (2017) add that for international maritime industry global trade, investments of

big volume capital are typical, however, due to significant tariffs and prices fluctuations, big operation and commercial risk are typical as well.

Maritime traffic is a channel of global trade uniting different states and is considered to be the most efficient and cheapest hauling way of goods of all sorts. Several distinguishing features are typical of the international market of load-hauling tariffs: these are big instability, the impact of seasonality related with the goods hauled by seacraft, cyclical behaviour of tariffs and prices taking into consideration business cycles and others. Whereas Axaroglou et al. (2013) emphasize that companies engaged in the activity of loose goods belong to maritime sector as well. The market of loose goods is very competitive, as many buyers (freighters) and sellers (shipbuilders) negotiate concerning homogenous load-hauling service, they have nearly the same information level and it is rather easy to get into the market. Ship owners and freighters together conclude load haulage contracts and the balance freight prices are established taking into consideration the supply and demand at every moment of time. Under weak market situation, the increased demand only insignificantly increases the tariffs of freight haulage, as the least efficient ships are built, and the active fleet is slowly accumulated. On the contrary, under a strong market situation, when the demand increases, the tariffs of load haulage increase, as nearly all the ships are active. Therefore, the tariffs of load haulage are rather instable, especially in the case of short-term load contracts. Andrikopoulos et al. (2013) note that maritime companies having big influence, especially in the industry of loose goods, experience still growing pressure of shareholders and creditors to undertake the revelation of more exhaustive and frequent financial information. The demand for more exhaustive financial revelation is related to the typical instability of navigation markets, and that increases the uncertainty concerning the income and future prospects of maritime companies. Due to such big changes of market tendencies, the discrepancy of the ship accounting value and their market value can increase, so bigger uncertainty concerning their investment prospects appears for the creditors and shareholders. In this respect, the creditors are especially interested to evaluate the risk of the company credit, as they wish to elucidate if their share of loans and interest will be paid as it has been provided for. Shareholders are more interested to elucidate if it is probable that their investments earn bigger returns than the price of their capital. In both cases, the providers of capital are interested in the evaluation of the company's opportunities to remain a continuous company.

Drobetz et al. (2013) present the finding after investigating the factors determining capital structure decisions employing the sample set of 115 maritime companies quoted in the market and verifying if the maritime companies trading in the market follow the objective capital structure and analyzing their correction dynamics in the case of deviation from this objective leverage coefficient. In comparison with G7 countries industrial companies maritime companies have bigger financial leverage coefficient and bigger financial risk. Most capital structure factors have big influence on the companies of maritime industry. Asset tangibility is positively related to companies financial leverage and its economic impact is more significant than in other branches of industry. Profitability, property risk and activity leverage are conversely related to financial leverage. The research conducted by Paun and

Topan (2016) confirm the relation between capital structure and capital structure factors of chosen companies acting in maritime industry. The empirical results have rejected the pecking order theory (optimal capital structure has not been established) and confirmed the validity of trade-off theory (optimal capital structure factors related to the company size, profitability, taxation and others are important). The research has revealed that taxation is not important wishing to explain the capital structure of maritime sector. It can be explained by the fact that most maritime companies have been established in various tax spheres. The research has confirmed that there is positive relation between the size of the company and capital structure, negative relation between the profitability of the company and capital structure, positive relation between the tangibility of long-term assets and capital structure and negative relation between the prospects of business growth and capital structure.

The results of a study by Thalassinos et al. (2012) to identify the factors influencing the capital structure of European maritime traffic and find the ratio of the target capital structure ratio indicate that in this sector, the theory of choice sequences is prevalent and there is positive relation between the tangible assets and tax exemptions (appearing from other sources than borrowing) and financial leverage. Besides negative ratio between the size of the company or its profitability and debt has been noticed. Lin et al. (2010) draw attention to the fact that geographically diversified maritime industry acting in several countries can have an opportunity to use more debts than other branches of industry. The reason lies in the fact that the maritime industry can diversify its flow of cash, so it has less profit fluctuations and less bankruptcy risk. Other bigger factors of financing of maritime industry debt are liquidity and insurance. Wishing to reduce the risk of failure to perform the company obligations and protect the rights and interests of investors, it is very important to draw up a clear model of analysis of the payment of debts which would enable the maritime industry to improve financial profitability, also would assist the investors in taking more secure investments decisions. According to the statement of Giannakopoulou et al. (2016) the role of company management as determining the results of maritime business activity and financial results ought to be evaluated. The research of the management of maritime sector companies, despite the growing flow of related research, is still not sufficiently investigated. Due to this reason, the empirical data of performed research ought to be evaluated reservedly. Therefore, one can notice that the results obtained during the former investigations in the sector are contradictory and are characterized by heterogeneity.

As Drobetz et al. (2013) state, whereas the supply and demand of maritime industry is closely related to macroeconomic environment financial leverage acts in anti-cyclical way. During the period of economic decline capital structure deviations from objective leverage ratio are less. However, on average, the pace of adapting capital structure in maritime industry is bigger in comparison with the industrial companies of G7 countries. These conclusions indicate that due to big probable experienced expenses of financial waste the deviation from the objective leverage coefficient is large. In the opinion of Merika et al. (2015) in choosing capital structure for the companies of maritime sector the impact of different economic cycle stages is important. The obtained conclusions indicate that size,

tangibility and company activity are the main factors determining capital structure in maritime sector. It has also been established that the attitude of the shipowner during the different stage of the business cycle together with assets concentration are the principal elements explaining the relation of profitability and capital structure in the maritime sector. In the research conducted by Yeo (2016), it has been established that liquidity is closely related with the financial leverage of maritime companies. Negative relation between assets liquidity and financial leverage level means that interest conflicts between the managers and the investors exist. Maritime companies possess a convenient high liquidity position, but they have big financial leverage degree. Evidence also exists that the factors determining the financial leverage level are heterogenous: such variables as profitability, company size influence financial leverage level in a different way, no matter if the debt is a short-term or a long-term one.

After doing exhaustive capital structure empirical investigations analysis, one can state that in many empirical investigations while drawing up the model of factors influencing capital structure, such firm-level factors as profitability, company size, tangibility, growth factor, taxes, liquidity are included. From external environment inflation size, GDP change, interest rate is included. Scientists include into the models different quantity of factors and the measurement of these factors can differ. The results of conducted empirical research vary depending on the region, the level of the country development, sector in which the company is operating and similar. It is also necessary to draw attention that the dependence of capital structure factors can be different following different capital structure theories. Following empirical investigations one can state that among the scientists, a general agreement as to what factors influence financial leverage size exists. However, there is no unanimous opinion concerning their impact and the influence of factors on capital structure is heterogenous in different investigations, often supposing two completely opposite attitudes. Therefore, the question what influence factors would make on capital structure for the companies of maritime sector remains outstanding.

5 Methodology

This chapter explains the measurements and possible outcomes of selected firm-level factors and macro factors of the capital structure. First of all, capital structure is measured as total debt to total asset ratio (CS1). It should be noted that the interpretation of the meaning of this indicator is highly dependent on the industry and sector in which the company operates. As the activities of business companies in the maritime sector require a large amount of financing and are characterized by the intensity of available assets (Arvanitis et al., 2012; Drobetz et al., 2013), long-term debts are important for these companies. Therefore, the ratio of long-term debt to total assets is chosen as a measure of capital structure (CS2) too. This indicator has been used in many empirical studies (Alipour et al., 2015; El & El, 2019; Kadir &

Mekonnen, 2015; Sheikh & Qureshi, 2014). Measurements of selected firm-level factors (Alipour et al., 2015; Gill et al., 2011; Serrasqueiro & Caetano, 2015):

- Profitability (PROFIT): net profit to total assets
- Liquidity (LIQUID): the ratio of current assets to current liabilities
- Size of company (SIZE): natural logarithm of total assets
- Tangibility (TANG): the ratio of net fixed assets to total assets
- Non-debt tax shield (NDTS): the ratio of depreciation expenses to total assets
- Growth of company (GROWTH): percentage change in sales

In this study, macro factors such as foreign direct investments (INVEST) are measured as foreign direct investments net income to gross domestic product ratio, and productivity (PRODUCT) is measured as annual growth rate of output per employee. As the political aspects of the country are particularly important for business companies in the maritime sector, the Political Stability Index (STABIL) and the Port Infrastructure Quality Index (PORT) were included in the model. In order to reveal the influence of imports and exports on the capital structure of companies in the maritime sector, when the sea route is one of the main ways to export and import products, the trade openness indicator (TRADE) was chosen. This article also seeks to address environmental aspects. Goss and Roberts (2011) provide evidence that the environmental performance of firms could increase the value of the firm by lowering the cost of capital. Islam et al. (2017) add that various other stakeholders, i. y. government, policy makers and financial organizations emphasize environmental sustainability practices in companies in various economic sectors. The implementation of green finance policy is also very relevant for companies in the maritime sector. With the rapid development of maritime trade, emissions from shipping are increasingly contributing to air pollution (Gong et al., 2018; Kopela, 2017; Lv et al., 2018). Green Growth Indicator (Environmental and resource productivity (ENV)) was chosen to reflect environmental performance.

The data required for the study to measure firm-level factors were taken from the Bloomberg database. The survey period was 2010–2019. 180 European companies of maritime sector (shipping and shipbuilding subsectors) were included in the sample. The sample included all companies from the specified subsectors that provided financial data for the period considered. As some companies provided full data for the period considered and others only for part of the year considered, the survey data are unbalanced panel data. There were companies from Norway, Denmark, France, UK, Sweden, Germany, Belgium, Italy, Finland, Greece, Croatia, Russia, Montenegro, Bulgaria, Poland, Ukraine, Latvia, Romania, Estonia, Lithuania in the dataset. Data for the macro factor were taken from World Bank, Bank for International Settlements (BIS) statistics and Organization for Economic Co-operation and Development (OECD) statistics.

Regression analysis is most used to investigate the influence of capital structure determinants (Bandyopadhyay & Barua, 2016; Prahalthan, 2010; Sheikh & Qureshi, 2017). In this study, a panel data approach as fixed and random effects have been used. Firm-level factors and macro factors influencing capital structure are reflected in this regression equation:

$$\begin{aligned}
 CS_{i,j,t} = & \beta_0 + \beta_1 SIZE_{i,j,t} + \beta_2 PROFIT_{i,j,t} + \beta_3 TANG_{i,j,t} + \beta_4 NDS_{i,j,t} + \beta_5 LIQUID_{i,j,t} + \\
 & \beta_6 GROWTH_{i,j,t} + \beta_7 INVEST_{j,t} + \beta_8 TRADE_{j,t} + \beta_9 PORT_{j,t} + \beta_{10} STABIL_{j,t} + \\
 & \beta_{11} PRODUCT_{j,t} + \beta_{12} ENV_{j,t} + \varepsilon_{i,j,t}
 \end{aligned}
 \tag{1}$$

where $CS_{i,j,t}$ = capital structure for firm i in country j at time t . The covariates of the model, which represent the firm-level regressors for each firm i in country j at time t are as follows: $SIZE_{i,j,t}$ = size of company, $PROFIT_{i,j,t}$ = profitability, $LIQUID_{i,j,t}$ = liquidity ratio, $TANG_{i,j,t}$ = tangibility, $NDS_{i,j,t}$ = non-debt tax shield, $GROWTH_{i,j,t}$ = growth of the company. The country level regressors common to all firms in each country j at time t are $INVEST_{j,t}$ = foreign direct investments, $TRADE_{j,t}$ = trade openness, $PORT_{j,t}$ = port infrastructure quality, $STABIL_{j,t}$ = political stability, $PRODUCT_{j,t}$ = productivity of the country's employees, $ENV_{j,t}$ = environmental and resource productivity. The idiosyncratic error term for each firm i in each country j at time t is defined as $\varepsilon_{i,j,t}$.

Using panel data, three regression analysis methods are most applied in practice: pooled ordinary least squares, fixed effects and random effects. A panel data diagnostic test will be performed to determine the model type. The Hausman test explores the choice between fixed and random effect models. The Durbin-Watson test is used to determine autocorrelation (Baltagi, 2005). Calculations were performed with the cross-platform software package for econometric analysis GRET. L.

6 Findings

Table 1 presents descriptive statistics of variables. Table 1 shows that there are businesses in the maritime sector that finance their activities only from their own resources. However, there are companies that finance their activities mainly from borrowed funds. Table 1 shows that the financial situation of the companies in this sector is quite different, and the results of performance of the companies are different. Macro indicators in European countries also vary widely.

Table 2 presents the correlation matrix of variables. According to the Table 2, capital structure ratios are negatively correlated with liquidity ratios and positively with asset tangibility and firm size. The ratio of total debts to total assets is positively related to the non-debt tax shield. Of the macro-level indicators, the capital structure ratios are positively correlated with the Port Quality Infrastructure Index, Environmental and resource productivity, negatively correlated the country's employee productivity, and the long-term debt to total assets ratio positively correlated with the country's Political Stability Index.

According to Hausman test statistic ($H = 57,0492$ with $p\text{-value} = \text{prob.}(\chi^2(26) > 57,0492) = 0,000412527$) (A low $p\text{-value}$ counts against the null hypothesis that the random effects model is consistent, in favor of the fixed

Table 1 Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
CS (1)	1769	0.00	99.83	36.6798	23.77348
CS (2)	1769	0.00	97.90	27.9486	22.40322
PROFIT	1765	-89.44	68.61	-0.8033	11.47065
LIQUID	1769	0.00	9.31	1.6166	1.52460
SIZE	1769	11.37	25.17	19.5790	1.97461
TANG	1768	0.00	99.23	58.6411	30.52710
GROWTH	1767	-99.71	109.67	4.4067	27.15821
NDTS	1766	0.00	2.82	0.0923	0.19952
INVEST	1769	-28.58	280.13	2.9529	12.17351
TRADE	1769	46.29	408.36	80.9290	39.83343
PORT	1769	2.60	6.50	4.8775	0.77588
STABIL	1769	-2.02	1.66	0.4895	0.68532
PRODUCT	1769	-9.80	22.10	0.9262	1.85902
ENV	1728	0.00	16.35	6.1108	2.71843

Source: own calculations

effects model)), the fixed effects model was applied. The results are presented below in the Table 3.

According to the data in the Table 3, profitability has a positive influence on the capital structure, measured as total debt to total asset (CS1). Firm-level factors such as tangibility, size and growth have positive influence on capital structure also, and liquidity has negative influence on capital structure. Also profitability has a positive influence on the capital structure, measured as long-term debt to total asset (CS2). Firm-level factors such as tangibility, size and growth have positive influence on capital structure also. But liquidity has no influence on capital structure, when it is measured as long-term debt to total asset. Macro factor such as foreign direct investments has negative influence on capital structure for the companies in maritime sector. Productivity of employee in country has a positive influence on long-term debt to total asset ratio. Thus, the capital structure of companies in the maritime sector is mainly influenced by the firm-level factors of the company.

Compared to the results of previous studies in the literature, the obtained results confirm the results of previous studies (Drobetz et al., 2013; Merika et al., 2015; Paun & Topan, 2016), which suggest that tangibility of asset is positively related to the capital structure of maritime enterprises and its economic impact is more pronounced than in other industries. The results on the impact of firm size on capital structure and liquidity also overlap. However, contradictory results have been obtained regarding the impact of profitability and business growth prospects on the capital structure of maritime businesses. The obtained results also confirmed the influence of macroeconomic indicators on the formation of capital structure.

Table 2 Pearson Correlation matrix

	PORT	STABIL	TRADE	ENV	PRODUCT	INVEST
CS (1)						
CS (2)						
ROA						
LIQUID						
SIZE						
TANG						
GROWTH						
NDTS						
PORT	1					
STABIL	0.666** 0.000	1				
TRADE	0.120** 0.000	0.337** 0.000	1			
ENV	.0598** 0.000	0.0704** 0.000	0.076** 0.002	1		
PRODUCT	-0.110** 0.000	0.042 0.080	0.108** 0.000	-0.056* 0.020	1	
INVEST	-0.023 0.333	0.032 0.184	0.238** 0.000	-0.063** 0.009	0.043 0.069	1

Notes: ** Pearson Correlation is significant at the 0.01 level (2-tailed); * Pearson Correlation is significant at the 0.05 level (2-tailed)

Source: own calculations

7 Conclusion

The decisions of the business companies of maritime sector concerning the choice of capital structure are significant due to various reasons. Capital structure influences the ability of the company to act under competitive environment and is related to the demand of the company to increase the company returns maximally and manage the risk efficiently. The formation of capital structure is one of the matters of strategic management, as it is closely related with the abilities of the companies to satisfy the

Table 3 Panel data estimation

Dependent variable	Total debt to total asset (CS1)	Long-term debt to total asset (CS2)
Const	-56.91* (33.20)	-30.90 (27.70)
PROFIT	0.0003790*** (0.0001085)	0.0004197*** (8.127e-05)
LIQUID	-0.2085* (0.1096)	0.003149 (0.05707)
SIZE	3.327** (1.683)	2.602** (1.315)
TANG	0.2761*** (0.05873)	0.2647*** (0.05709)
GROWTH	0.0007656*** (0.0001926)	0.0009397*** (0.0001835)
NDTS	-0.5650 (7.720)	-4.798 (7.791)
INVEST	-0.1267*** (0.02269)	-0.1332*** (0.02089)
PORT	1.425 (3.439)	-1.417 (3.468)
STABIL	1.239 (4.720)	2.812 (4.712)
TRADE	0.002660 (0.09253)	-0.02601 (0.08135)
PRODUCT	0.1817 (0.1599)	0.3100* (0.1765)
ENV	0.6036 (0.8163)	0.1082 (0.8317)
n	1720	1720
Adj. R ²	0.1580	0.1097
lnL	-6625	-6711
Durbin-Watson	1.025517	1.148146

Standard errors in parentheses

* significant at the 10 percent level

** significant at the 5 percent level

*** significant at the 1 percent level

Source: own calculations by GRETL

needs of various interested parties. The companies aim to establish such capital structure capital structure level which was less risky, cost less and was as useful to the investors (shareholders and creditors) as possible and enabled to achieve the main goal of the company—to increase the value of the company. The decisions of capital structure play an important role aiming to remain in business, ensure the welfare of the company and strongly influence the stability of the company. Previous empirical research shows that the pecking order theory is the most common in the

companies of maritime sector, this theory states that the company prefers internal sources of financing over external ones in process of capital structure formation. However, as companies of maritime sector need large capital to acquire fixed assets, borrowed capital plays a large role in the capital structure of these companies.

The results show that the capital structure of companies in the maritime sector is mainly influenced by the firm-level factors of the company. Regardless of the measurement of the capital structure, profitability, company size, tangibility and growth have a positive effect on the capital structure. The capital structure, which is measured by the ratio of total debt to total assets, is negatively related to the liquidity of the company. As with any company, the economic environment is paramount for companies in the maritime sector. It should be noted that macro factors may have a lagging effect that was not assessed in this study. The growing focus on environmental performance is also visible in the companies of maritime sector. Of course, ensuring environmental efficiency will require additional investment from companies in the maritime sector, and this must be considered in the formation of capital structure. As companies in the maritime sector have only recently begun to pay close attention to the environment, it may be too early to assess the impact of environmental indicators on capital structure.

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Measuring Corporate Social Responsibility by Constructing an Index: An Empirical Evidence from Oman



Afshan Younas and Aza Azlina Md Kassim

Abstract Corporate Social Responsibility (CSR) is identified as the main business tool toward the sustainability path. However, the measurement of corporate social responsibility (CSR) is always a source of contention. Researchers use different approaches to measure corporate social responsibility (CSR). The main objective of this study is to measure corporate social responsibility (CSR) by constructing an index, which is one of the common methods used by many researchers to understand the performance of firms toward CSR. The data used in this study is based on the non-financial listed companies at Muscat Securities Market Oman, for the period 2016. Thus, 71 non-financial listed companies are used in this study to construct and measure a CSR disclosure index. This study used a content analysis approach to construct an index for CSR disclosure which covers 40 consisting of five sub-themes to measure CSR disclosure. The significant sections to measure corporate social responsibility are community and its welfare, education and health, environment and energy resources, product-customer area, and finally workers. The result indicates that the CSR disclosure of listed companies at MSM is acceptable because 2016 is the first year in which CSR activities are mandatory for all listed companies. However, some companies are very strong in CSR disclosure, while few companies are still weak and need to focus on developing their CSR charter and disclosing CSR activities.

Keywords CSR Disclosure · Community Welfare · Environment and Energy · Workforce

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1 Introduction

The recent development and advancement in the concept of corporate social responsibility have several influences on the business reputation (Harun et al., 2020). Corporate social responsibility disclosure plays an important role in developing and enhancing corporate image, its transparency, and provides useful information to different stakeholders (Axjonow et al., 2018). The rising trend of academic research in CSR is one of the indications of its increasing importance, also many businesses voluntarily adopt and disclose their CSR activities, even where it is not mandatory (Tilakasiri, 2015). Nowadays businesses are seen and expected to be socially responsible, at the same time providing benefits to all stakeholders, which is consistent with the perspective of stakeholder theory (Tilt, 2016). As the businesses realize the importance of CSR activities, the more pressure companies may feel in terms of satisfying stakeholders.

The development of corporate governance mechanism is based on agency theory which highlights the structure of business where the control is separated from ownership (Fama & Jensen, 1983). The role of corporate governance on the agency relationship between managers and stakeholders can be examined from different governance mechanisms. CSR disclosure is also a key driver of corporate governance mechanism effectivity (Majeed et al., 2015). Thus, corporate governance can be considered a vital factor in the decisions of corporate disclosure related to CSR from an agency theory perspective.

The CSR disclosure research is mostly conducted in developed countries, developing countries are still suffering from a lack of research in this area. In fact, the awareness of CSR among businesses and markets increases but still this area of research suffers due to scarcity. Whereas developing countries are more exposed to social issues, thus the larger room is available for CSR activities in developing countries (Ehsan et al., 2018). Gulf Cooperation Council (GCC) countries have unique characteristics as compared to the western world; social responsibility is considered a religious duty. Thus, on the one side, businesses are expected to be socially responsible to fulfill their religious expectations and another aspect is to adhere to increasing expectations of stakeholders (Farook et al., 2012).

CSR measurement is a critical and crucial step in evaluating CSR practices. The concept of CSR is multidimensional and it is important to cover all the dimensions to show more reliability and validity in its measurement (Tilakasiri, 2015). Many studies propose different ways of measuring CSR, which include society, individuals, product quality, natural environment, culture, education, and wellbeing services concerns. Measurement of CSR is a complex area of study under CSR research; however, different approaches are used by different researchers.

There is still a gap in the CSR disclosure literature, its practices, and evaluation in developing countries (Ali et al., 2017). This study contributes to the existing literature on CSR disclosure and measurement in many ways. First, it is the first study of its kind which constructs an index on the listed companies at MSM after the mandatory disclosure of CSR activities. Previous studies focused on CSR disclosure

practices of a limited number of samples (Al Salmi & Khan, 2019). Second, the current study contributes to the measurement and practices of CSR disclosure literature by using content analysis techniques, whereas previous studies focused on another method to measure CSR disclosure (Haddad et al., 2020). This study can provide an opportunity for future research to examine the different aspects of CSR research.

Corporate Social Responsibility is an important principle of the Oman Code of Corporate Governance (OCCG). According to the Oman Code of Corporate Governance, which was developed in 2015 and implemented in 2016, all public listed companies are required to develop CSR charter and then disclose their CSR activities in their annual reports (CMA, 2016). Thus, this study focuses on constructing and measuring a CSR disclosure index based on a content analysis approach on the public listed companies in Oman.

The findings of the study portray the first-year corporate social responsibility disclosure of public companies listed at Muscat Securities Market (MSM). Since the disclosure of CSR activities is mandatory in Oman, thus the result of the study explains that how listed companies respond to the new mandatory CSR charter and how much firms are successful in adopting, implementing, and disclosing CSR activities.

This paper is organized as follows. Section 2 provides an overview of the prior literature that explored the literature of corporate social responsibility disclosure. Section 3 provides the details about research methodology which covers the review of existing approaches to measure corporate social responsibility disclosure, construction of the index, and selection of sample. Section 4 presents the results and findings, followed by Sect. 5 which portrays the discussion part. Section 6 focuses on the study limitation and future scope, and finally Sect. 7 focuses on the conclusion.

2 Literature Review

After the second world war, the acceptance and changing attitudes toward corporate social responsibility have started (Carroll, 2003). The concept of corporate social responsibility was first introduced by Bowen (1953) in his book “Social Responsibilities of the businessman.” Further, Davis (1960) elaborated the CSR concept by justifying it as a long-run economic gain of the firm. In the same year, Frederick (1960) referred to CSR as a private contribution to society’s economic and human resources. Whereas Carroll (1979) introduced a three-dimension model of CSR which is identified as an aspect of corporate responsibility, social issues of business, and corporate actions. Later, Wartick and Cochran (1985) focused on the integration of the three-dimensional model as principles (which reflects corporate responsibility), policies (which refers to policies for social issues), and processes (which describes as action into the evolving system). Later, Wood (1991) has developed

an institutional framework that is based on four types of corporate responsibilities such as economic, legal, ethical, and philanthropic.

The three-domain approach of corporate social responsibility was proposed by Schwartz and Carroll (2003), which includes economic, legal, and ethical. The development of CSR theoretical background is based on the methodology that businesses follow toward their stakeholders, firstly is based on the participation of stakeholders in businesses and secondly for whom the wealth is generated. The literature focused on four methodologies to describe the reasons that why companies adopt CSR practices. These methodologies are “regulation,” “descriptive,” “instrumental,” and “strategic” (Charlo et al., 2017). The regulations are justified from the businesses’ ethical behavior, where businesses need to follow and implement CSR actions to align with the law and thus considered as the moral obligation of the firm. It is also suggested as an “ethical” approach. Whereas the descriptive approach focuses on the legitimacy aspect that will assist society support the companies’ actions. The instrumental approach claims that CSR is the tool that enhances the corporate image and helps in generating and sustaining competitive advantage, which results in the creation of wealth. The strategic approach combines all three approaches, which further extends the definition of CSR as a long-term business value (Diez-Cañamero et al., 2020).

There is no specific definition of CSR, during the past few decades, the notion of CSR has been increasing rapidly in all businesses. Many organizations follow CSR as a form of self-regulation as a part of their business model and strategic planning (Newman et al., 2020). A socially responsible business is expected to act in an ethical way, contribute efficiently to minimize the negative influences of business operations, and gain the maximum benefit associated with socially responsible products (Szedi et al., 2020).

Many researchers suggest that companies adopt CSR behavior for several reasons. These range from philanthropy to conformity with institutional standards (Lee & Shin, 2010). Barnett and Salomon (2006) identified different benefits of CSR activities for businesses. First, CSR-oriented businesses are able to attract more resources through debt as well as through equity. This is due to the high trust of creditors and shareholders in the business’s socially responsible behavior. Second, internal CSR activities of businesses result in obtaining high-quality and skilled employees, which further bring better performance to the company. Third, CSR activities can be used as a marketing tool by a business, so the business can market its products and services through CSR activities. Fourth, CSR can be used as an important source of competitive advantage.

In a similar way, Weber (2008) also identified the potential benefits of CSR for firms. First, CSR activities create positive impacts on a company’s image and reputation. Second, employee CSR activities help in employees’ motivation and retention which further improves their performance. Third, at first glance, CSR activities look like cost centers but for long-term business sustainability, it works as a profit center. Fourth, CSR actions increase revenue from higher sales and market share. Fifth, CSR activities help in the reduction of business risk.

While the above-mentioned benefits are realized at the firm's level but in fact, CSR also has macro-level influences. Škare and Golja (2014) discussed that CSR has a greater share of socially responsible firms in economy-related activities which contributes to higher economic growth. Thus, corporate CSR is also a valuable contributing factor to economic growth at the level of an economy (Galant & Cadez, 2017).

CSR is regarded as a multidimensional notion which ranges from philanthropy to a more complex concept. In the past, business performance was measured through its donation to special social projects. Nowadays, the distinct and multiple aspects of social, environmental, education, product, and customer variables combine with the complex relationships among stakeholders, thus this strongly needs comprehensive tools to measure CSR actions (Diez-Cañamero et al., 2020). Thus, the inclusion of CSR in the United Nations sustainability goal confirmed the importance and much wider scope of CSR notion.

3 Research Methodology

3.1 Review of Existing Approaches to Measure CSR

Several approaches are used by researchers to evaluate and measure CSR practices. However, most of the previous studies focused on four conventional methods to measure CSR disclosure. The most common approaches are content analysis, reputational indices questionnaire-based surveys, and one-dimensional measures.

The most common approach used by many researchers is content analysis. Content analysis is based on secondary data sources that may include annual reports and other CSR publications on the website of the company. Under this method first, the information is collected then converted into a quantitative form to develop a disclosure index (Szegedi et al., 2020). The second method is reputational indices; under this method the CSR is measured by specialized rating agencies. Many researchers suggest different reputational indices that measure CSR, which include MSC KLD 400 social Index, Fortune Magazine reputation index, Dow Jones Sustainability Index, and Video Index (Galant & Cadez, 2017). The reputational indices are typically compiled by private firms (Johansson et al., 2015).

A questionnaire-based analysis is usually used when any business is not ranked by a rating agency, besides not enough information is available in the company's annual reports and websites. Under this method, the primary data is collected by developing a questionnaire (Galant & Cadez, 2017). Another method is the one-dimensional approach, which focuses on only a single dimension of CSR. It usually covers the environment management area only and thus the main benefit is for researchers to put less effort into data collection due to its limited scope (Johansson et al., 2015).

All the above four methods have their own benefits and drawbacks. The most common problem in each method is the researcher's subjectivity and bias. Hence, all

methods are used by the researcher, but the content analysis approach is heavily used in measuring CSR disclosure (Aribi & Gao, 2011; Ehsan et al., 2018; Masoud & Vij, 2021; Omair Alotaibi & Hussainey, 2016; Szegedi et al., 2020).

3.2 Constructing the CSR Index

Many CSR studies have suggested the importance of the measurement of CSR. The current study required a CSR measurement index for identifying and quantifying social and environmental data being disclosed by listed non-financial companies at Muscat Securities Market (Tilakasiri, 2015). The current study uses a content analysis approach, which is also known as the disclosure approach to measure corporate social responsibility as a qualitative approach by constructing an index. Thus, the CSR disclosure approach is defined as the CSR information revealed by the company in its financial reports, annual report, website, or through any other source about the company's initiative, programs, contributions, or any actions which influence the society, general public, and company's stakeholders (Chan et al., 2014).

The content analysis approach is used to measure CSR disclosures and is considered one of the extensive approaches used in the social research stream (Milne & Adler, 1999). Under content analysis two approaches are commonly known, one is the "index" and another is "volumetric." In the "index" approach the presence and absence of specific items are checked by following a simple binary coding method. If the specific item is present, assign 1, whereas if a particular item is missing, then it will be assigned 0 for the absence of a specific item. Based on coding aggregated scores are used to establish an index of the overall selected item. Opposite to this, the "volumetric" approach focused on the volume of a specific item in the chosen text, such as counting words, phrases, paragraphs, or proportions of a specific page (Kansal et al., 2014).

The main challenge in content analysis is the right and proper recognition of a suitable unit of analysis that supports the purpose of the study. The main objective of this study is to pinpoint the construct of an index by analyzing CSR practices and disclosure activity in the annual reports to measure the adaptability of CSR charter by businesses as stipulated in the Oman Code of Corporate Governance (2016).

An important consideration for using content analysis to measure CSR disclosure is to select a particular category in which the framework components are categorized and an index is developed. It is highly essential to develop and use an index that matches the country's economic and business environment which should give a correct measure of CSR disclosure. Thus, the index proposed and developed by Ehsan et al. (2018) reflects the CSR themes that are used in developed and developing countries. Therefore, this study used the same index with few modifications to fit with country-specific requirements. It consists of five sub-themes and a checklist of 40 items. The main five sub-themes to measure CSR disclosure are community or social welfare, health and education, environmental and energy concerns, product

and customer and stakeholders awareness, and workforce practices. There are 11 items under general community welfare, 5 items under health and education, 7 items under environmental and energy, 9 items under product and customer, and finally 8 items under workforce. These five sub-themes which comprise 40 items also reflect the sustainability development goals which are identified by the United Nations and comprised of 17 goals (UN, 2021). According to the Omani market and requirements mentioned by the Oman Code of Corporate Governance, few modifications are made in this index, whereas the number of items remained 40 under the same five sub-themes. The reliability of the CSR disclosure index is reported by Ehsan et al. (2018) as Cronbach’s coefficient alpha value of 0.924, which is considered outstanding in accepting five sub-themes with 40 items. The CSR index has been calculated separately for each sub-theme and then the total index has been calculated by dividing by a total of 40 items. Each company sub-indices are calculated and then its total disclosure is divided by 40 and calculated from 100 as a percentage.

The content analysis approach is widely used to construct the index and measure the CSR disclosure activities of a business. Masoud and Vij (2021) used a content analysis approach to examine the corporate social responsibility disclosure of Libyan state-owned enterprises. One of the famous and widely used methods for the measurement of CSR disclosure activities is content analysis (Aribi & Gao, 2011). Thus, to measure the CSR disclosure of Omani listed companies content analysis approach is used in this study. The methodology to scoring items is essentially dichotomous, with a score of one (1) assigned to an item if it is disclosed or present, and a score of zero (0) when an item is not disclosed or absent (Ehsan et al., 2018; Khan, 2010). Thus, the CSR index will be calculated as

$$(i) \text{ CSRI} = \sum x_{ij}$$

n_j

CSRI = Corporate Social responsibility index of j^{th} company

n_j = Total number of CSR items

x_{ij} = 1 if “ i^{th} ” item is disclosed by j^{th} company’s annual reports or website, and 0 if the item is not disclosed

3.3 Sample Size

The current research paper used annual reports of the non-financial firms listed on Muscat Securities Market for the year 2016. The rationale to use the 2016 year to measure CSR disclosure is underlying the implementation of the Oman Code of Corporate Governance, which requires compulsory CSR charter and disclosure of listed companies from 2016. Thus, the result of 2016 reflects the CSR disclosure position after the mandatory implementation of CSR activities. This study is based on annual report data. There are several reasons for using annual reports as sources of a CSR disclosure of a company. First, many previous studies used annual reports

to measure CSR disclosure and construct a CSR index (Chan et al., 2014). Second, one of the main and vital source through which a company communicates with its stakeholders is the annual report (Rahman Belal, 2001). Third, annual reports are considered the most comprehensive document of the company which gives an overview of all activities (Deegan & Rankin, 1996).

4 Results and Findings

The CSR disclosure and its sub-indices descriptive results are given in Table 1. The average value of the total CSR disclosure index is 40.98%, which states that the CSR disclosure is at the earliest stage in 2016 with the establishment of CSR charter and introduction of CSR policies. The average value of community welfare is 28.36%, for Education and Health is 20.67%, for Environment and Energy is 15.81%, for product and customer is 65.92%, and for the workforce is 49.33%. Among the sub-indices, the highest mean value of product and customer which is 65.92% indicates that most companies disclosed CSR information about their products and customers.

The second highest mean value is for the workforce as 49.33%, which reflects that companies are committed to focusing on employees' welfare and betterment. This result is consistent with the study of Ehsan et al. (2018), which also reflects that companies usually disclosed more CSR information about products and customers and then followed the workforce. Similarly, the community welfare sub-index stands at the third highest mean value as 28.36, but this value is below the average value which reflects the company's involvement in society-oriented actions. The mean value of education and health is 20.67%, which reflects the weak and limited health and education facilities in Oman. The mean value of environment and energy is 15.81%, which shows that a smaller amount of information has been released by the companies in the environment and energy element of CSR. This may be due to the high involvement of government in the energy sector, where all major resources are planned and controlled by governmental organizations.

Table 2 shows the descriptive statistics of CSR disclosure by industry. There are a total of 16 types of industries operating and listed at Muscat Securities Market. It is noted that the Telecommunication industry has the highest mean value of CSR

Table 1 Descriptive Statistics of CSR and Sub-indices for 2016

Variables	Mean	Median	SD	MIN	MAX
Corporate social responsibility	40.98	40	10.08	0	90.00
Community welfare	28.36	27.27	21.07	0.00	81.82
Education and health	20.67	0.00	27.06	0.00	100.00
Environment and energy	15.81	0.00	24.58	0.00	100.00
Product and customer	65.92	77.78	23.21	0.00	100.00
Workforce	49.33	50.00	26.70	0.00	100.00

Table 2 Descriptive Statistics of CSR Disclosure by Industry

Sectors	N	Mean	Median	SD	MIN	MAX
Cement industry	2	49.00	49.00	22.63	33	65
Chemicals industry	3	28.67	35.00	13.65	13	38
Commercial services industry	4	40.75	36.50	39.44	0	90
Construction material industry	7	34.57	35.00	16.48	10	63
Education industry	2	44.00	44.00	5.65	40	48
Electrical industry	2	55.50	55.50	3.53	53	58
Energy industry	11	49.63	48.00	12.83	28	65
Engineering industry	2	46.50	46.50	9.19	40	53
Food industry	14	38.50	40.00	12.42	18	55
Logistics industry	1	45.00	45.00	0	45	45
Mining industry	3	22.00	20.00	5.29	18	28
Oil and gas industry	5	44.80	40.00	19.79	25	78
Paper and glass industry	3	22.00	18.00	11.53	13	35
Telecommunication industry	2	56.50	56.50	19.09	43	70
Textiles industry	1	38.00	38.00	0	38	38
Tourism industry	5	40.40	38.00	22.05	18	63

disclosure which is 56.50% and the industry is comprised of two firms. The second highest mean value is 55.50% which is noted in the Electrical Industry and the industry is comprised of two firms. Other industries have also a great share in CSR disclosure, the Energy industry with a mean value of 49.63% and the Cement industry with a mean value of 49.00%. Further, it is followed by the Engineering industry with the mean value of 46.50%, the Logistics industry with a mean value of 45.00%, the Education industry with a mean value of 44.00%, Commercial services with a mean value of 40.75%, Tourism industry with a mean value of 40.40%, and Textiles industry with a mean value of 38.00% as mentioned in Table 2.

The reason for higher CSR disclosure in the Telecommunication industry, Electrical industry, Energy industry Cement industry, Engineering industry, Logistics industry, Education industry, and Commercial industry is rooted back in their higher capitalization of Muscat Securities Market, so these industries have more resources to practice their CSR activities and reporting them effectively in their annual reports. On the other hand, the least CSR disclosure is reported in the Mining industry which is 22.00%, and the Paper and Glass industry which is also 22.00%. This reflects that the Mining industry and Paper and Glass industry disclose the minimum amount of CSR information as compared to all other industries.

While analyzing the details of all listed non-financial firms for 2016 in Appendix B, it is noted that within the industry some companies' CSR disclosure is higher while some companies have low CSR performance. For instance, under Commercial Services Industry, Renaissance services have the highest CSR disclosure index which is 90%, whereas Oman Investment and Finance CSR disclosure index is 53%, Al Jazeera Services CSR disclosure index is 20% and Oman International Marketing CSR disclosure index is 0% under the same industry. These results

suggest that CSR disclosure of firms may not be relevant to the industry, it is more relevant to firms' strategic policies and their application of corporate governance practices.

5 Discussion

The results are consistent with the study of Ehsan et al. (2018) which shows that CSR disclosure is higher in the product and customer sub-index followed by the workforce. The rationale to have a high percentage in these two sub-indices is underlying on the nature and items of these indices. Usually, good companies disclose more product and customer information which enhances the company itself positive image and is not only a matter of CSR activities. Similarly, treating employees and the workforce fairly is based on the fact that it helps to reduce the turnover rate of the firm which in turn creates a positive environment for business (Newman et al., 2020).

The result of the study indicates that CSR practices and their disclosure in Oman show the commitment of firms and enforcement of the Code of Corporate governance by Capital Market Authority (CMA). Overall, Omani firms' performance in CSR disclosure is 40.98%, which reflects the significant contribution of some firms in CSR disclosure. The result of five indices indicates that businesses are involved in disclosing more information about products and customers, and the workforce. This may be due to ISO 9000 certification of Omani listed companies which is an international system of quality management that companies need to maintain in order to compliance the law (Bashir et al., 2008). However, less CSR disclosure is evident in the theme of environment and energy. This is due to less realization of the importance of the environment and energy sources by the listed firms. The country is less populated as compared to other developing countries; the population of Oman is four million approximately. Thus, energy is not the main concern till 2012 due to the availability of sufficient natural resources, which includes oil and petrochemical products (Mawali et al., 2016). Similarly, problems related to the environment are not at high risk as compared to developing countries, hence the CSR disclosure is less in these areas. On the other hand, there are some sectors and companies which truly performed well in all the five sub-indices as can be seen in Appendix B (arranged all companies CSR disclosure in ascending order). These findings are significant in the context of GCC countries' perspective, as it portrays that CSR is gaining importance in GCC countries as a mandatory measure, particularly in Oman.

The outcomes of this study offer significant insights for a wide range of stakeholders like regulators, policymakers, the board of directors for the formulation of corporate strategy, investors, and the public. The study offers a broad and distinctive framework for evaluating and measuring CSR disclosure of Omani listed firms. This provides insight to regulators such as the Capital Market Authority about the practical implementation of CSR practices through which they can plan and control rigorous actions to ensure compliance with the law. Since the disclosure of CSR

activities is the thirteenth principle of the Oman Code of Corporate Governance, thus these results offer listed companies' compliance to Code. Policymakers can adopt more stringent practices to enhance and assure the CSR practices of the firm (Lu & Abeysekera, 2021). On the other side, the current study provides detailed industry-wise CSR disclosure and each company's CSR index, which is beneficial for the directors of firms to benchmark their performance with the standards and within and outside the industry. Investors, while making investment decisions can analyze that which company is more socially responsible and has higher information disclosure about its activities. Similarly, this study offers significant results to the general public to buy goods from such companies which are more socially responsible and take care of their society (Axjonow et al., 2018). This study is a distinctive kind of pragmatic study that measured CSR disclosure of Omani non-financial listed companies where CSR practices are mandatory for all firms. The CSR elements of this study also comply with sustainable development goals as identified by the United Nations.

6 Limitation and Scope of Future Study

With few limitations, the current study offers new insights into future research areas. Firstly, the data used in this study is based on data collected from annual reports only because annual reports are the main source for a company to communicate information with stakeholders. Also, the CMA Oman made it mandatory for all listed companies to disclose their CSR activities in annual reports. But in fact, management also uses other sources of mass communication, such as newspapers, websites, and in-house magazines to disclose their details. Secondly, this study focused on non-financial listed companies only, whereas the contribution of the financial sector is out of the scope of the current study. Future research may focus on all listed companies at MSM including financial and non-financial. Thirdly, this study concentrates on the year 2016 because CSR disclosure becomes mandatory after the launch of the new Code of Corporate Governance in 2015. Thus, it is interesting if future studies can focus on the comparison of 2016 to 2017, 2018, and 2019. Therefore, future studies may also analyze the listed firms from other GCC countries by using the same index. In order to conclude the above discussion, it can say that non-financial listed companies in Oman follow an acceptable range of CSR practices.

7 Conclusion

The current study aims to fill the gap in the literature of measuring CSR disclosure through constructing the CSR index of listed companies at Muscat Securities Market for the year 2016. The study provides a better understanding of CSR practices using the case of Oman where it is mandatory. The present study fulfills two primary

objectives, first to measure the CSR disclosure of Omani listed firms and second to construct a CSR disclosure index in the context of the Omani framework. To achieve this purpose, a content analysis approach has been implemented to measure CSR disclosure and practices, for a dataset of 71 firms for the year 2016. Since CSR practices are required to be mandatory in 2016, thus the year 2016 portrays the picture of the implementation of the Code of Corporate governance in Oman. The content analysis approach is used to construct the CSR index, which is further divided into five sub-indices and 40 elements. The result of the study shows the compulsory CSR disclosure of Omani listed companies for the first year. The result of the study offers better understandings to regulators, the board of directors, and all stakeholders about the adoption of CSR practices.

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On the Relationship Between Macroeconomic Factors and S&P BSE Auto Index: An ARDL Approach



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Abstract This study aims to explore the relationship between selected macroeconomic variables and the S&P BSE Auto index between January 2017 and August 2019, when the automotive industry in India recorded its biggest slump in sales. Using monthly time-series data, the present study employs an autoregressive distributed lag (ARDL) approach to co-integration. The results show that there is evidence of a long-run co-integrating and negative relationship between the exchange rate and the S&P BSE Auto index. However, in the short run, lagged values of the auto index and crude oil price are found to have significant influences on the S&P BSE Auto index. Moreover, the error correction term (ECT) which indicates the short-run adjustment process is found to be negative and statistically significant. The study concludes that the S&P BSE Auto index can be predicted by the exchange rate (USD/INR) in the long run. However, in the short run, it can be predicted by the lagged values of crude oil price. Inconsistent with the existing literature, the association between lagged values of crude oil price and the S&P BSE Auto index is found to be positive. Results from this study have important implications for researchers, corporations, investors, portfolio managers, and governments alike.

Keywords S&P BSE Auto index · Macroeconomic variables · ADF test · Bounds test · ARDL co-integration · India

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1 Introduction

The decline in the Indian automotive sector has been in the news for quite some time. The Indian economy has seen the biggest slump in its auto industry since July 2018, recording a 30.9% decline in vehicle sales as of August 2019. Newspaper sources report that this is the sharpest fall in automobile sales since December 2000 (*Hindustan Times*, 2019). An increase in oil price could be a major factor for this downturn as per market analysts. The government's recent changes in fiscal policies, variation in other macroeconomic variables, and changing consumer attitudes also could have contributed to this downfall. Apart from the direct effects of the auto sector on the Indian economy, many researchers contend that it has a spillover effect on the economy, as several industries are affected by it one way or another (Miglani, 2019). The repercussions of this decline were seen on the Bombay Stock Exchange as well.

The Bombay Stock Exchange (BSE) was started in 1875, as "The Native Share and Stockbrokers Association". It is the oldest stock bourse in Asia and is one of the fastest stock exchanges in the world. The government of India granted the BSE permanent recognition by the Securities Contract Regulation Act of 1956. By facilitating a well-organized capital-raising platform, the BSE has accelerated the development of Indian industries over these years. Indian Clearing Corporation Ltd., a wholly owned subsidiary of the BSE, manages all trades executed on the BSE platform and provides settlement services.

Currently, the BSE caters to a systematic and explicit market for trading in a variety of investment vehicles like stocks, currencies, debt and derivative instruments, and mutual funds. The Bombay Stock Exchange SME is the largest of its kind in India with more than 250 listed companies, and is growing at a steady pace. S&P BSE SENSEX, the equity index of the BSE, is the most extensively tracked benchmark index in India. This is also traded globally on the stock markets of Brazil, Russia, China, South Africa, and the EUREX.

Stock market movements are an indication of the investors' confidence in various sectors of a country's economy. Generally, when investors have less confidence about a particular industry, they will have less demand for these shares, which will ultimately result in a reduction in the share prices. Moreover, they will look for alternative investment avenues like bank deposits and gold which will have an impact on the economic structure of the country. On the other hand, many studies have found that various macroeconomic factors of a country also influence the stock index movements (Alam, 2017; Fama, 1990; Misra, 2018; Tripathi & Seth, 2014). According to the arbitrage pricing theory (APT) of Stephen Ross, return from assets is a linear function of different macroeconomic variables where the responsiveness to changes in each variable is indicated by the corresponding coefficient in the model (Kevin, 2015).

A buoyant automotive sector is considered an important indicator of the economic performance of any country (Tambade et al., 2019; Yadav et al., 2015). Yet, there is only limited discussion in the literature regarding the performance of the

automotive industry in terms of its firm value. As stated, many researchers have attempted to understand the relationship between the macroeconomy and the stock market developments in general over these years. However, hardly any research has explored the possible link between the macroeconomic factors and the auto indices in an Indian context. Hence this research study becomes relevant.

BSE Auto is one of the 19 sectors in the BSE contributing to about 8% of the total turnover. The S&P BSE Auto index comprises 15 stocks, each tracking the movement in the automobile industry in the BSE. Given the current scenario in the economic as well as the capital market in India, to better understand the economic structure of the Indian economy and the automotive industry, there is a need to explore the relationship between macroeconomic variables and the S&P BSE Auto index. Another important aspect of this study is that it attempts to find out the possible long-run and short-run causal relationships using the sophisticated ARDL co-integration techniques. The findings from this study will have implications for researchers, corporations, investors, portfolio managers, and policymakers.

Section 2 reviews past studies and reports generated in similar fields to make connections between variables as well as to identify a possible gap in the literature. Section 3 highlights the various methods of data collection, hypothesis development as well as the methodology used for data analysis. Section 4 discusses the empirical results. Section 5 summarizes the study, offering recommendations to enhance the performance of auto stocks in India and scope for future research. This section also points out the limitations of the study.

2 Literature Review

Many studies have been conducted globally to understand the factors affecting the automobile industry. Yadav et al. (2015) conducted a detailed qualitative study to explore the hierarchical structure and linkages of multiple strategic factors affecting the performance of the auto industry in India. The authors proposed a strategic performance management model for Indian automobile enterprises that can be considered as a conceptual scheme that helps in identifying the leading and lagging factors of performance. In another study, Nanda and Panda (2018) studied the impact of firm-specific (total asset, debt/equity, current ratio) and macroeconomic indicators (net exports, net imports, volatility of exchange rate, real and nominal effective exchange rates, index of industrial production and interest rate) on the profitability of Indian automotive firms before and after crisis during the period 2000–2015. Generalized least squares regression with random-effects design and vector autoregression for the standard panel data was employed on annual data of 173 listed firms in the S&P BSE Industrial Index. The return on assets (ROA) and the net profit margin (NPM) were considered as a proxy for corporate profits. The study claims that firm-specific variables and exchange rates can be considered as potential indicators of manufacturing firm profitability. However, the exchange rate is not a better predictor in the short run when compared to the long run. The study also posits

that the nominal exchange rate index is better at predicting profitability than the real exchange rate. Another study adopted a multiple case study approach to analyze the drivers, strategies, and contingent factors impacting the volume flexibility of Indian firms related to automobiles and allied products (Mishra, 2018). Based on the qualitative data collected from northern India, the paper suggested that uncertainties were associated with demand, technology, competitors, suppliers, and macroeconomic indicators as the drivers of flexibility, while strategies of the firm, competitive behavior, nature of demand, product life cycle, and features of end-product were the contingent factors.

As evident from the literature, many studies have tried to explore the factors affecting the performance of the automotive industry. It can be seen that the majority of them have used macroeconomic variables as the independent variables. Furthermore, the performance of the automotive industry has been measured in terms of automobile demand, production, or sales. However, there exists a dearth of research specifically aimed at finding the performance of this industry from the perspective of its firm value as indicated by its index movements.

On the contrary, several studies have examined the relationship between macroeconomic factors and stock market performance in both the developed (Celebi & Hönig, 2019; He et al., 2021) and emerging markets (Basher et al., 2012; Gunasekarage et al., 2004; Hashmi & Chang, 2021; Sheikh et al., 2020), including India (Aggarwal & Manish, 2020; Anand & Paul, 2021; Aruna & Acharya, 2020; Giri & Joshi, 2017; Kumar et al., 2021). It is interesting to note that recent research studies have tried to explore these relationships with developed, emerging, and even frontier economies together and by adopting different multivariate analysis techniques (Aydoğan et al., 2017; Basariya & Murugesan, 2021; Pradhan, 2018).

Moreover, a few researchers (Chang et al., 2021; Maji et al., 2020) further tried to explore the link between macroeconomic variables and the sectorial indices. However, to the best of our knowledge, no study has tried to explore the link between macroeconomic factors and the auto indices of the Indian stock market. Hence, this research study is intended to fill this gap in the literature. The ARDL co-integration analysis adopted in this study will indicate if the selected macroeconomic variables are significant in explaining the auto index movements or in other words the firm value of the automotive industry in an emerging market like India.

3 Data and Methodology

3.1 Data

The purpose of this study is to examine the influence of macroeconomic factors on the S&P BSE Auto index. The six independent variables initially selected for the study include the price of crude oil, exchange rate, index of industrial production as a proxy for gross domestic product, consumer price index as a proxy for inflation, gold price, and repo rate as a proxy for interest rates. The S&P BSE Auto index is taken as

the dependent variable. Monthly data from January 2017 to August 2019 has been used. The data series except for the repo rate has been plotted on a logarithmic scale so that the changes in these variables represent relative changes. A brief discussion on the data collected, their sources, and hypothesis development is provided below.

3.2 Measurements of Variables and Hypothesis Development

3.2.1 Dependent Variable (LBSEAUTO)

Monthly closing prices of the S&P BSE Auto index (LBSEAUTO) were collected from the BSE website during the period January 2017 to August 2019.

3.2.2 Independent Variables and Hypotheses

Crude Oil Price (LCRUDE)

Many sources have reported the preference of Indian refiners toward oil prices linked to Brent over WTI (West Texas Intermediate) even though the latter seems to be somewhat cheaper (Mishra, 2011). Hence, for this study monthly data related to the spot price of Brent (dollars per barrel) downloaded from the website of the US Energy Information Administration (EIA) has been used. Gupta and Goyal (2015) found a significant positive relationship between oil prices and stock prices in the Indian context. Even though a surge in oil prices affects the overall market, automotive stocks in countries like the USA and Germany have shown more sensitivity in the past (Lis et al., 2012). Recently, Elian and Kisswani (2018) also found a negative relationship between oil prices and the Kuwait stock market. Thus, we can hypothesize:

H1 : *There is a negative association between crude oil price and the S&P BSE Auto index, ceteris paribus.*

Exchange Rate (LER)

Daily data on the exchange rate (USD-INR) downloaded from the RBI website for the aforementioned time frame was averaged monthly for the analysis. Some authors contend that a decrease in the home currency increases the volume of exports, enhances the profit of a company, and ultimately increases the share prices. A recent study reported that the depreciation of Polish zloty has led to the rise of stock prices of a few pharmaceutical companies in Poland (Šimáková & Rusková, 2019). A few other studies also reported a negative association between exchange rates and stock prices in emerging economies (Türsoy, 2017). Thus, we can hypothesize:

H2 : *There is a negative association between the exchange rate and the S&P BSE Auto index, ceteris paribus.*

Index of Industrial Production (LIIP)

GDP growth rate is a significant indicator of the economic performance of any country. Many authors have tried to explore the association between economic growth and stock prices (Alam, 2017; Fama, 1990). The results from these studies indicate a strong positive correlation between the two variables. A higher growth rate is considered favorable to the stock market, other things being equal. In this study, the Index of Industrial Production from the RBI website is used as a proxy for GDP because in India the latter is available only quarterly. Past studies indicate that IIP has a very high positive correlation with GDP (0.97) and is a suitable indicator of economic activities in India (Gupta & Goyal, 2015). Furthermore, many past studies found a positive association between IIP and Indian stock market indices (Srivastava, 2010) Hence, we can hypothesize:

H3 : *There is a positive association between IIP and the S&P BSE Auto index, ceteris paribus.*

Inflation (LCPI)

When inflation refers to a rise in the general price level, the rate of inflation is the rate of change of the general price level (Kumar & Gupta, 2007). The Wholesale Price Index (WPI), the GDP Inflation, and the Consumer Price Index (CPI) are the three important measures of inflation in India (Patnaik et al., 2011). This study uses CPI and the required data was downloaded from the RBI website. CPI inflation is defined as a year-on-year log difference of the CPI index with base year 2012 = 100. The effect of inflation on the corporate sector is quite mixed. Those industries that have a strong market base and which do not come under the scope of price control may benefit. But those industries having a weak market base and that come under the scope of price control may lose. Overall, a moderate level of inflation influences the stock market positively. Similar previous studies also found a positive correlation between inflation and stock prices (Alam, 2017) Thus, we hypothesize:

H4 : *There is a positive association between inflation and the S&P BSE Auto index, ceteris paribus.*

Gold Price (LGoldPrice)

Monthly gold prices (\$/troy oz) for this study, were taken from the World Bank website. Traditionally, gold is considered a haven for investment in India. Gold price is expected to increase when equity prices plummet, and traders seek gold as an

alternate source of investment (Maierbrugger, 2015). However, gold prices have been declining since the second half of 2012 and it is said that returns from gold are not comparable with the returns from asset classes like stocks. Nevertheless, gold is considered to act as a hedge against inflation, offering high liquidity and alleviating risk in the portfolio (George, 2019). Most of the research studies (Misra, 2018) conducted in the Indian context reveal that there exists a negative relationship between gold prices and stock indices. Hence, we can hypothesize:

H5 : *There is a negative association between the gold price and the S&P BSE Auto index, ceteris paribus.*

Repo Rate (REPO)

In India, when commercial banks borrow money from RBI, they are charged an interest which is called the repo rate. For the current study, the repo rate was collected from the RBI website. A rise in interest rates leads to a fall in corporate profitability. It also raises the discount rate employed by equity investors. Both will have a negative impact on stock prices. The study conducted by Srivastava (2010) also proved the same. Hence, we can hypothesize:

H6 : *There is a negative association between repo rates and the S&P BSE Auto index, ceteris paribus.*

3.3 Empirical Model

The model is based on previous studies (Giri & Joshi, 2017; Joshi & Giri, 2015; Srivastava, 2010) where the linkage between macroeconomic variables and stock market index has been investigated. The following general specification has been employed in this study to empirically evaluate the impact of the selected macroeconomic variables on the S&P BSE Auto index.

$$LBSEAUTO_t = \alpha_0 + \alpha_1 LCRUDE_t + \alpha_2 LER_t + \alpha_3 LIIP_t + \alpha_4 LCPI_t + \alpha_5 LGoldPrice_t + \alpha_6 REPO_t + \varepsilon_t \quad (1)$$

The prefix *L* indicates that the model uses data in the log form. Since the correlation matrix generated showed a high correlation (-0.84) between *LGoldPrice* and *REPO*, the former was abandoned from subsequent analyses to ward off problems associated with multicollinearity (Curwin et al., 2013). As stated, this study attempts to empirically estimate the impact of the above macroeconomic variables on the auto index of BSE (S&P BSE Auto index) using the time-series concepts and methods detailed in the following sections (Shrestha & Bhatta, 2018).

3.4 Model Specification for Co-integration with ARDL

The Auto-Regressive Distributed Lag (ARDL) co-integration method is used to empirically analyze the asymmetric linkage and dynamic interaction between the macro variables and S&P BSE Auto index (Pesaran et al., 2001). For small sample sizes as in the case of this study, this test is more efficient (Adeleye et al., 2018; Shabbir et al., 2020).

The modified ARDL models constructed to empirically analyze the impact of macroeconomic variables on the movement of the BSE Auto index are given below (Giri & Joshi, 2017).

The ARDL(p,q) model is given below:

$$\begin{aligned}
 \Delta LBSEAUTO_t = & A_0 + A_1 LCRUDE_{t-1} + A_2 LER_{t-1} + A_3 LIIP_{t-1} \\
 & + A_4 REPO_{t-1} + \sum_{i=1}^p a_i \Delta LBSEAUTO_{t-i} \\
 & + \sum_{i=1}^q b_i \Delta LCRUDE_{t-i} + \sum_{i=1}^q c_i \Delta LER_{t-i} + \sum_{i=1}^q d_i \Delta LIIP_{t-i} \\
 & + \sum_{i=1}^q e_i \Delta REPO_{t-i} + \varepsilon_t \tag{2}
 \end{aligned}$$

Here, the first part of this equation with $A_1, A_2, A_3,$ and A_4 refers to the long-run coefficients and the second part with $a_i, b_i, c_i, d_i,$ and e_i refers to the short-run coefficients. The superscripts p and q represent the lags of the dependent variable (LBSEAUTO) and independent variables respectively. The optimal lags are decided by the AIC criterion (Adeleye et al., 2018; Kripfganz & Schneider, 2016).

The hypotheses are stated as follows:

Null hypothesis: $H_0 : A_1 = A_2 = A_3 = A_4 = 0$ (i.e., no co-integration)

Alternate hypothesis: $H_0 : A_1 \neq A_2 \neq A_3 \neq A_4 \neq 0$ (co-integration exists) (Shakil et al., 2018)

3.5 ARDL Bounds Testing

In the ARDL procedure, the first step is to estimate the above eq. (2) by an ordinary least squares (OLS) regression to test the possibility of a long-run relationship between the corresponding variables. This is done by conducting an F -test which tests for the joint significance of the lagged levels of variables. After establishing co-integration, the next step is to estimate the conditional ARDL long-run model for both cases (Adeleye et al., 2018).

The conditional ARDL model for $LBSEAUTO_t$ is specified as follows:

$$\begin{aligned} \Delta LBSEAUTO_t = & A_0 + \sum_{i=1}^q A_1 \Delta LBSEAUTO_{t-i} + \sum_{i=1}^q A_2 \Delta LCRUDE_{t-i} \\ & + \sum_{i=1}^q A_3 \Delta LER_{t-i} + \sum_{i=1}^q A_4 \Delta LIIP_{t-i} + \sum_{i=1}^q A_5 \Delta REPO_{t-i} + \varepsilon_t \quad (3) \end{aligned}$$

In the final step, the short-run dynamic parameters are estimated by an error correction model with the long-run estimates. The error correction version of the above model is as follows:

$$\begin{aligned} \Delta LBSEAUTO_t = & const + \sum_{i=1}^q a_i \Delta LBSEAUTO_{t-i} + \sum_{i=1}^q b_i \Delta LCRUDE_{t-i} \\ & + \sum_{i=1}^q c_i \Delta LER_{t-i} + \sum_{i=1}^q d_i \Delta LIIP_{t-i} + \sum_{i=1}^q e_i \Delta REPO_{t-i} \\ & + k_1 EECM_{t-1} + \varepsilon_t \quad (4) \end{aligned}$$

where $a_i, b_i, c_i, d_i,$ and e_i are the short-run dynamic coefficients to equilibrium and k_1 is the speed adjustment coefficients of $LBSEAUTO$.

4 Results and Discussion

A series of techniques and tests have been employed using GRETL and STATA to analyze the relationship between macroeconomic variables and the S&P BSE Auto index, keeping in mind the properties of time series data (Shrestha & Bhatta, 2018). First and foremost, descriptive statistics are provided. After plotting the graphs, unit root tests were conducted to confirm the stationarity of the data series. Further, a correlation matrix was also plotted to check for multicollinearity among the variables (Curwin et al., 2013). Bounds testing procedure was performed to check the co-integrating relationship in the data. Following this, ARDL co-integration tests were conducted on both the models under study. Finally, diagnostic tests were also conducted to check their robustness as well as stability.

4.1 Descriptive Statistics

A descriptive summary of all the variables is provided in Table 1. The values have been rounded up to three decimal points. No major discrepancies are seen and hence the variables identified are per conventional research norms.

Table 1 Descriptive Statistics of all variables

Variables	Mean	Std. dev	Variance	Skewness	Kurtosis	Min	Max
LBSEAUTO	9.996	0.146	0.021	-0.788	2.697	9.647	10.194
LCrude	4.136	0.148	0.022	-0.159	2.035	3.848	4.388
LER	4.212	0.044	0.002	0.223	1.709	4.153	4.299
LIIP	4.849	0.048	0.002	0.374	3.063	4.765	4.971
LGoldPrice	7.156	0.048	0.002	1.097	4.990	7.083	7.313
LCPI	4.924	0.030	0.001	-0.350	2.267	4.870	4.977
REPO	6.145	0.254	0.064	-0.589	3.684	5.400	6.500

Notes: LBSEAUTO = S&P BSE Auto index, LCRUDE = crude price, LER = exchange rate, LIIP = index of industrial production, LGoldPrice = gold price, LCPI = consumer price index, REPO = repo rate. The prefix L indicates that the log form of the corresponding variable is taken

Source: authors' compilation

4.2 Graphical Analysis

4.2.1 Log Transformations

A graphical plot of the log transformations of all the initially selected variables is given below. A first look at the graphs (Fig. 1) reveals that all variables are trending

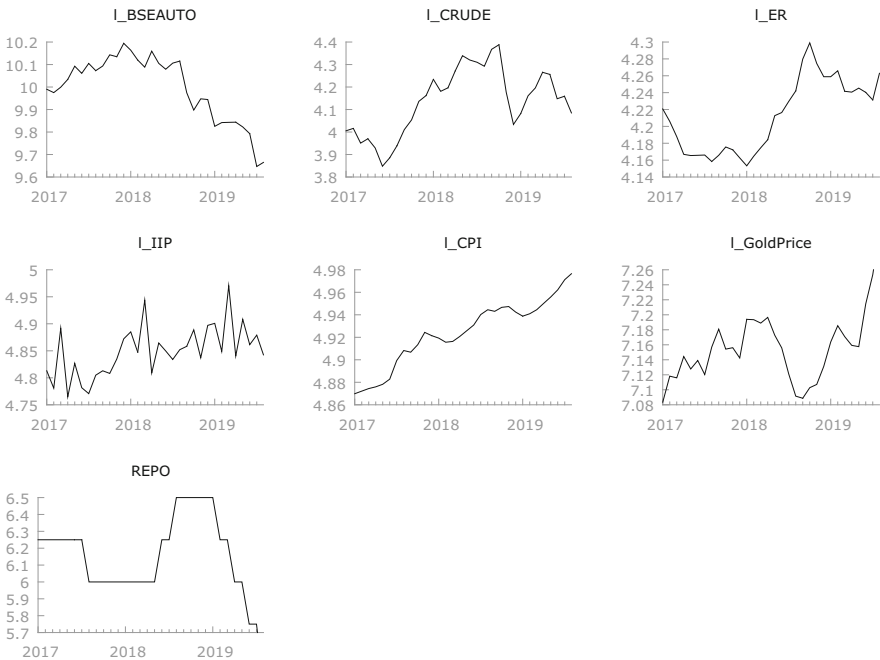


Fig. 1 Graphical plot of all variables. Source: authors' compilation

or in other words non-stationary, except LIIP, which seems to be stationary around its mean (between 4.8 and 4.85).

4.2.2 First Difference of Log Transformations

Next, the first differences in these variables are generated, and the graphs are plotted using GRET. These graphs are shown in Fig. 2. Here we see that the first difference in all these variables is stationary around their respective means. Hence we can conclude that their log forms are integrated of order 1 i.e. I(1). Using the same logic, REPO is also integrated of order 1.

4.3 ADF Test

The results of Augmented Dickey-Fuller (ADF) tests are provided in Table 2.

This test confirms that log levels of all variables except IIP are integrated of order 1, LIIP is integrated of order 0, and REPO is integrated of order 1. Hence it is ascertained that there is no problem in going forward with the ARDL tests.

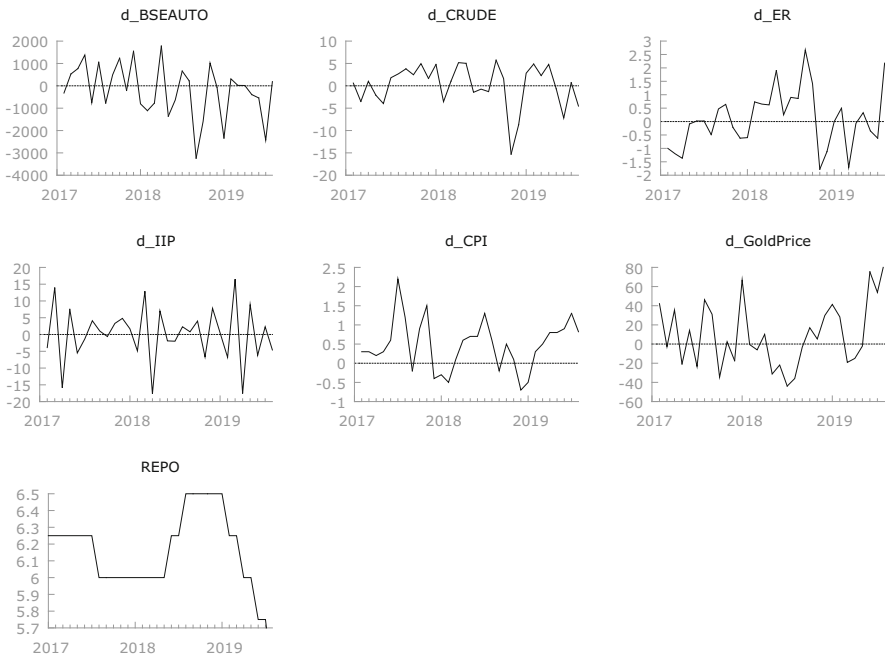


Fig. 2 Graphical plot of the first difference of variables. **Source:** authors' compilation

Table 2 ADF test statistic with p-values

Variables	Level form	First difference
LBSEAUTO	-1.507(0.8267)	-6.545(0.0000)
LCRUDE	-1.173(0.9159)	-3.905(0.0119)
REPO	0.234(0.9960)	-5.232(0.0001)
LER	-2.381(0.3895)	-3.531(0.0362)
LIIP	-7.039(0.0000)	-14.325(0.0000)
LCPI	-1.658(0.7689)	-3.447(0.0454)
LGoldPrice	-0.472(0.9845)	-4.017(0.0083)

Note: Numbers in parentheses are p-values of the test statistic
Source: authors' compilation

Table 3 Correlation matrix

	LBSEAUTO	LCrude	LER	LIIP	LGoldPrice	LCPI	REPO
LBSEAUTO	1.000						
Crude	-0.063	1.000					
LER	-0.696	0.504*	1.000				
LIIP	-0.329	0.472*	0.386*	1.000			
LGoldPrice	-0.426	0.033	-0.056	0.176	1.000		
LCPI	-0.577	0.632*	0.673*	0.503*	0.458*	1.000	
REPO	0.211	0.050	0.296	0.030	-0.840*	-0.241	1.000

Note: * denotes significance at the 5% level

Source: authors' compilation

Additionally, a Phillips Perron (PP) test was also performed to recheck the stationarity of data (Asteriou & Hall, 2015). However, the results are not reported here.

4.4 Multicollinearity Check

A correlation matrix was generated to test for multicollinearity. The results are provided in Table 3.

A high negative correlation (-0.84) is seen between LGoldPrice and REPO, significant at the 5% level. Consequently, LGoldPrice was eliminated from further analysis to avoid problems related to multicollinearity (Curwin et al., 2013).

4.5 ARDL Co-integration Test

Having established that the data series under study is a combination of I(0) and I(1) in the previous sections, now we proceed to analyze the co-integrating relationship using the ARDL bounds testing approach (Adeleye et al., 2018). The step-by-

step ARDL test results for both models are given separately in the following sections.

4.5.1 Research Model

Lag Length Selection

The optimal lags selected by AIC for the various independent variables while LBSEAUTO is the dependent variable are shown in Table 4.

ARDL Bounds Test

The bounds testing procedure is based on the error correction representation of the ARDL model (Kripfganz & Schneider, 2016). The null(H_0) and alternate(H_1) hypotheses are as follows.

H_0 : No co-integration

H_1 : Co-integration

The results from the current study are given in Table 5.

Since F statistic > critical value for I(1) regressors, the null hypothesis in the model is rejected (Adeleye et al., 2018). Hence it implies a co-integrating relationship between the variables.

ARDL and ECM Results

Table 6 shows the long-run estimates (LR), adjustment (ADJ) or error correction coefficients, and the short-run estimates (SR) of the model. As can be seen from Table 6, the value of R^2 is 0.7274, indicating that 72.74% of the variability in the

Table 4 Optimal lags

Variable	Optimal lag
LBSEAUTO	4
LCRUDE	2
LER	0
LIIP	0
REPO	2

Source: authors' compilation

Table 5 Bounds Test results

Estimated Model: LBSEAUTO = f (LCRUDE, LER, LIIP, REPO)				
H ₀ : no levels relationship			F statistic = 5.943	
Regressor	10% critical value	5% critical value	2.5% critical value	1% critical value
I_1	3.52	4.01	4.49	5.06

Table 6 ARDL and error correction results for model (Δ LBSEAUTO, ARDL (4,2,0,0,2))

Regressors	Coefficient	t-statistic (p-value)
Constant	13.48718	3.42 (0.004)
	Long-run estimates	
LCrude	-0.0081605	-0.03 (0.980)
LER	-4.29146	-3.85 (0.002)
LIIP	-0.3883266	-0.69 (0.501)
REPO	0.2241409	1.88 (0.080)
	Adjustment (ECM_{t-1})	
LBSEAUTO L1.	-0.4715619	-2.46(0.026)
	Short-run estimates	
Δ LBSEAUTO		
LD.	-0.403875	-1.97 (0.067)
L2D.	-0.6173856	-3.16 (0.006)
L3D.	-0.4406551	-2.18 (0.045)
Δ LCrude		
D1.	0.014181	0.10 (0.924)
LD.	0.4081337	2.52 (0.023)
Δ REPO		
D1.	0.1416536	1.12 (0.280)
LD.	0.2766853	2.10 (0.053)
No. of obs.	28	
R ²	0.7274	
Adjusted R ²	0.5094	

Note: L1, L2, and L3 indicate the first, second, and third lags of Δ LBSEAUTO. Δ indicates the first difference operation. ARDL is an efficient method for finite and small samples (no. of obs. = 28) like this study (Adeleye et al., 2018)

Source: authors' compilation

dependent variable (i.e., Δ LBSEAUTO) can be explained by the variations in the explanatory variables (Koop, 2013).

The long-run results show that the coefficients on LCRUDE and LIIP have negative signs; however, they are statistically not different from zero. At the same time, REPO seems to have a positive influence on the movement of the BSE Auto index. However, the coefficient of REPO is only statistically significant at the 10% level.

Furthermore, the exchange rate (LER) is found to be a significant determinant of BSE Auto index movement in the long run. The coefficient on LER is significant at the 1% level. This implies that a 1% increase in the exchange rate will lead to a 4.29% decrease in the BSE auto index movement, ceteris paribus. This finding confirms our third hypothesis that there is a negative association between exchange rate and BSE Auto index. It is worth mentioning that past studies reported a negative relationship between exchange rate and stock prices (Alam, 2017).

The short-run adjustment process is indicated by the ECM coefficient. The error correction term (i.e., the first lag of LBSEAUTO) is negative (-0.4715619) and is

found to be statistically significant. This figure is an indication of the speed with which the adjustment process is restored to equilibrium following a shock in the long-run equilibrium relationship (Adeleye et al., 2018). The speed of adjustment term (ECM_{t-1}) is expected to be negative and its absolute value determines how quickly the equilibrium is restored (Pesaran et al., 1999). In this analysis, $ECM_{t-1} = -0.4715619$ indicates that 47.16% of the disequilibrium of the previous month's shocks are corrected back to the long-run equilibrium in the current month via the explanatory variables.

From the short-run coefficients, it can be seen that the lagged values of LBSEAUTO and LCRUDE have a significant influence on the auto index, and are significant at the 1% level. To be more precise, the second lag (-0.6173856) and third lag (-0.4406551) of the BSE auto index are significant at 1% and 5% levels, respectively. Furthermore, BSE Auto index movement in the short run is strongly predicted by the first lag of LCRUDE (0.4081337) and is significant at a 5% level. This implies that, in the short run, the movement of the S&P BSE Auto index is influenced positively by the crude oil price of the previous month. This finding rejects our first hypothesis. However, a study conducted by Boldanov et al. (2016) posits that during demand-side events like recession, financial crisis, and oil shocks, positive correlations were observed between crude oil price and stock indices across markets. During the last few years, India has also been going through slow GDP growth coupled with poor consumer demand, less capacity utilization, and crises in the labor market, which has led to low-risk appetite and low investments. Moreover, the demonetization drive in November 2016 and the introduction of a goods and services tax (GST) in July 2017 have worsened the economic situation in India.

Diagnostic Test Results

These diagnostic results summarized in Table 7 reveal that there are no concerns over normality, autocorrelations, heteroscedasticity, misspecification, or structural breaks in the model. Hence the results obtained are robust and reliable for making inferences (Adeleye et al., 2018).

Table 7 Summary of diagnostic tests results

Specification	Test statistic (p-value)	Conclusion
Jarque–Bera normality test	0.38 (0.8252)	Evidence of normality
Durbin–Watson	2.5	No first-order autocorrelation
Breusch–Godfrey	3.46 (0.0629)	No higher-order autocorrelation
Breusch–Pagan	1.27 (0.2605)	No heteroscedasticity
ARCH LM	2.53 (0.1118)	No conditional heteroscedasticity
Ramsey's RESET	0.63 (0.6071)	No omitted variables
CUSUM (recursive)	0.36 (0.9479)	No structural breaks

Source: authors' compilation

5 Conclusion

The purpose of this study was to examine the relationship between selected macro-economic variables including price of crude oil, exchange rate, index of industrial production, inflation, repo rate, and gold price, and the auto index of the Bombay Stock Exchange (S&P BSE Auto index). Out of the six initially selected variables, inflation and gold price were omitted from subsequent analysis due to the presence of multicollinearity with other variables.

The findings showed that the exchange rate was negatively associated with the BSE Auto index in the long run. The Indian auto sector comprising automobiles as well as auto components is predominantly involved in export and import activities (Migliani, 2019). The depreciation of the Indian rupee against the US dollar seems to have had an adverse impact on the auto indices of the BSE during the selected time frame. A possible recommendation for corporations to reduce this risk is by adopting appropriate hedging strategies using derivatives (e.g., currency options, currency futures, currency swaps, or foreign exchange forwards).

In the short run, the first lag of crude oil price was found to have a significant positive association with the BSE Auto index. Oil price crises coupled with labor market crises, demonetization and GST introduction in India have resulted in poor customer sentiments, low-risk appetite, and hence declining investments in the automotive industry. The lagged values of the S& P BSE index itself were also seen as significant predictors in the short run.

The results from this study have implications for investors, portfolio managers, and the government. As some of the macroeconomic factors examined in the present research were found to be statistically significant predictors of auto indices, investors could study the movement of these determinants to understand the possible impact on the auto index before identifying stocks in this sector for parking their funds. In addition, portfolio managers should study similar research reports before finalizing their investment portfolios. Finally, the results of this study could serve as an eye-opener for the government and policymakers. They should watch the current situation of the automotive sector and implement suitable macroeconomic policies to foster growth. This could be in the form of a reduction in tax rate or the introduction of a scrappage policy in the automotive industry.

Like other studies, this study is not free from limitations. This study used a single equation model for analyzing the association between the dependent variable and explanatory variables in each model. Hence, it is not applicable in those circumstances where there is an inter-relationship among the variables. Moreover, there could be problems due to the usage of proxies for the explanatory variables (e.g., IIP was used instead of GDP). Another limitation arises from the fact that the data used is secondary and hence cannot ward off the problems associated with it. Further, the finalized four regressors (i.e., crude oil price, exchange rate, index of industrial production, and repo rate) are not sufficient to capture the whole macroeconomy of India.

Future researchers may incorporate more macroeconomic variables like the unemployment rate, foreign direct investment, and foreign institutional investment to have a better outlook on the influence of the macroeconomy on the auto indices. Moreover, they may also consider a longer time frame to extend this study in the future. Another interesting idea is to include daily or weekly data for further empirical analyses. Researchers could also incorporate other statistical methods like Granger causality and variance decomposition methods to better understand the dynamics underlying the data. In addition, they can extend this study with simultaneous equation models. Furthermore, they may also incorporate how other variables like changes in consumer demography and attitude, changes in government policies (e.g., demonetization, the introduction of goods and services tax (GST)), and proliferation of technology-led disruptive businesses like Ola Cabs and Uber are impacting the Indian automotive sector. At present, we see a downturn in the automotive industry across the globe. It would be a good idea to identify such global factors which could have an impact on the Indian automotive industry. Finally, similar studies can be conducted in other countries or a group of countries in a specific region.

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Part VII
Eurasian Economic Perspectives: Growth
and Development

Economic Policies and Their Impacts on Growth



Nihal Bayraktar

Abstract Macroprudential policies have been used by many countries to ensure the stability of their financial systems and, in return, the stability of their economic conditions. Because the major aim of macroprudential policies is to stabilize financial markets and prevent possible serious financial problems in the future, the literature has mostly focused on the link between macroprudential and monetary policies, ignoring the importance of fiscal policies in this process. However, fiscal policies can also help financial stabilization but indirectly. Therefore, the interaction among these groups of economic policies is expected to be crucial to achieve smooth economic development. This paper empirically investigates the relationship between the direction of economic policies and their impacts on growth. The dataset covers the years between 1990 and 2018 and includes 135 advanced and developing countries. The findings show that macroprudential policies are more effective in terms of improving economic performance of countries when supported with other economic policies. The results imply that macroprudential policies can be sometimes more beneficial when they are introduced in a way to counterbalance the possible negative effects of monetary and fiscal policies.

Keywords Macroprudential policies · Monetary and fiscal policies · Interaction · Direction of policies · Economic growth

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1 Introduction

Many macroprudential policies have been used throughout the world, especially after the global financial crisis of 2008–2009, to ensure the stability of financial systems and, in return, the stability of economic conditions.¹ Such policies are expected to be used more frequently in the future to maintain the health of financial markets. In some countries, macroprudential policies have been introduced as a part of a bigger economic package involving changes in additional government economic policies. Tight macroprudential policies have been accompanied by tight monetary policies and/or tight fiscal policies.² Similarly, expansionary macroprudential policies have been supported by loose monetary and/or loose fiscal policies. In some cases, tight (or easy) macroprudential policies are accompanied by loose (or tight) monetary or fiscal policies in a way to counterbalance the negative effects of policies.

Because the major aim of macroprudential policies is to stabilize financial markets and prevent possibly serious financial problems in the future, the literature has mostly focused on the link between macroprudential and monetary policies, ignoring the importance of fiscal policies in this process.³ However, fiscal policies can also help financial stabilization but indirectly. For example, governments transfer funds to households and businesses in their stimulus packages during economic downturns. It is expected that people and businesses utilize some of these funds to pay back their loans. These loan payments can partially ease the pressure on financial institutions struggling with collecting loans back and, in return, assist the stabilization of financial conditions. Therefore, macroprudential policies are expected to be more effective in stabilizing financial markets and economy conditions when they are coupled with supportive fiscal policies as well as monetary policies.

The contribution of this paper to the literature is the joint consideration of fiscal, monetary, and macroprudential policies and their collective impacts on the economic performance of countries.⁴ Several questions are answered in this paper. The first question is whether macroprudential policies are actually accompanied by supportive fiscal and monetary policies in terms of their direction. To answer this question, the periods of tight or easy economic policies (macroprudential, monetary, and fiscal) are identified in each country that is included in the dataset. Then, we try to

¹See, for example, Galati and Moessner (2013), Fendoğlu (2017), Galati and Moessner (2018), Bernier and Plouffe (2019), Richter et al. (2019), Franta and Gambacorta (2020), Galan (2020), Araujo et al. (2020).

²See, for example, Svensson (2018).

³For example, Borio and Shim (2007), Martinez-Miera and Repullo (2019), Takáts and Temesváry (2019), Bussière et al. (2021).

⁴Best of our knowledge, there is only one paper considering the joint effects of all economic policies. Alpanda and Zubairy (2017) investigate how these policies affect indebtedness of households. However, their paper does not consider the impact on these three economic policies on economic development. There is also a paper focusing on the impact of macroprudential policies on fiscal policies (Reis (2020)). But my paper studies the interaction among policies.

understand whether countries combining these policies in a specific way tend to grow faster in the future. For example, what would be the growth impact of matching tight macroprudential policies with easy fiscal or monetary policies?

While answering such questions, we need to identify the directions of economic policies in each period. The information on the direction of macroprudential policies (tight or loose) is already given in the database that we use in this paper. To determine the direction of monetary and fiscal policies, we compare the level of monetary and fiscal policy indicators in a period with their moving averages from earlier years. The policy indicators used in the paper are government spending as a share of GDP (or in per capita terms), M2 as a share of GDP, and real interest rates. If the value of an indicator in a period is above its moving average from earlier years, this period is identified as an easy policy period, when the indicator is government spending or M2, and as a tight policy period, when the indicator is the real interest rate. The opposite is considered true if the value of an indicator in a period is below its moving average. After the classification of the countries and the time periods, based on the direction of macroprudential, monetary, and fiscal policies, we investigate these countries' economic growth performance around the periods of economic policy changes.

The second question that we try to answer is the interaction among macroprudential, fiscal, and monetary policies and how this interaction determines the growth performance of the countries. In order to answer this question, we run a set of panel regressions in which the growth rate of GDP per capita is the dependent variable and the interaction terms between macroprudential and other economic policies are independent variables. We also include a set of control variables which mainly consists of other possible determinants of growth, such as capital investment and governance quality.

The time period of the dataset is between 1990 and 2018. The list of countries includes ones from different income groups. There are 135 countries in total. We use three major databases to collect data: Alam et al. (2019) for macroprudential data, the International Country Risk Guide for bureaucracy quality and financial risk ratings, and the World Bank's World Development Indicators for all other variables.

The findings show that macroprudential policies, especially the tight ones, are more effective in terms of improving economic performance when they are supported with monetary and fiscal policies. Similarly, monetary and fiscal policies can promote future growth more adequately when they are paired with macroprudential policies, especially in opposite directions.

2 Data

Because this paper investigates the impacts of fiscal, monetary, and macroprudential policies on economic growth, the key variables in the analysis involve the indicators of such policy changes. The dataset is for the years of 1990–2018, which are restricted by the data availability of macroprudential policy in our data source, i.e.,

Alam et al. (2019). One hundred and thirty-five countries are included in the dataset. There are 98 developing and emerging market economies and 37 advanced economies (see Appendix for the list).

In the main empirical section, monetary policy changes are captured by the changing values of real interest rates in countries.⁵ When the real interest rate increases, it signals a tightening monetary policy. Oppositely, when the rate is declining, it signals an easing monetary policy change. To check the robustness of the empirical findings, we also run the regression specifications with an alternative indicator of monetary policy (M2 as a percent of GDP).⁶ As the ratio of M2 in GDP increases, it can indicate a loosening monetary policy, while the declining ratio can be interpreted as a tight monetary policy. To determine the periods of tight versus easy monetary policy changes, the yearly data values are compared with their moving averages from the past 3 years. In this process, first, the 3-year moving average of the real interest rate is calculated in each year by taking the average of the values in $t - 1$, $t - 2$, and $t - 3$. If the value of the real interest rate in period t is higher than its 3-year moving average, then period t is identified as a tight monetary policy period (i.e., the real interest rate in period t is greater than its 3-year moving average based on $t - 1$, $t - 2$, and $t - 3$). If not, the period is labeled as an easy monetary policy period. We repeat the same exercise in each period. For the ratio of M2 to GDP, if the value of the ratio in period t is lower than its 3-year moving average based on periods $t - 1$, $t - 2$, and $t - 3$, then this period is identified as a tight monetary policy period. If the opposite is true, this period is named as an easy monetary policy period.

The direction of fiscal policies is also important in the paper. To identify the direction of fiscal policies, government final consumption in percent of GDP is used.⁷ To decide whether there is an easy or tight monetary policy change in a period, we follow the same procedure as in the real interest rate. If the value of the ratio of government spending to GDP is lower than its 3-year moving average, calculated based on data points from $t - 1$, $t - 2$, and $t - 3$, then this period is identified as a tight fiscal policy period. If not, it is labeled as an easy fiscal policy period. In the sensitivity analysis section, an alternative indicator of fiscal policy is used to understand the robustness of the empirical estimations. More specifically, real government spending per capita is used to determine the periods of easy and tight fiscal policies by following the same methodology described above.⁸

⁵The data come from World Bank's World Development Indicators (WDI). In the databases, the real interest rates are defined as "the lending interest rate adjusted for inflation as measured by the GDP deflator. The terms and conditions attached to lending rates differ by country, however, limiting their comparability."

⁶M2 (Broad money) in percent of GDP is taken from the WDI Database.

⁷More specifically, general government final consumption expenditure (% of GDP) is used to identify easy and tight policy periods. It comes from the WDI Database.

⁸We divide general government final consumption expenditure (constant 2010 US\$) by the total population of countries to calculate this variable. The data source is the WDI Database.

The data for macroprudential policies are taken from Alam et al. (2019). This database identifies the number of macroprudential policies for 135 countries from January 1990 to December 2018 and these policies' directions (tightening or loosening).⁹ This set includes 17 categories of macroprudential policies.¹⁰ They are stated in the database as follows (Alam et al. (2019)):

- “A requirement for banks to maintain a countercyclical capital buffer.
- Requirements for banks to maintain a capital conservation buffer, including the one established under Basel III.
- Capital requirements for banks, which include risk weights, systemic risk buffers, and minimum capital requirements. Subcategories of capital measures are also provided in separate sheets, classifying them into household sector targeted, corporate sector targeted, broad-based, and FX-loan targeted measures.
- A limit on leverage of banks, calculated by dividing a measure of capital by the bank's non-risk-weighted exposures (e.g., Basel III leverage ratio).
- Loan loss provision requirements for macroprudential purposes, which include dynamic provisioning and sectoral provisions.
- Limits on growth or the volume of aggregate credit, the household sector credit, or the corporate sector credit by banks, and penalties for high credit growth. Subcategories of limits to credit growth are also provided, classifying them into household sector targeted, corporate sector targeted, and broad-based measures.
- Loan restrictions. Subcategories of loan restrictions are also provided, classifying them into household sector targeted, and corporate sector targeted measures.
- Limits on foreign currency lending.
- Limits to the loan-to-value ratios.
- Limits to the debt-service-to-income ratio and the loan-to-income ratio.
- Taxes and levies applied to specified transactions, assets, or liabilities, which include stamp duties, and capital gain taxes.
- Measures taken to mitigate systemic liquidity and funding risks.
- Limits to the loan-to-deposit ratio and penalties.
- Limits on net or gross open foreign exchange positions, limits on FX exposures and FX funding, and currency mismatch regulations.
- Reserve requirements (domestic or foreign currency) for macroprudential purposes. A subcategory of reserve requirements is provided for those differentiated by currency.
- Measures taken to mitigate risks from global and domestic systemically important financial institutions, which includes capital and liquidity surcharges.
- Macroprudential measures not captured in the above categories.”

Macroprudential policies have been introduced more commonly over the years. Figure 1 presents the number of macroprudential policy changes between 1990 and

⁹In the original database, the variables are reported monthly. We converted the series to annual data by adding up the number of tight and easy policy changes in a year as two separate variables.

¹⁰Macroprudential policies in general are explained in Claessens (2015).

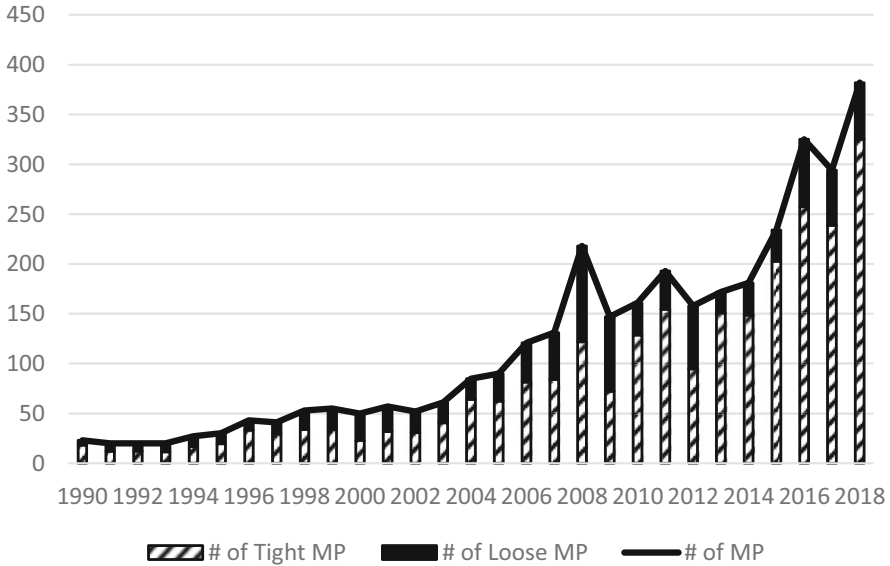


Fig. 1 Number of macroprudential policies (1990–2018). (Source: Author's calculation based on data from Alam et al. (2019); Note: MP stands for macroprudential policies)

2018 for 135 countries in the dataset. It can be seen in the figure that the number of policy changes was only around 25 in 1990. It jumped to nearly 400 policy changes in 2018. This trend clearly shows that more countries have been relying on macroprudential policies to stabilize their financial markets in addition to other economic policies. Most macroprudential policy changes are in the tight policy group. However, there is still a significant number of easy policy changes. In 2018, the number of tight macroprudential policy was 326, while the value was 57 for loosening macroprudential policy changes.

Macroprudential policies are used both in developing and advanced economies. Figures 2, 3, and 4 present the number policy changes in these two groups of countries between 1990 and 2018 and the direction of changes. Figure 2 shows that macroprudential policy changes have been common in developing countries over the years. On the other hand, advanced economies started to use such policies relatively more frequently in recent years, especially after the global financial crisis of 2008–09 when their financial markets were fragile. As can be seen in Figs. 3 and 4, the number of tight macroprudential policies was higher than the number of loosening policy changes for each group of countries. Especially during the crisis period, easy macroprudential policies are used more commonly to ease the pressure on financial markets.

A set of control variables are also included in the growth regressions to control for other determinants of economic growth in addition to changes in economic policies.

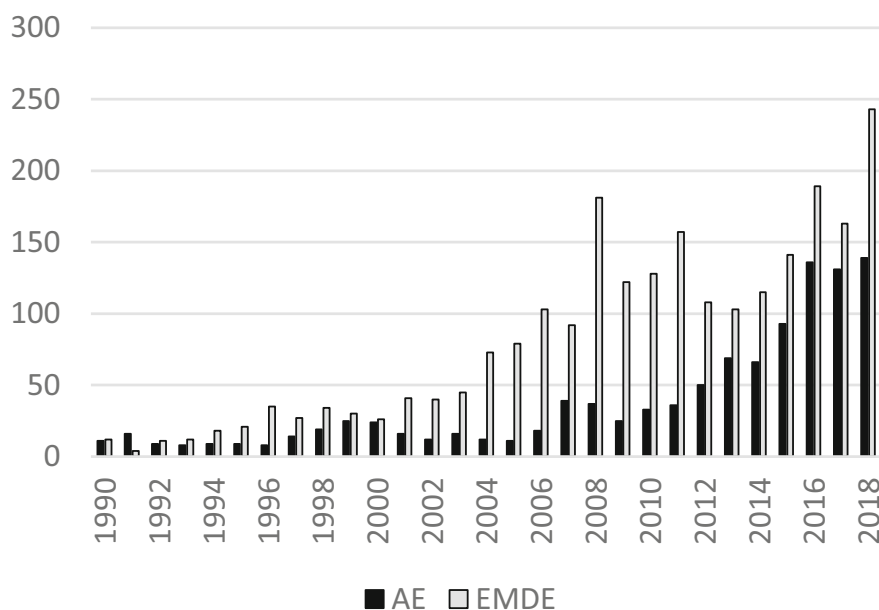


Fig. 2 Number of macroprudential policies in developing and advanced economies. (Source: Author's calculation based on data from Alam et al. (2019); Note: AE for advanced economies; EMDE for emerging market developing economies)

We included capital investment in percent GDP as one of the main determinants of growth. The data source is the WDI Database.¹¹ We include trade openness, measured as the summation of imports and exports in percent of GDP, as another determinant of growth. It comes from the WDI Database too. To capture the quality of governance, the bureaucracy quality index from the International Country Risk Guide (ICRG) Database is included in regressions. The higher values of the index correspond to the higher bureaucracy quality. To measure the stability of financial markets, a variable named Financial Risk Rating is included in regressions. It comes from the ICRG database. It is defined in the database as an assessment of “a country’s ability to pay its way by financing its official, commercial and trade debt obligations.” The higher values of the index correspond to lower risks. The estimated coefficients of all these control variables are positive in growth regressions.

The descriptive statistics of the main variables are given in Table 1 for the period of 1990–2018. The average number of tight policy changes was higher than the one for the number of loose policy changes. It indicates that tight policy changes are more common. The maximum number of tight macroprudential policy changes in a

¹¹ Gross capital formation (% of GDP) is the variable used. In the database, it is defined as “Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.”

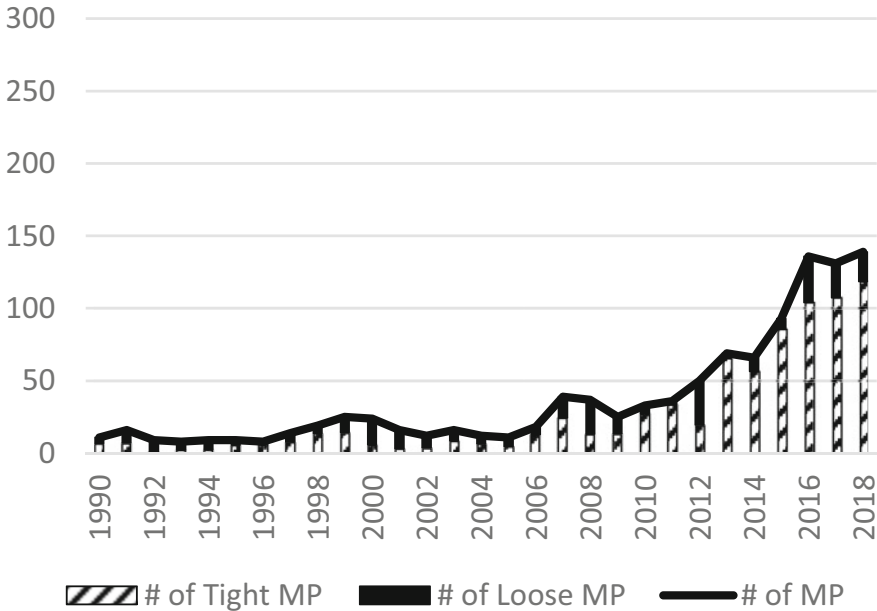


Fig. 3 Direction of macroprudential policies in advanced economies. (Source: See Fig. 2; Note: MP stands for macroprudential policies)

country in one year was 13, while the maximum number of loose policy changes was 11. The average value of GDP per capita growth in the dataset was 2.11%. The average real interest rate is 6.10%. But there are also periods with negative rates. The ratio of government spending to GDP was 16.29% on average. The correlation coefficients among the possible explanatory variables, which are not reported due to space limitations, are not high enough to cause any multicollinearity problem in regressions.

One weakness of macroprudential policy data is that the sizes of the policy changes are not reported. Available databases report only the number of policy changes and sometimes the direction of policy changes (tight or loose). This limitation of the macroprudential policy series leads us to identify the periods of tight and loose fiscal and monetary policy changes in a similar way for comparison purposes. Therefore, we create a set of dummy variables to capture the direction of fiscal and monetary policy changes and their combinations. The following dummy variables are used in the regressions, presented in the following sections. It should be noted that tight or easy policy changes are identified as described above.

- $Dummy_{MT_FT} = 1$ if only tight monetary and fiscal policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FT} = 1$ if only loosening monetary and tight fiscal policy changes are observed in a period for a country; otherwise, 0.

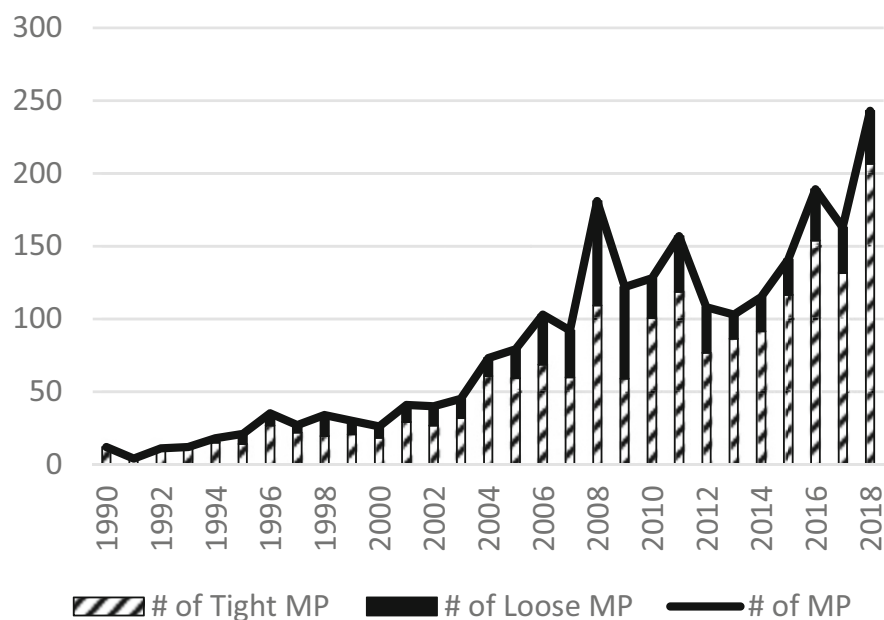


Fig. 4 Direction of macroprudential policies in developing economies. (Source: See Fig. 2; Note: See Fig. 3)

Table 1 Descriptive statistics (1990–2018)

	Mean	Stan. dev.	Median	Min	Max
# of tight macroprudential policy changes	0.55	1.23	0.00	0.00	13.00
# of loose macroprudential policy changes	0.16	0.59	0.00	0.00	11.00
GDP per capita growth (%)	2.11	4.92	2.30	-25.33	62.20
Real interest rate (%)	6.10	12.54	5.53	-23.51	87.81
Government spending (% of GDP)	16.29	8.06	16.14	0.91	73.73
M2 (% of GDP)	54.56	43.73	43.55	2.86	396.19
Trade (% of GDP)	85.06	54.48	73.62	11.09	442.62
Government spending per capita (constant \$US)	2645.60	3681.38	828.76	5.97	21977.28
Bureaucracy quality	2.38	1.13	2.00	0.00	4.00
Financial risk rating	37.02	6.67	37.63	9.00	50.00

Source: Author's calculation based on WDI, ICRG, and Alam et al. (2019)

- $Dummy_{MT_FL} = 1$ if only tight monetary and loose fiscal policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FL} = 1$ if only loosening monetary and fiscal policy changes are observed in a period for a country; otherwise, 0.

Table 2 Share of periods of higher economic growth following different combinations of economic policies

Combination of . . .		Combination of . . .		Combination of . . .	
MT and FT	61.52	MT, FT, and MPT	67.02	MT, FT, and MPL	55.38
ML and FT	62.53	ML, FT, and MPT	67.31	ML, FT, and MPL	60.98
MT and FL	40.68	MT, FL, and MPT	45.55	MT, FL, and MPL	41.86
ML and FL	42.16	ML, FL, and MPT	50.63	ML, FL, and MPL	45.16

Source: Author's calculation based on WDI and Alam et al. (2019)

Note: MT = tight monetary policy change; ML = loosening monetary policy change; FT = tight fiscal policy change; FL = loosening fiscal policy change; MPT = tight macroprudential policy change; MPL = loosening macroprudential policy change

- $Dummy_{MT_FT_MPT} = 1$ if tight monetary, fiscal and macroprudential policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FT_MPT} = 1$ if loosening monetary and tight fiscal and macroprudential policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{MT_FL_MPT} = 1$ if loosening fiscal and tight monetary and macroprudential policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FL_MPT} = 1$ if loosening fiscal and monetary policy and tight macroprudential policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{MT_FT_MPL} = 1$ if tight fiscal and monetary policy and easy macroprudential policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FT_MPL} = 1$ if loosening monetary and macroprudential policy and tight fiscal policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{MT_FL_MPL} = 1$ if tight monetary policy and loosening macroprudential and fiscal policy changes are observed in a period for a country; otherwise, 0.
- $Dummy_{ML_FL_MPL} = 1$ if easy monetary, fiscal and macroprudential policy changes are observed in a period for a country; otherwise, 0.

We also define a dummy variable for growth periods ($Dummy_{FGRY}$). In period t in a country, we first calculate the 3-year forward moving average of the growth rate of GDP per capita by taking the average value of the growth rate in $t + 1$, $t + 2$, and $t + 3$. Then, we compare the value of this moving average with the overall average of the growth rate for this country. If the forward moving average is higher than the overall average for this country, then we identify the future growth performance as high in period t . If not, we label the period as a low growth period. Therefore, the dummy variable for growth is equal to 1 if the period is identified as a high growth period for this country; otherwise, 0.

Table 2 presents the share of better economic growth performances following the periods of different combinations of economic policies in terms of their directions

(tight or loose). Future economic growth is defined as in the previous paragraph. In the first set of the table, we report the share of high growth periods following the changes in only monetary and fiscal policies without any change in macroprudential policies. In the second set, the shares are reported when monetary and fiscal policies are paired with tight macroprudential policy changes. In the third set of the table, the shares are reported for the periods when monetary and fiscal policies are combined with loosening macroprudential policy changes. The table presents that when different types of monetary and fiscal policies are combined specifically with tight macroprudential policies, the probability of better future growth is higher, as it can be seen in set 2 of the table. It is comparable to the combinations of no macroprudential policy change (set 1) or loosening one (set 3). The highest share of success (i.e., the highest future economic growth) comes with the combination of tight fiscal and macroprudential policy. This share is around 67%. It means that in 67% of cases with the combination of tight fiscal and macroprudential policy (it does not matter whether the monetary policy in that period is tight or loose), we observe higher economic performance. The share of success is lower with easy fiscal policy changes (first two rows in each set) when compared to tight fiscal policy changes (last two rows in each set). The share of success is lowest in policy combinations with easy macroprudential policy changes (set 3). In this group, the lowest share belongs to the combination with easy fiscal and macroprudential policy and tight monetary policy. Overall, we can say that different combinations of economic policies produce different future growth performances. The regression analysis can give a better opinion on which combinations are working better for future economic growth when other determinants of growth are controlled as well.

3 Regression Specification and Methodology

In this section, the regression specifications and regression techniques are explained. Two methodologies are introduced to understand the link between economic policies and economic performance of countries. The first set of results is obtained with logit regressions, while the second set of results is obtained with panel least squares regressions.

The first regression specification, estimated with a logit technique, is:

$$\begin{aligned}
\text{DummyFGRY}_{it} = & c0 + c1 * \text{DummyMT_FT}_{it} + c2 * \text{DummyML_FT}_{it} + c3 \\
& * \text{DummyMT_FL}_{it} + c4 * \text{DummyML_FL}_{it} + c5 \\
& * \text{DummyMT_FT_MPT}_{it} + c6 * \text{DummyML_FT_MPT}_{it} \\
& + c7 * \text{DummyMT_FL_MPT}_{it} + c8 \\
& * \text{DummyML_FL_MPT}_{it} + c9 * \text{DummyMT_FT_MPL}_{it} \\
& + c10 * \text{DummyML_FT_MPL}_{it} + c11 \\
& * \text{DummyMT_FL_MPL}_{it} + c12 * \text{DummyML_FL_MPL}_{it} \\
& + e_{it},
\end{aligned} \tag{1}$$

where i represents countries and t represents time. The vector of parameters is $\{c0, c1, \dots, c12\}$ and e is an error term. The dependent variable is a dummy variable for future growth performance as defined in the previous section. All other dummy variables are also defined in the previous section. The aim of this regression specification is to understand whether any specific combinations of economic policies can increase the success probability. The success probability is having higher average growth in the next three years, compared to the overall growth performance of the country. The regression technique is a logit regression with maximum likelihood, following Newton-Raphson and Marquardt steps.

In the second regression specification, we try to understand the effect of changes in the direction of economic policy indicators on economic growth. We use the number of macroprudential policy changes, while the dummy variables are used to determine the direction of monetary and fiscal policies. The regression specification is:

$$\begin{aligned}
\text{GRGDPPC}_{it} = & d0 + d1 * \text{MI}_{it} + d2 * \text{FI}_{it} + d3 * \text{MPI}_{it} + d4 * \text{MI}_{it} * \text{MPI}_{it} \\
& + d5 * \text{FI}_{it} * \text{MPI}_{it} + dd * X + ee_{it},
\end{aligned} \tag{2}$$

where i represents countries and t represents time. The vector of parameters is $\{d0, d1, \dots, d5\}$ and ee is an error term. dd is a vector of coefficients for the set of control variables (X).

The dependent variable (GRGDPPC) is the 3-year future moving average of the growth rate of GDP per capita. It means that in period t , the value of the dependent variable is calculated by taking the average of the growth rate in periods $t + 1$, $t + 2$, and $t + 3$. One advantage of defining the dependent variable in this way is that the possible reverse causality problem moving from the dependent variable towards the independent variables can be minimized.

MI is a dummy variable for a monetary policy indicator. It can either be tight or easy. For tight monetary policy periods (MI_T), it is equal to 1 if the value of the real interest rate in period t is higher than its moving average value in year $t - 1$, $t - 2$, and $t - 3$; otherwise, 0.¹² For easy monetary policy periods (MI_L), the value is equal to 1 for the opposite cases; otherwise, 0.

¹²In the sensitivity analysis section of this paper, we also measure monetary policy changes by M2 in % of GDP.

Similarly, FI is a dummy for fiscal policy indicators. For tight fiscal policy periods (FI_T), it is equal to 1 if the value of government spending in percent of GDP in period t is lower than its moving average value in year $t - 1$, $t - 2$, and $t - 3$; otherwise, 0.¹³ For easy fiscal policy periods (FI_L), it is equal to 1 if government spending is lower than its 3-year moving average; otherwise, 0.

MPI is the number of macroprudential policy changes. It can be in the form of tight (MP_T) or easy policy changes (MP_L). In this regression equation, we also consider the interaction terms between macroprudential policies and other economic policies; $MI * MP$ or $FI * MP$.

A set of control variables (X) are also included in the regression specification to consider other determinants of economic growth. The control variables include gross capital formation, trade, bureaucracy quality, and financial risk ratings. They are all expected to affect economic growth in a positive way.

The regression technique used for Eq. (2) is panel least squares with time and country dummies. This methodology can correct for omitted explanatory variables. Also, we can account country-specific heterogeneity with this methodology. Because the fixed effects exclude country heterogeneities, it can reduce the risk of endogeneity bias. It should be noted that an alternative regression methodology that can consider any endogeneity issues could be Generalized Method of Moments by Arellano and Bond (1991). This methodology eliminates fixed effects by calculating the first differencing of the variables and then using the lagged values as instruments. Because we have many dummy variables and interaction terms in the regression specification, this technique is not applicable.

4 Estimation Results

Table 3 presents the results for Eq. (1). The dependent variable is a dummy variable that is equal to 1 when the average future growth rate in the next 3-years is higher than the overall average growth in a country. The independent variables consist of dummy variables with different combinations of economic policy changes. In the last column, the marginal effects of the variables are reported. The table shows that almost all estimated coefficients are statistically significant. When monetary and fiscal policies are combined with macroprudential policies, the marginal effects of policy changes on economic growth are higher. This indicates that macroprudential policies are important while stabilizing economies. One explanation for this result is that because the focus of macroprudential policies is specifically on financial markets, macroprudential policies may lead to higher growth given the importance of financial systems for stable economy. Another explanation can be related to that the observation that macroprudential policy changes may introduce longer term stability

¹³In the sensitivity analysis section, we also measure fiscal policy changes by government spending in per capita terms.

Table 3 Logit regression results

Dependent variable: DummyFGRY				
Variable	Coefficient	z-Statistic	Prob.	Marginal effects ($c_0 + c_i$)
Constant	1.386*	1.740	0.088	
DummyMT_FT	-0.861*	-1.768	0.084	0.526
DummyML_FT	-0.823*	-1.733	0.089	0.563
DummyMT_FL	-1.468**	-2.311	0.028	-0.082
DummyML_FL	-1.372**	-2.223	0.034	0.014
DummyMT_FT_MPT	0.183**	2.227	0.033	1.570
DummyML_FT_MPT	0.159*	1.781	0.082	1.545
DummyMT_FL_MPT	-0.018**	-2.132	0.041	1.368
DummyML_FL_MPT	0.011**	2.058	0.048	1.397
DummyMT_FT_MPL	-0.310**	-2.182	0.037	1.077
DummyML_FT_MPL	-0.117	-1.344	0.162	1.270
DummyMT_FL_MPL	-0.185*	-1.798	0.079	1.202
DummyML_FL_MPL	-0.208	-1.557	0.119	1.178
Included observations: 3458				
McFadden R-squared	0.42			
LR statistic	121.43			
Prob(LR statistic)	0.00			

Source: Author's calculation

Note: Data is panel with 135 countries. Regression technique is logit with maximum likelihood, following Newton-Raphson and Marquardt steps. Dependent variable and dummy variables are defined in the data section. MT = tight monetary policy change; ML = loosening monetary policy change; FT = tight fiscal policy change; FL = loosening fiscal policy change; MPT = tight macroprudential policy change; MPL = loosening macroprudential policy change. ***, **, and * stand for the 1%, 5%, and 10% significance level, successively

in the system, while most fiscal and monetary economic policies are relatively shorter term. As a result, their positive effects on growth can last longer.

In Table 3, the highest and the most significant marginal effects belong to the combination of economic policies with tight macroprudential policies (*MPT*). The marginal effect of tight fiscal, monetary, and macroprudential policy on economic growth (1.570) is larger than the marginal effect of only tight fiscal and monetary policy (0.526). The marginal effect of tight monetary and fiscal policy combined with loose macroprudential policy is 1.077. This can be one reason why countries use tight macroprudential policies more commonly (Fig. 1). The highest benefits are observed when tight macroprudential policies are matched with tight fiscal policies. Whether monetary policy is tight or easy does not make much difference in this group.

Economic policy changes involving easy macroprudential policies have relatively lower marginal effects on growth, but they are still statistically significant, and the effects are higher than the ones involving only fiscal and monetary policies combinations without macroprudential policies. The highest marginal effect in this group

belongs to loosening monetary and macroprudential policy and tight fiscal policy. The marginal effect of this policy combination is estimated at 1.270. The combination of tight monetary policy and easy macroprudential policy also produces a high marginal effect (1.202). Easy macroprudential policies should be counterbalancing the negative effects of tight monetary policies by introducing financial stability.

The marginal effects of economic policies with only fiscal and monetary policies are low, indicating they are relatively less successful in improving economic conditions without the help of macroprudential policy changes. Tight fiscal policies have relatively higher positive marginal effects for longer term economic growth. On the other hand, loose fiscal policies do not improve economic conditions at higher margins. The marginal effect of easy monetary and fiscal policy on higher economic growth is only 0.014. But still, it is statistically significant at the 5 percent level.

Table 4 presents the results for the growth regression, given in Eq. (2). The dependent variable is the 3-year future moving average of the growth rate of GDP per capita. The regression methodology is panel least squares with fixed time and country effects. The upper section of the table reports the combination of economic policies with tight macroprudential policy (columns (1)–(4)). The lower section shows the results with loose macroprudential policy changes (columns (5)–(8)). The table reports only the estimated coefficients of the policy variables. The control variables (gross capital formation (% of GDP), trade (% of GDP), bureaucracy quality, and financial risk ratings), which are not reported in the table because of space limitation, have the expected positive coefficients and significant. Tight monetary policies and easy fiscal policies have a significant negative effect on economic growth. This observation is valid in each regression involving this combination. While tight macroprudential policies have a significant positive effect on future economic performance, the impact is negative for loose macroprudential policy changes.

The estimated coefficients of the interaction terms between monetary or fiscal policies and macroprudential policies present interesting results. As stated earlier, the impact of tight macroprudential policy on growth is positive. This positive link gets stronger when tight macroprudential policies are combined with tight fiscal and/or tight monetary policies because the estimated coefficients of these interaction terms are positive and significant (see columns (1), (3), and (4)). Oppositely, when tight macroprudential policies are matched with loosening fiscal and/or easy monetary policies, the positive impact of tight macroprudential policies on growth gets weaker because the estimated coefficients of the interaction terms for this combination is negative, as can be seen in Columns (2), (3), and (4). Therefore, we can conclude that tight macroprudential policy changes are more effective, in terms of leading to higher future growth, when they are introduced with tight fiscal and/or tight monetary policy.¹⁴

¹⁴For example, Bruno et al. (2017) also show that macroprudential policies are more successful when they complement monetary policy by reinforcing monetary tightening.

Table 4 Economic growth and direction of economic policies

Dependent Variable: 3-year forward moving average of GDP per capita growth								
<i>Tight macroprudential policies</i>								
	(1)	(2)	(3)	(4)				
Constant term	2.194	(12.785)***	2.599	(18.412)***	1.513	(11.768)***	3.277	(19.048)***
ML_T	-0.681	(-3.59)***					-0.571	(-2.51)***
ML_L			0.421	(2.983)***	0.521	(3.012)***		
FI_T	1.084	(6.336)***			0.986	(5.751)***		
FI_L			-1.086	(-6.351)***	...		-0.914	(-4.136)***
MP_T	0.049	(2.449)**	0.222	(2.271)**	0.116	(2.159)**	0.156	(2.468)***
MP_T*FI_T	0.107	(1.916)*				(2.011)**		
MP_T*ML_T	0.068	(1.779)*			0.123		0.075	(1.579)
MP_T*FI_L			-0.107	(-1.711)*			-0.112	(-2.016)**
MP_T*ML_L			-0.066	(-1.563)	-0.074	(-1.313)		
Time and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of countries	133	133	133	133	133	133	133	133
# of observations	3415	3415	3415	3415	3415	3415	3415	3415
Adjusted R-squared	0.573	0.533	0.533	0.583	0.583	0.533	0.533	0.533
F-statistics	5.371	5.371	5.371	5.371	5.371	5.371	5.371	5.371
<i>Easy macroprudential policies</i>								
	(5)	(6)	(7)	(8)				
Constant term	2.285	(14.213)***	2.772	(21.052)***	1.644	(13.544)***	3.412	(21.062)***
ML_T	-0.642	(-3.567)***					-0.572	(-2.977)***
ML_L			0.642	(3.567)***	0.413	(4.007)***		
FI_T	1.127	(7.033)***			0.928	(4.515)***		
FI_L			-1.128	(-7.045)***			-1.347	(-6.752)***
MP_L	-0.429	(-1.753)*	-0.172	(-1.879)*	-0.387	(-1.909)*	-0.214	(-1.95)*

MP_L*FI_T	0.215	(1.894)*		0.321	(2.093)**	
MP_L*MI_T	0.045	(1.183)				0.067 (1.713)*
MP_L*FI_L			-0.215		(-1.893)*	-0.322 (-1.721)*
MP_L*MI_L			-0.036		(-1.647)*	
Time and fixed effects	Yes		Yes	Yes		Yes
Control variables	Yes		Yes	Yes		Yes
# of countries	133		133	133		133
# of observations	3415		3415	3415		3415
Adjusted R-squared	0.438		0.493	0.483		0.443
F-statistics	5.363		5.363	5.363		5.363

Source: Author's calculation

Note: Panel least squares regression with fixed and time effects. Control variables are gross capital formation (% of GDP), trade (% of GDP), bureaucracy quality, and financial risk ratings. They are not reported due to space limitation. Their estimated coefficients are positive and significant. F-statistics are all significant at the 1% level. MI_T = dummy for tight monetary policy; MI_L = dummy for easy monetary policy; FI_T = dummy for tight fiscal policy; FI_L = dummy for easy fiscal policy; MP_T = # of tight macroprudential policy changes; MP_L = # of easy macroprudential policy changes. ***, **, and * stand for the 1%, 5%, and 10% significance level, successively

When we check the results with loose macroprudential policy changes in the lower portion of Table 4, it can be seen that the negative impact of loosening macroprudential policy changes on growth gets less intense when such policies are combined with tight fiscal and/or tight monetary policies. The explanation of this result would be that tight monetary and fiscal policies are expected to have a negative effect on financial markets. However, accompanying these policies with easy macroprudential policies can be helpful to balance the system and help to improve economic conditions (see columns (5), (7), and (8)). More interestingly, when loosening macroprudential policies are matched with loosening monetary and/or fiscal policies, the negative effect of easy macroprudential policies gets even more negative, as can be seen in columns (6), (7), and (8). This result indicates that when all economic policies are easy, it may destabilize the system.

Overall, the results show that macroprudential policies can support economic growth more effectively when they are accompanied by monetary or fiscal policies in the opposite direction. The reason for this observation would be that macroprudential policies basically play an important role in balancing the financial system to minimize the possible negative effects of easy or tight fiscal and monetary policies.

5 Sensitivity Analysis

Several sensitivity analyses are conducted to understand the robustness of the results presented in the previous section. Alternative economic policy indicators to identify the direction of monetary and fiscal policies and different country groups are used in this section.¹⁵

One of the sensitivity analyses involves an alternative measure of monetary policy changes. In the original results, the real interest rate was used to identify the periods of easy and tight monetary policies. In this section, M2 in percent of GDP is used to determine the periods of tight and easy monetary policies. A tight monetary policy period is defined as the one in which the value of the ratio of M2 to GDP is lower than the 3-year moving average value of the variable. Oppositely, if this ratio is higher than the moving average value, then the period is considered as the one with a loosening monetary policy. The results presented in Tables 3 and 4 are robust to this alternative measure.

In another sensitivity test, fiscal policy changes are measured by real government spending per capita instead of government spending in percent of GDP. If the value of government spending per capita is higher than its moving average, it is concluded that this period can be identified as an easy fiscal policy period. Adversely, the easy fiscal policy periods are considered as the ones with government spending per capita

¹⁵Because of space limitations, the estimated coefficients are not reported in the paper. But they are available upon request.

less than the 3-year moving average. The results presented in Tables 3 and 4 are robust to this different measure of fiscal policy.

Another set of sensitivity analysis involves splitting the countries in the dataset into two groups to understand whether the interaction among economic policies can be different in advanced and developing economies. The results are mostly robust for these two groups of countries. The main differences can be summarized as follows: tight macroprudential policies promote future growth more in developing countries; the positive interaction especially between tight macroprudential policy and easy monetary policy is stronger in developing countries; loose macroprudential policies do not significantly affect future growth in advanced economies; the interaction terms are less significant in advanced economies.

6 Conclusion

This paper investigates the empirical link among economic policies, including monetary, fiscal and macroprudential policies, and their impacts on economic growth. The focus is on the direction of policies (tight versus easy). The results show that tight macroprudential policies can promote growth more successfully compared to easy policies. This should be one of the reasons why governments use tight macroprudential policies more commonly when compared to easy macroprudential policies. The findings also point out that the interaction between tight macroprudential policies and easy fiscal or monetary policies increases the future growth performance of countries. We can conclude that tight macroprudential policies can successfully counterbalance the possible negative effects of loose fiscal and monetary policy. The results are robust to the alternative measures of fiscal and monetary policies and different country income groups. Given the success of macroprudential policies in promoting growth, it is expected macroprudential policies to continue to remain as an essential part of economic policies for a stable growth path. A detailed classification of macroprudential policies in regressions could have provided more accurate policy implications. This analysis can be explored in a future study.

Appendix

List of Developing Countries: Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cape Verde, Chile, China, Colombia, Congo Democratic Republic, Costa Rica, Cote d'Ivoire, Croatia, Dominican Republic, Ecuador, El Salvador, Ethiopia, Fiji, Gambia, Georgia, Ghana, Guinea Bissau, Haiti, Honduras, Hungary, India, Indonesia, Jamaica, Jordan, Kazakhstan, Kenya, Kosovo, Kuwait,

Kyrgyz Republic, Laos, Lebanon, Lesotho, Macedonia, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Nepal, Niger, Nigeria, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Romania, Russia, Saint Kitts and Nevis, Saudi Arabia, Senegal, Serbia, Solomon Islands, South Africa, Sri Lanka, Sudan, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, Uruguay, Vietnam, Yemen, Zambia.

List of Developed Countries: Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, United States.

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Three Decades on Renewable Climate Policy: A Bibliometric Analysis



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Abstract Global climate change is having observable effects on the environment and for this reason is driving the promotion of renewable climate policies (RCPs). But no doubt this is a problem that will not be solved easily. For this reason, this paper aims to contribute an overview of RCPs through a bibliometric approach. In this analysis, Web of Science database is used interrogating specific keywords on a period of thirty years. Through the study of the literature, three main topic areas have been identified and, for each of them, a research question has been defined respectively. The direction of the research is to answer these three research questions so as to have an assessment concerning bibliographic expertise on the theme of RCPs. The study shows that the interest in RCPs has grown strongly over the years and that the leading countries in the field have been the USA and the People's Republic of China, followed by Europe. This review can help the researchers and practitioners to understand the current state of development and also where research is missing. It can also support the identification of new lines of application and the development of better policy instruments towards climate goals.

Keywords Climate policy · Renewable energy · Green energy · Bibliometric analysis · Assessment · Web of Science database

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1 Introduction

The significant impact of global climate change has long been attracting the attention of the major world economies that are committed to the development and promotion of renewable climate policies (Goers et al., 2020). At the same time, it has to be recognized that the development of these policies needs considerable effort, a sound example is that of the photovoltaic sector that, between 1976 and 2014, was characterized by a reduction in costs of 99.4% following political measures taken by various nations that alternated in the leadership of the initiative (Buchholz et al., 2019; Cucchiella et al., 2018).

Article 194 of the Lisbon Treaty of the European Union, taking into account the need to preserve and improve the environment, explicitly identifies energy efficiency, savings, and the development of renewable energy sources as objectives of the European Union's energy policy (European Union, 2007).

Through the development and application of cleaner environmental technologies, it is possible to reduce the carbon intensity of the economy while improving energy security and reducing greenhouse gas emissions (Dovì et al., 2009). In addition, in 2017, according to the Intergovernmental Panel on Climate Change (IPCC) transition to renewable energy sources was unavoidable and was a priority due to climate change (Adami et al., 2020; Annibaldi et al., 2019).

In this context, in December 2015, 193 governments signed the "Paris Agreement" aimed at stabilizing the global temperature at 2 ° C above pre-industrial levels. Considerable private and public investments in terms of technological development are needed to achieve this. At the same time, responsible policymakers are called upon to implement effective measures to promote new technologies and investments necessary to achieve a path of sustainable growth (Lamperti et al., 2019). Menanteau et al. (2003) underline the specific and relevant role of public authorities: stimulating technical progress and accelerating technological developments so that renewable energy technologies can compete with conventional technologies.

Fischer and Newell (2008) demonstrate how, in the context of a process of technological change, incentives can take on a more relevant role than in the research and learning phases. At the same time it should be noted that in the early stages of development of non-competitive technologies, it is better to invest in research and development, rather than promoting their production and large-scale distribution (Frondel et al., 2010).

Bridge et al. (2013) underline how the transition to low carbon emission energy represents a geographical process that can lead to the reconfiguration of the current geographic areas with important social implications. Furthermore, Jiusto (2009) show how historical energy transitions have been associated to wide social changes, such as industrialization, urbanization, and increase of consumerism. Examples are the transition from wood to coal and the electrification of urban and rural areas at the end of the nineteenth century. And, when developing strategies to stimulate the use of renewable and sustainable energy it is important to take into account preconceived

ideas and motivational factors of consumers, even if very often these are overlooked by professionals and policy-makers (Frederiks et al., 2015).

According to Shafiei and Salim (2014), policy-makers should consider increasing population density as another key strategy aimed at the reduction of polluting emissions. Furthermore, the assessment of the socio-economic and financial impacts of climate change, essential for informing policy-makers in support of their decision-making process (Secinaro et al., 2020), represents one of the main sources of uncertainty. For this reason, there is an increasing need to formulate new models capable of contemplating uncertainty and complexity deriving not only from climate impacts on socio-economic systems but also from their reaction (Monasterolo et al., 2019). For example, Wüstenhagen and Menichetti (2012) show that the investment risk in the renewable energy sector can be quantified. Still, the measures are strongly conditioned by hypotheses, such as assumptions of input in the evaluation model or hypotheses that support the logic of the model itself. The relevance emerging is of a topic such as the development of renewable climate policies for various society stakeholders, including state, politicians, non-governmental organizations, researchers, consumers.

All of these actors are increasingly involved in operations aimed at limiting damage that could derive from events linked to climate change, and at every level whether public or private, there is the will to work in synergy to develop systems capable of limiting the negative impact connected to an incorrect use of non-renewable energy. In this direction national and local authorities are committed to develop climatic policies which provide incentives to the use of renewable energy (Busch et al., 2020; Schmid et al., 2016). According to International Energy Agency (IEA) recommendations, the main means to decrease the environmental impact are increasing energy efficiency and the use of alternative materials (Collivignarelli et al., 2020). Clearly these questions are not easily resolved, being extremely articulated and complex themes, which need to be addressed from various directions, with the participation of numerous actors, with all contributions managed in a coordinated and synergetic way, with no fragmentation (Cucchiella et al., 2021). In this scenario, a further degree of complexity is given by the current pandemic (Chernysh & Roubík, 2020) which has strongly influenced as people live, work, and interact, as well as causing a global health and economic crisis (Vaka et al., 2020). According to the study by Hepburn et al. (2020), to overcome this crisis, upcoming fiscal recovery packages “could entrench or partly displace the current fossil-fuel-intensive economic system”. In particular, investment policies in renewable energy produce positive effects both in the short and long term. In fact, they are able to generate jobs in the immediate crisis but also in the long term, in terms of manpower for operation and maintenance (Blyth et al., 2014; Sanaeepur et al., 2013).

Therefore, renewables offer higher long-run multipliers. A similar reasoning can also be developed in relation to other types of investments for clean energy, such as retrofit and energy efficiency interventions (Cucchiella et al., 2016; Hepburn et al., 2020), since in the long term they reduce the costs of transition (Henbest, 2020) towards the objectives of sustainability of the 2030 SDGs. It is precisely in this context that, for example, the European Union (EU) pushed Member States to

engage towards a cleaner energy production supplied by treatment of municipal solid waste. This topic is also focused by researchers. For example, Cucchiella et al. (2019) focuses on the profitability of biomethane plants and the environmental benefits obtained recovering the organic fraction of municipal solid waste in Italy. Rada et al. (2021) study the potential impacts from WtE plants. This is in order to provide a useful knowledge and guidance tool for several subjects, for example, researchers and practitioners who intend to undertake research in this field, but above all for policy-makers. At this end a bibliometric approach will be used.

A systematic literature review should “carefully identify and synthesize relevant literature to compare and contrast the findings of prior studies in a domain” (Paul & Criado, 2020, p. 1). In line with that, this paper aims to contribute in the following three key aspects to the existing body of research:

- Understanding of the state of the art in renewable climate policy;
- Identify the main research gaps in renewable climate policy, and
- Define and point out future avenues of research that can help decision and policy-makers to address the challenges of the field.

The paper is organized as follows: the bibliometric methodology used is illustrated in the next section, the results are then presented in tabular and graphic format. This section therefore summarizes the main findings. Finally conclusion and implications are illustrated.

2 The Bibliometric Approach Method

The bibliometric approach is a method that facilitates the reading and sorting of a large amount of data related to bibliography references. Using quantitative parameters, it is possible to evaluate, referring to specific themes, elements such as: year of publication, author, university (Broadus, 1987; Pritchard, 1969). It is of widespread use in the scientific community (Rodríguez-Fernández et al., 2020), to the point that it has become an area of research in itself. The bibliometric approach is used not only in the analysis of bibliographic references but, also, for example, for the analysis of patents (Narin, 1994).

The diffusion of this methodology among researchers and its success is due to the possibility of investigating a multitude of aspects of various realities. For example, Zupic and Čater (2014) underline how bibliometric methods measure objectivity in the evaluation of scientific literature. According to Gerdri et al. (2013), the bibliometric technique is applied to analyse technology road mapping-related journal and conference articles and demonstrates how this method is useful in promoting potential collaborations between researchers and practitioners who have similar interests in the field. Yang et al. (2012) use the bibliometric method to compare the most studied disciplines in G7 countries to the BRIC ones. The number of papers that were published on a research theme, and the number of citations that each paper

receives, are examples of bibliometric indicators that allow to symbolize the relevant information (Garfield, 1955).

Therefore, as already stated, a bibliometric approach consists of investigating a multitude of aspects concerning various realities. The need to utilize different indicators that are understandable to the various stakeholders who have different interests and objectives, is evident. Many authors have dedicated their research to the study of these indicators, as demonstrated in Alonso et al. (2009) “today there is no consensus regarding a single optimal method that can correctly evaluate a set of documents”. The same authors identified productivity and influence as the two key factors in function of analysing data and documents beyond (Alonso et al., 2009) which attempts to fuse them into a single indicator. Also Hirsch (2005) implements the same procedure “by finding the threshold that connects the number of documents with the number of citations” identifying the well-known h-index. In general, however, many authors use separately influence and productivity.

This bibliometric approach was used to explore the research trends on the topic of renewable climate policy. Firstly, the search terms have to be defined, to use to retrieve literature AND “climate policy” or “climate policies” or “green policy” or “green policies” or “(from both journals and conference papers) from the Web of Science database. Specifically, the database was queried using the following keywords: “renewable energy” or “renewable energies” or “green energy” or “green energies” or “clean energy” or “clean energies” or “cleaner energy” or “cleaner energies” “policy”, or “policies”. The time span is over thirty years and starts from 1990 until November 2019. To this end, a contemporary bibliometric approach was used, based on different indicators (Cobo et al., 2011; van Eck & Waltman, 2009). At this point, after a preliminary literature review, three main topic areas have been identified and, for each of them, a research question has been defined (RQ), respectively:

RQ1: What is the annual trend of publications and which are the most cited?

RQ2: What about the leading journals and most recognized authors that publish the biggest number of papers on analysed issues?

RQ3: On renewable climate policy which are the most involved institutions of the authors and related countries?

In this article the more common indicators have been used and the data has been elaborated both in tabular and graphical formats (van Eck & Waltman, 2009). Specifically the main indicators used are the citations by paper and by year, citation thresholds, and citing articles. Furthermore, the data is analysed by country and university, taking into account any variations in the time span of the study.

The Web of Science Core Collection database has been used to develop the analysis upon which the research is based as it is one of the most common database in the review.

Summarizing, the methodology adopted in this article is based on four steps:

- definition of search criteria and identification of sources;
- data extraction (WEB OF SCIENCE database);

Table 1 Acronyms

Acronym	Definition
C/Y	citations per year
H	h-index
R	rank
TC	Total citations
TP	Total papers
TLS	Total link strength

Source: Authors own study

- data analysis according to a bibliometric methodology;
- interpretation of results.

In the present research, the following four dimensions, useful for analysing the bibliographic literature (Hallinger & Suriyankietkaew, 2018), are been analysed, that is:

- “Size”: quantitative value,
- “Time”: evolution over time,
- “Space”: geographical location of the publication,
- “Composition”, intellectual composition.

With reference to the indicators (Cobo et al., 2011), on the other hand, the following were analysed:

- bibliographic coupling;
- co-citation, co-authorship;
- co-occurrence of keywords;
- citation.

For acronyms details, see Table 1. By querying the WEB OF SCIENCE database, 12,719 articles relating to the topic of Renewable Climate Policy (RCP) were identified through the bibliometric analysis covered by this paper. The database was queried using the keywords previously listed. The documents identified through these questions were then reduced to 10,364 limiting to article letter review and note (Hallinger & Suriyankietkaew, 2018; Moher, 2009).

3 Results and Discussion

This paragraph presents the results of the bibliometric analysis relating to Renewable climate policies. The subparagraphs are organized following the answers to the research questions.

3.1 Research Question 1: What Is the Annual Trend of Publications and Which Are the Most Cited?

The first two papers on the topic Renewable climate policies were published in 1990, since that year the number of publications on the topic has been growing steadily (Fig. 1), however, until 2005, the annual number of papers stood at below 100 units, this number is reached during the next year (2006) in which there is an increase of 44% on the previous year. From 2007 to 2011, there was constant growth on an average above 26%, thus reaching 494 papers in 2011. In 2015, almost a thousand papers were published on the subject and this number continued to grow also in the next years.

An apparent exception was the year 2019, however it is necessary to underline that the analyses do not include the whole of 2019 but only until 31 October. Figure 1 also shows the total number of citations relating to the papers of the year of analysis, and in the figure is also represented how many papers are published from 1 November to 31 December also if these papers (equal to 321) are not included in bibliometric analysis. To analyse the citation structure of the papers a number of papers that achieved several citation threshold levels were analysed, specifically equal or higher than 100, 50, 20, 10, 5, and 1. The results are presented in Fig. 1.

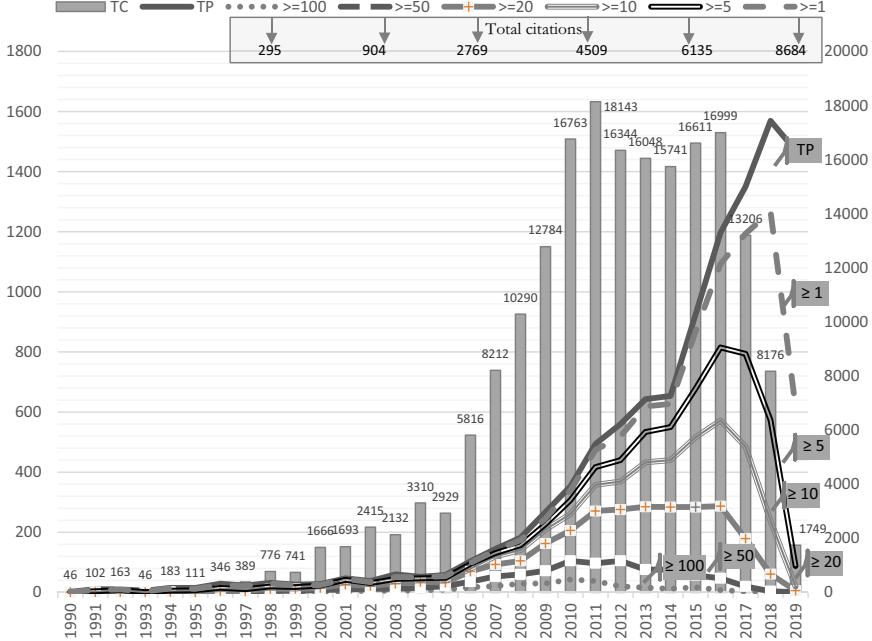


Fig. 1 Annual citation structure. (Source: Authors own study)

As can be noted, there has been a growth in the number of citations over time, and this is certainly correlated to the growth in the number of journals indexed in the Web of Science database. This database has in fact indexed about forty thousand journals. Analysing the results obtained, as illustrated in Fig. 1, it can be seen that 295 papers (equal to about 3%) registered more than one hundred citations and 904 articles (equal to 8.7%) have been cited at least fifteen times. 27% of the articles (numerically 2769 papers) have been cited at least twenty times, and more than 43% of papers have registered a number of citations at least equal to 10. If, on the other hand, the number of papers having received at least one citation are considered, then 84% of the papers satisfy this criterion within the Web of Science database. The information in Fig. 1 permits the analysis of the RQ1 proposition, i.e. what is the annual trend of publications and which are the most important.

3.2 Research Question 2: What Are the Most Relevant Journals and Most Recognized Authors That Publish the Biggest Number of Papers on Analysed Issues?

In order to identify the origins of the citations on RCP, it is necessary to analyse the citing articles in the Web of Science, for such scope, to identify “which are the most influential journals, authors?” (question RQ2) the forty most cited papers were selected with reference to the time span of analysis previously defined. The result of this selection is shown in Table 2 from which it emerges that the most cited paper on the topic RCP was published in 2004 (Pohekar & Ramachandran, 2004) on Renewable & Sustainable Energy Reviews Journal and, on the date of the database query, it appears to have 809 citations. Analysing the top ten most cited papers, it is to be noted that some authors are repeatedly present in 2011, 2007, and 2009, respectively (Saidur et al., 2011), (Demirbas, 2007) and (Demirbas, 2009). Furthermore, in this list Energy Policy is the leading journal with 13 articles, followed by Renewable & Sustainable Energy Reviews with 8 articles. These twenty most popular articles deal with the topic of renewable energy primarily from the perspective of policy, methodological, review, and sustainability approaches. These approaches represent precisely the field most studied by the scientific community, and not only, to accelerate growth in renewables. Renewable energy can in fact contribute to most of the reduction of greenhouse gas emissions according to the objectives set for 2050.

At the same time, it is interesting to analyse which are the most cited papers not in absolute terms but from other papers with the theme of RCP. Table 3 lists the 30 most cited papers selected as starting from the most cited to the least cited. In the “Cited reference” column, the full bibliographic data are organized in the following form: first author name, year of publication, journal title, volume, pages, doi.

Table 2 Twenty most cited journals in RCP

R	Journal	TC	Title	Year
1	Renewable & Sustainable Energy Reviews	809	Application of multi-criteria decision making to sustainable energy planning—A review	2004
2	International Journal of Hydrogen Energy	757	Hydrogen futures: toward a sustainable energy system	2002
3	Renewable & Sustainable Energy Reviews	694	Renewable energy and sustainable development: a crucial review	2000
4	Bioresource Technology	650	The future of anaerobic digestion and biogas utilization	2009
5	Research Policy	641	Analyzing the functional dynamics of technological innovation systems: A scheme of analysis	2008
6	Renewable & Sustainable Energy Reviews	591	A review on biomass as a fuel for boilers	2011
7	Energy Policy	547	Importance of biodiesel as transportation fuel	2007
8	IEEE Transactions on Energy Conversion	516	Centralized control for optimizing microgrids operation	2008
9	Applied Energy	501	Political, economic and environmental impacts of biofuels: a review	2009
10	Journal of Community & Applied Social Psychology	493	Rethinking nimbysism: the role of place attachment and place identity in explaining place-protective action	2009
11	Environmental & Resource Economics	485	Renewable energy policies and technological innovation: evidence based on patent counts	2010
12	Renewable & Sustainable Energy Reviews	467	Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives	2007
13	Energy Policy	463	The politics and policy of energy system transformation—explaining the German diffusion of renewable energy technology	2006
14	Renewable & Sustainable Energy Reviews	446	A review on global solar energy policy	2011
15	Applied Energy	431	Competitive liquid biofuels from biomass	2011
16	Energy Policy	391	Considering the energy, water and food nexus: towards an integrated modelling approach	2011
17	Energy Policy	384	Providing all global energy with wind, water, and solar power, part ii: reliability, system and transmission costs, and policies	2011
18	Energy Policy	366	Hydrogen and fuel cells: towards a sustainable energy future	2008
19	Journal of Environmental Economics and Management	364	Environmental and technology policies for climate mitigation	2008
20	Energy Policy	363	Prices versus quantities: choosing policies for promoting the development of renewable energy	2003

Source: Authors own study

Table 3 Thirty most cited documents in RCP publication

R	Cited reference	Citations	TLS ^a
1	wustenhagen r, 2007, energ policy, v35, p2683, doi 10.1016/j.enpol.2006.12.001	263	258
2	menanteau p, 2003, energ policy, v31, p799, doi 10.1016/s0301-4215(02)00133-7	229	226
3	jacobsson s, 2006, energ policy, v34, p256, doi 10.1016/j.enpol.2004.08.029	209	204
4	mitchell c, 2006, energ policy, v34, p297, doi 10.1016/j.enpol.2004.08.004	186	184
5	johnstone n, 2010, environ resour econ, v45, p133, doi 10.1007/s10640-009-9309-1	174	174
6	couture t, 2010, energ policy, v38, p955, doi 10.1016/j.enpol.2009.10.047	173	167
7	unruh gc, 2000, energ policy, v28, p817, doi 10.1016/s0301-4215(00)00070-7	172	167
8	carley s, 2009, energ policy, v37, p3071, doi 10.1016/j.enpol.2009.03.062	152	152
9	lipp j, 2007, energ policy, v35, p5481, doi 10.1016/j.enpol.2007.05.015	149	148
10	geels fw, 2002, res policy, v31, p1257, doi 10.1016/s0048-7333(02)00062-8	141	139
11	devine-wright p, 2005, wind energy, v8, p125, doi 10.1002/we.124	139	139
12	im ks, 2003, j econometrics, v115, p53, doi 10.1016/s0304-4076(03)00092-7	136	136
13	jacobsson s, 2000, energ policy, v28, p625, doi 10.1016/s0301-4215(00)00041-0	132	131
14	frondel m, 2010, energ policy, v38, p4048, doi 10.1016/j.enpol.2010.03.029	131	128
15	lewis ji, 2007, energ policy, v35, p1844, doi 10.1016/j.enpol.2006.06.005	131	127
16	apergis n, 2010, energ policy, v38, p656, doi 10.1016/j.enpol.2009.09.002	129	129
17	painuly jp, 2001, renew energ, v24, p73, doi 10.1016/s0960-1481(00)00186-5	127	119
18	engle rf, 1987, econometrica, v55, p251, doi 10.2307/1913236	125	124
19	wolsink m, 2007, renew sust energ rev, v11, p1188, doi 10.1016/j.rser.2005.10.005	125	125
20	searchinger t, 2008, science, v319, p1238, doi 10.1126/science.1151861	123	98
21	pesaran mh, 2001, j appl econom, v16, p289, doi 10.1002/jae.616	119	118
22	sadorsky p, 2009, energ policy, v37, p4021, doi 10.1016/j.enpol.2009.05.003	119	118
23	bell d, 2005, environ polit, v14, p460, doi 10.1080/09644010500175833	117	116
24	butler l, 2008, renew energ, v33, p1854, doi 10.1016/j.renene.2007.10.008	116	115
25	menz fc, 2006, energ policy, v34, p1786, doi 10.1016/j.enpol.2004.12.018	116	116

(continued)

Table 3 (continued)

R	Cited reference	Citations	TLS ^a
26	walker g, 2008, <i>energ policy</i> , v36, p497, doi 10.1016/j.enpol.2007.10.019	116	116
27	wolsink m, 2000, <i>renew energ</i> , v21, p49, doi 10.1016/s0960-1481(99)00130-5	116	115
28	levin a, 2002, <i>j econometrics</i> , v108, p1, doi 10.1016/s0304-4076(01)00098-7	113	113
29	jaffe ab, 2005, <i>ecol econ</i> , v54, p164, doi 10.1016/j.ecolecon.2004.12.027	109	105
30	fischer c, 2008, <i>j environ econ manag</i> , v55, p142, doi 10.1016/j.jeem.2007.11.001	108	106

Source: Authors own study

^aTLS: Total link strength

The papers Wüstenhagen, et al. (Wüstenhagen et al., 2007) and Menanteau, Finon and Lamy (Menanteau et al., 2003) were the most cited, to be noted that the first paper is not present in Table 2, while, the second most cited among the papers concerning RCP, is in twentieth position in the previous Table 2 in which the total citations is in absolute terms. In general, the recurring presence of the names of certain authors can be observed both within the individual tables and between the tables, for example: Jacobsson, S. (Table 2 position n. 5 and 13 and Table 3 position n. 3 and 13), Johnstone N. (Table 2 position n. 11 and Table 3 position n. 5) and Devine-Wright, P. (Table 2 position n. 10 and Table 3 position n. 11). Also notable is that frequently the more cited papers are of the review type.

Always with the aim of investigating the content matter of question RQ2, an analysis of which journals published the articles concerning the RCP research themes was made. This research is useful for authors who want to focus on RCP so that they know which journals may refer for their research. The results of this analysis are illustrated in Fig. 2.

With reference to the journals in which the highest number of articles on this topic is published it is verified that the journal leader is Energy Policy with 1510 publications and 45,774 citations, followed by Renewable & Sustainable Energy Reviews with 1247 publications and 40,561 citations. Below, all of the journals inside the ranking have a total number of publications less than 500 and citations less than 10,000. However, it is to be noted that the relevance role of these journals is growing with time so these leading positions may increase in the future. In order to see the most productive journals over time, it is necessary to proceed by analysing the leading journals in sub periods. The total reference time frame (1990–2014) was divided into three time ranges, from 1990 to 2001, from 2002 to 2013, and from 2014 to 2019.

In Fig. 2, the first 20 journal leaders in the overall period (1990–2019) were analysed and also for each paper how the total publication of the papers is divided over the three time periods. For example, in the case of Applied Energy there is a total of 294 publications, only 2% were published in the period 1990–2001, about

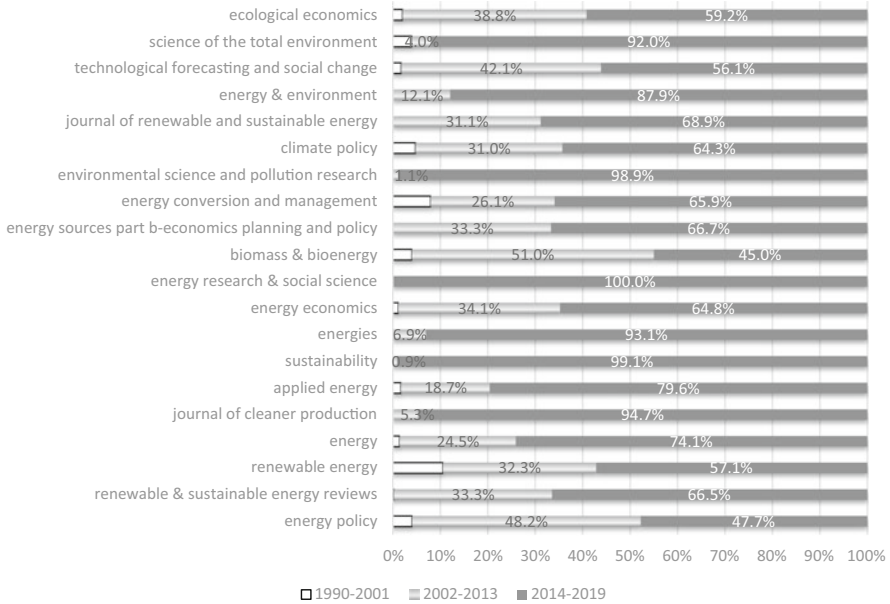


Fig. 2 The first 20 journal leaders in the overall period (1990–2019). (Source: Authors own study)

18% in the second period, and almost 80% of the publications belong to the period 2014–2019. In terms of the number of articles published, during the entire analysis period the Journal of Cleaner Production ranks in fifth position, instead in the third period, this journal has a number of articles published of about 95%. The same for Science of the total environment journal, Sustainability and Energies that in the third period have, respectively, a number of articles published of about 92%, 99.1%, and 93.1%.

In general there is a growing research interest in the topic of RCP and at least 45% of the publications on the subject, in the 20 leading journals, relate to the last five years, namely 2014–2019. On the other hand, issues relating to RCP did not attract particular interest in the decade 1990–2001, in fact the number of publications in this period did not exceed 10%.

3.3 *Research Question 3: On Renewable Climate Policy Which Are the Most Involved Institutions of the Authors and Related Countries?*

The subsequent research questions are aimed at analysing “Which are the most important institutions and countries on Renewable climate policies?”, That is, the analyses relating to the RQ3 group. For this purpose, Table 4 lists the twenty most

Table 4 Most productive institutions in RCP

R	Institution	Country	TP ^a	TC ^a	H ^a	C/P ^a
1	North China Electric Power University	China	188	2552	28	425.33
2	Chinese Academy of Sciences	China	117	3629	33	323.55
3	University of California, Berkeley	USA	107	2405	28	92.5
4	Tsinghua University	China	102	2110	25	175.83
5	University of Sussex	UK	84	1954	23	130.27
6	National Technical University of Athens	Greece	82	2088	22	94.91
7	Utrecht University	Netherlands	82	1943	22	92.52
8	University of Malaya	Malaysia	70	3384	27	349.6
9	University College London	UK	66	960	19	43.64
10	Massachusetts Institute of Technology	USA	65	1571	22	78.55
11	National University of Singapore	Singapore	65	1452	21	132
12	Swiss Federal Institute of Technology	Switzerland	65	898	15	68
13	Xiamen University	China	62	1233	20	137
14	Delft University of Technology	Netherlands	58	889	18	76.5
15	University of Technology	Malaysia	56	1826	25	114.13
16	University of Cambridge	UK	55	1459	22	76.79
17	European Commission	EU	53	825	15	65.33
18	University of Oxford	UK	53	1458	15	121.5
19	Australian National University	Australia	51	671	15	59.67
20	Beijing Institute of Technology	China	51	778	17	155.6

Source: Authors own study

^aTP: Total papers, TC: Total citations, H: h-index, C/P: citations per paper

productive universities with respect to the topic being analysed. The North China Electric Power University is at the top of the list followed by two other Chinese universities, the Chinese Academy of Sciences and the Tsinghua University, positioned, respectively, in second and fourth place, divided by the University of California, Berkeley, in third position. Sussex University, UK is in fifth place, while other European universities are present, the National Technical University of Athens in sixth, and Utrecht University in seventh.

Table 4 provides information also on influence. For example, the eighth classified by productivity, the University of Malaya with a TP equal to 70, in reality has a TC influence level lower only than the second classified and higher also to the first of the list. It also has a number of citations per year C/P higher than all of the institutions that precede it in the ranking, with the exception of the first in the list.

Also, with reference to the results listed in Table 4, a further analysis was carried out which aimed at investigating how much the results are influenced by the timespan of the analysis and understanding future trends. Considering the timespan in three ranges, i.e. 1990–2001, 2002–2013 and 2014–2019, the leadership in RCP of Chinese universities is confirmed in the last period, followed by the UK and the USA.

Table 5 Most productive and influential countries in RCP

R	Country	TP	TC	H	C/P	Starting year
1	USA	1826	37,431	81	1300.07	1990
2	Peoples R China	1348	23,659	66	1243.53	2000
3	England	936	21,525	73	860.6	1994
4	Germany	907	16,161	61	769.57	1998
5	Italy	544	9062	44	453.1	1999
6	Spain	509	8302	43	415.1	1999
7	Australia	502	8549	45	305.32	1991
8	Netherlands	444	8744	46	323.85	1992
9	Turkey	405	11,327	49	514.86	1997
10	Canada	387	7712	42	366.72	1998
11	India	385	7934	43	345.78	1996
12	Sweden	312	8607	47	307.39	1991
13	France	290	5053	35	245.57	1998
14	Malaysia	288	9979	53	434.09	1996
15	Switzerland	274	5569	41	397.79	2005
16	Japan	247	3544	31	161.09	1997
17	South Korea	241	2955	29	295.5	2009
18	Greece	240	5203	36	192.7	1992
19	Denmark	211	6258	43	272.26	1996
20	Austria	210	5859	42	234.36	1994

TP: Total papers, TC: Total citations, H: h-index, C/P: citations per paper

Source: Authors own study

Moving on to ascertain which are the more productive countries for papers on the subject of RCP, question RQ3, analyses have been developed, the obtained results are presented in Table 5.

Also in this case, to have indications on the future trend of the statistics, the results were firstly analysed in absolute terms and then divided according to the three previously defined time ranges. The leadership of the United States is confirmed, followed by the People's Republic of China and by the UK. Among other aspects to be mentioned, interesting is the strong European component in the top positions of the list. In particular, in the first eight positions there are five EU countries, the UK in third position, followed by Germany, Italy, Spain and the Netherlands. The prominence of the USA and the People's Republic of China is confirmed.

Figure 3 graphically shows a comparison between countries and confirms US supremacy on this research topic. In the same figure, the results obtained with respect to the number of citations are presented considering different hypotheses of citation thresholds (≥ 50 , ≥ 75 , ≥ 100).

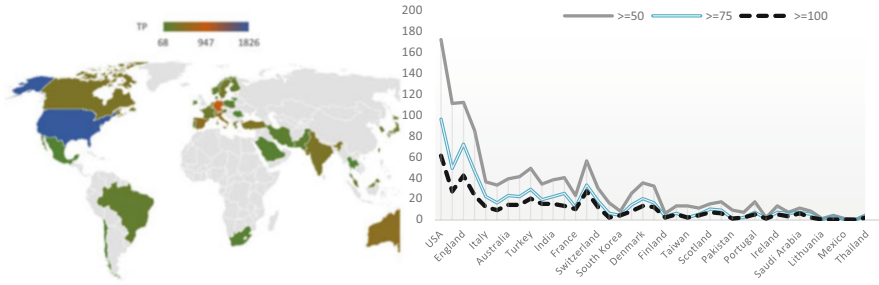


Fig. 3 Comparison between countries (on the left). Results of an analysis of the number of citations (on the right). (Source: Authors own study (as described in the section n. 2 all data were extracted from Web of Science))

4 Conclusion

The paper has illustrated a review of the topic of renewable climate policies over a period of almost thirty years, that is from 1990 until November 2019, according to the keywords “renewable energy” OR “renewable energies” OR “green energy” OR “green energies” OR “clean energy” OR “clean energies” OR “cleaner energy” OR “cleaner energies” And “climate policy” or “climate policies” or “green policy” or “green policies” or “policy” or “policies”. 10,364 articles in the Web of Science were analysed to answer three main research questions, namely “What is the annual trend of publications and which are the most cited?”, “What about the leading journals and most recognized authors that publish the biggest number of papers on analyzed issues?”, “Which are the most involved institutions of the authors and related countries?”. To respond to these RQs, the bibliometric methodological approach was adopted, obtaining results in tabular and graphic form. The indicators used in the study were bibliographic coupling, co-citation, co-authorship, co-occurrence of keywords, citation. The results obtained are quite significant and made it possible to respond to the RQs both in absolute and relative terms by analysing how the elements being assessed have undergone changes over time. The study showed that the interest in RCPs has grown strongly over the years: at least 45% of the publications on the subject, in the 20 leading journals, relate to the last five years, namely 2014–2019. On the other hand, issues relating to RCP did not attract particular interest in the decade 1990–2001, in fact the number of publications in this period did not exceed 10%. The first two papers on the topic Renewable climate policies were published in 1990, since that year the number of publications on the topic has been growing steadily, even if until 2005, the annual number of papers stood at below 100 units. Instead, from 2007 to 2011, there was constant growth thus reaching 494 papers in 2011. In 2015, almost a thousand papers were published on the subject and this number continued to grow also in the next years. 27% of selected articles in this study have been cited at least twenty times, and more than 43% of papers have registered a number of citations at least equal to 10. The journal leader is

Energy Policy with 1510 publications and 45,774 citations, followed by Renewable & Sustainable Energy Reviews with 1247 publications and 40,561 citations.

The present bibliometric analysis has also identified global research trends identifying the leading countries and institutions in the sector. The USA and the People's Republic of China followed by some European nations including the UK have occupied the higher positions. As concerns institutions instead, the North China Electric Power University is at the top of the list followed by two other Chinese universities, the Chinese Academy of Sciences and the Tsinghua University, positioned, respectively, in second and fourth place, divided by the University of California, Berkeley, in third position. Sussex University, UK is in fifth place, followed by other European universities, the National Technical University of Athens in sixth, and Utrecht University in seventh.

The leadership position of the USA and part of the EU may be due to economic and social reasons but it is certainly strongly influenced by the important environmental and climatic policies conducted over the years by the two communities, both in terms of obligations and incentives. In fact, the topic chosen for analysis is rather delicate since the renewable climate policies are considered strategic issues by every country for the achievement of sustainable development. For this there are many external reasons that influence the direction of research on the renewable climate policy theme. In any case, it is believed that the study presented in this paper can be useful not only to researchers from the whole scientific community to understand the evolution and directions on renewable climate policies but also to politicians and stakeholders working in the field. This is also valid because the research analyses the topic from multiple points of view. This assumption is of significant importance. In fact, the analysis of the state of the art revealed that RCP is now a particularly relevant issue since the issues inherent to renewables represent a driving force for economic recovery. On the other hand, however, the literature has revealed the enormous complexity of the topic for the issues and actors involved as well as the lack of consideration of renewable climate policies as a whole. Therefore, the research carried out proposes an overview of RCP, in order to represent an important element of knowledge to guide future political choices.

Authors' Contributions F.C.: Supervision, Conceptualization; Formal analysis; Methodology; Project Administration.

M.R.: Supervision, Conceptualization; Formal analysis; Methodology; Project Administration, Visualization; Writing—review & editing; Corresponding author.

V.A.: Formal Analysis; Investigation; Software, Visualization.

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The Potential Use of Blockchain Technology for Data Collection and Measurement of Trade in Services



Selahattin Armagan Vurdu

Abstract The unchangeable, decentralized structure of blockchain makes it a good candidate for potential use in international trade. Services sectors have become a crucial part of the world economy and international trade. Data collection methods used for trade in services may lead to various outcomes such as trade data not being able to be collected accurately and reported timely. If services statistics are not achieved correctly and timely, there is a risk that governments do not have the sufficient data to make correct policy decisions. This paper identifies the reasons that favor the potential application of blockchain technology for services trade data collection and measurement. It is proposed that a database powered by private blockchain acting as a single source of truth implemented for service provider companies to use while completing a transaction or issuing an invoice might be a practical solution for this problem. Arguably, use of blockchain in this field can lead to an instant access to the transactions made in the services sectors. It can also be suggested that, with the help of such a system, the services transactions can be tracked in categories which is difficult to achieve with current data collection methods and not possible in many cases.

Keywords International trade · Trade in service · Blockchain · Data collection

1 Introduction

Since blockchain technology first emerged, potential applications of blockchain in various areas have been widely studied. International trade is one of the fields where blockchain is expected to offer solutions to ongoing problems especially regarding trade finance, cross-border transactions, and supply chain management. The unalterable, decentralized, and distributed structure of blockchain and the benefits it provides such as reducing cost, digitization of goods and services, reducing fraud

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risks make it an interesting choice for uses in international trade (Ganne, 2018; McDaniels & Norberg, 2019).

Over the last two decades, international trade in services has been growing at higher rates compared to international trades in goods. Dramatic rise in the exports of services and their increasing share in gross domestic product (GDP) growth is a clear indication that services have become very important components of economic growth (Mishra et al., 2011). Besides being traded as a product, services are also essential inputs for the manufacturing process of goods. Since they play a key role for the overall economy of a country, it is crucial for governments to collect accurate and timely data about trade in services for the purpose of carrying out detailed analysis of the economic situation at a given time which would help making strategic decisions about the economy.

Because of its abstract characteristics, data collection and measurement of trade in services present many difficulties. Services are fundamentally more difficult to identify. Unlike trade in goods, trade in services do not go through the customs when they are exported or imported. Quality of the data collected depends on a combination of data sources including surveys, estimation techniques, information from business accounting or bookkeeping systems (United Nations Economic and Social Affairs Department (UN DESA), 2012).

Being a secure decentralized database, blockchain has potential to provide an effective data collection process. Accordingly, this paper focuses on the possibility of using blockchain for accurate and timely data collection and measurement of trade in services. It aims to identify the benefits and challenges of using blockchain technology in the related field. In addition, future research area suggestions are provided. Regarding the measurement of trade in services, most studies have focused on improving conventional approaches. This paper outlines a new approach to the measurement of trade in services with use of blockchain to increase the data quality and traceability. Use of blockchains in international trade has been widely studied, but research tended to focus on use of blockchain in international trade areas such as trade finance, supply chain management, logistics, insurance, and digitization of trade documents rather than use of blockchain for the measurement of trade in services. Previous studies have mainly focused on the use of blockchain technology for recording financial transactions as a part of the accounting process. Faccia and Mosteanu (2019) studied the blockchain applications for accounting and bookkeeping. Guan et al. (2018) proposed a framework for big data collection and trade system based on blockchain. Király (2019) investigated application possibilities of blockchain in accounting. Bonsón and Bednárová (2019) provided general insights into the extent to which blockchain technology might transform the accounting system. Parikh (2018) suggested the use of blockchain for enterprise resource planning (ERP). Supriadi (2020) studied the potential of blockchain technology for accounting and auditing. However, these studies do not address the data collection and measurement of services trade data for the purpose of government decision making. Literature search did not reveal any prior studies on the use of blockchain for measurement of trade in services. To fill this literature gap, this paper identifies the potential use of blockchain for collecting and measuring services trade data.

The paper is organized as follows. Section 2 provides an overview on blockchain, distributed ledger technology (DLT). In Sect. 3, information about application areas of blockchains are given. Section 4 outlines the international trade in services emphasizing its importance in the global economy and in Sect. 4.1, shortcomings of the data collection and measurement methods of trade in services are explained. In Sect. 4.2, potential use of blockchain technology for data collection and measurement of trade in services is studied regarding the advantages and disadvantages. Section 5 presents the conclusion.

2 Blockchain and Distributed Ledger Technology

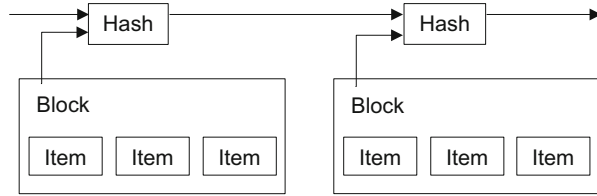
The most popular product built on blockchain is Bitcoin, a technology first emerged within the cryptography community and implemented as a peer-to-peer electronic cash system in 2008 (Nakamoto, 2008). It allows online payments thanks to providing a solution to the double-spending problem by adding digitally signed transactions into an ongoing chain of timestamp blocks through a concept called “proof-of-work” consensus mechanism. This forms a record of data that cannot be changed without controlling the majority of computer power in use. The decision-making mechanism of the system which relies on the majority of computer power in the network, eliminates the need for a trusted third party which makes it possible to make online payments without using a financial institution.

Compared to the traditional databases managed by a central entity, blockchains which are decentralized and distributed databases where the transactions are recorded via cryptographic techniques in an irreversible way, rely on a peer-to-peer network without any central entity control. Besides that, digital keys necessary to commit a transaction can be kept anonymous which makes it possible to provide some level of privacy in the system. Therefore, data about the transaction amount is shared throughout the network but data about the parties of the transaction is not revealed.

Blockchain is only one of the possible technologies to implement a distributed ledger. A distributed ledger (Underwood, 2016) is a decentralized database where data is stored and maintained by many participants without a need for the presence of a trusted party. In general, the participants in the system have equal rights and control over the database, and communicate directly between each other to make a decision on whether new data is added to the database. Since the system implements an algorithm for participants to reach a consensus on the decision about new data, there is no need for a trusted centralized party.

A blockchain is a type of distributed ledger technology and groups transactions as blocks. Because these blocks are linked to each other through a cryptographic signature, each block is repeatedly dependent on the previous block in the chain as shown in Fig. 1. This dependency would prevent any attempt to change the data inside a block (Maesa & Mori, 2020). Once new data is recorded to a blockchain, it gets time stamped and becomes hard to change. Therefore, blockchain presents a

Fig. 1 Chain of blocks.
(Source: Nakamoto (2008))



shared trusted ledger which all participants can read and monitor at any time (Ganne, 2018). There are many different types of blockchain implementation according to the purpose of the applications. Blockchains are mainly categorized as public, private, and hybrid based on their functioning and permission level (Belu, 2019; Biswas & Gupta, 2019). Any user can participate in a public blockchain network, issue a transaction, and read the data without requiring any permission. Public blockchains are designed to avoid any need for a third party. In private blockchains, a central authority controls the permissions for the read and write process. Since permissions in a private blockchain are limited, users have restricted access and functions in the system. Private blockchains are the most preferred type of blockchains implemented by business and governments. Since private blockchains have more control over the participants, they usually use less secure consensus mechanisms which in return allow them to increase efficiency and scalability of the system. A hybrid blockchain, depending on which business activities are required to be public or private, can possess properties of both public and private blockchains (Kimani et al., 2020).

Bitcoin, the most popular application of blockchain, was implemented as a permissionless public blockchain. Bitcoin blockchain (Bitcoin.org, 2021) is a public ledger where transactions are recorded and confirmed in historical order. Transactions are verified by Bitcoin nodes in the blockchain and “double-spending” is prevented by ensuring spendable balance in Bitcoin wallets are actually owned by the spender. Cryptography preserves the order of the blocks in the blockchain via mathematical proofs which makes the system highly secure. Therefore, it ensures that spenders can only spend the funds which they own in their “wallets” and this helps stop corruption. Wallets can only be used when the correct password is provided thanks to the encryption provided through cryptographic techniques.

Double spending is a situation where a user tries to spend the same funds in two different transactions at the same time and can be regarded as an attack to the system. The decision on which transaction will be accepted as valid and confirmed, is made through a process called Bitcoin “mining” creating a consensus on the blockchain network. Valid transactions are grouped into blocks which are then added to the blockchain as a record. A new block is added to the blockchain through mining every 10 minutes on average. Each block in the blockchain is linked to a previous block through a “hash” value created by a cryptographic hash function. Similarly every transaction in a block in the blockchain is linked to the previous transactions through its own hash value. A cryptographic hash function takes data as input and shrinks it down into a smaller hash value. It is a one-way function which means it is

practically not possible to achieve input data using output hash value without trying all possible inputs to see if they produce a matching output.

A transaction is a value transfer from a Bitcoin wallet to another. Bitcoin wallets, which are mostly software programs, contain a pair of data called public address and private key. A private key is used to sign transactions digitally. When the transaction is signed with the private key then it can be seen by all network participants if the signature matches with the Bitcoins being spent. This digital sign provides a mathematical proof that the owner of the wallet possesses the private key without actually revealing the private key. All digitally signed transactions are then sent to the network memory pool and wait there to get confirmed through mining. Mining is a process where mathematical calculations are carried out by computers to confirm transactions in the Bitcoin network. This process also increases the level of security in the system. When a transaction is confirmed, this means that the network has processed the transaction and there is a very low probability for the transaction to get invalidated.

A “public address” which is created from a public key, indicates the source of destination of a payment to receive Bitcoins. Bitcoin wallet shows the total balance of all bitcoins it controls and allows payments to a specific bitcoin address.

“Proof of work” consensus algorithm, which is used to validate transactions and allow the system to come to consensus, is the solution for selection of a random miner node in proportion to computer power resource. Proof of work uses mathematical problems called “hash puzzles” for miners to solve using computer power by trial and error. The process of repeatedly trying and solving these hash puzzles is known as mining and the users participating in this process are called miners. Proof-of-work process should be completed successfully by the miners for a block to be added to the blockchain. The miner node that solves the hash puzzle gets to create the block including transactions and receives a payment of Bitcoin called block reward in exchange for the service of creating a block on the blockchain. There is also a second payment given to the miner as a transaction fee which is given for each transaction in the block. These two incentives support honest behavior of the miners in the system. The hash puzzle difficulty is designed to adjust itself every 2016 blocks so that new block generation time is consistently 10 minutes, on average. The selection of the miner which will add the next block to the blockchain, becomes a random procedure, because the very low probability of solving the hash puzzle first makes it unpredictable to determine which miner will generate the next block. Proof-of-work consensus mechanism basically prevents double spending and guards the system in terms of data security. But if 51% or more of the mining power in the network is controlled by an attacker, then there is a higher probability that an invalid block containing invalid transactions can be added to the blockchain and destroy the confidence in the system (Narayanan et al., 2016).

Bitcoin network is thought to be decentralized because of its “peer-to-peer” transaction system and permissionless blockchain nature where users do not require a permission to participate in the system. Bitcoin system design allows each user to make payment directly to another, therefore no trusted third party such as a bank or a financial institution is necessary. The dynamics of blockchains change dramatically

based on the different consensus mechanism or permission level employed. There are alternative consensus algorithms other than “Proof of Work” being used in blockchains. For instance, “Proof of Stake” consensus mechanism allows a random selection process taking the number of tokens held by users into account. On a “permissionless blockchain,” anyone can participate in the consensus method, implement a transaction, and read the information on the blockchain without needing permission. On a “permissioned blockchain,” permission is required to participate in the network.

3 Main Benefits and Potential Applications of Blockchains and DLT

Blockchain technology is mainly associated with cryptocurrencies. But there are many other areas where blockchain can offer substantial benefit by providing a transparent, secure, and unchangeable database (Biswas & Gupta, 2019). International trade especially is one of the main areas where blockchain can help with effective solutions. This is the reason many government bodies and private companies have been investing in using blockchain technology for trade finance, supply chain management, customs processes, transportation, insurance, distribution, intellectual property (IP), and government procurement applications for the last few years (Ganne, 2018; Patel & Ganne, 2020).

Studies have been conducted to evaluate the use of blockchain in operations of government bodies (Olmes, 2016). Blockchain has been observed as an attractive tool to improve the efficiency of trade operations and make paperless trade possible. Financial services have been the main focus area of the first private blockchain applications (Ganne, 2018). Data added to the blockchain is instantly distributed and visible to all participants in the network. This ensures immediate transparency of the system. McDaniels and Norberg (2019) proposed that blockchain technology could increase transparency across the trade finance process, which would reduce risk and, in turn, expand the supply of credit available.

Hassani et al. (2018) studied the effects of blockchain for the banking industry and capital market. It is assumed that the insurance industry is another field where blockchain technology can have significant impact. Brophy (2019) studied the employment of Blockchain in the insurance industry and predicted that this technology will disrupt insurance services. The use of smart contracts in blockchain can help reduce administrative procedures, costs and manage international insurance contracts. Smart contract, as a software program, carries out the execution of the terms of an agreement when predetermined conditions are fulfilled (Ganne, 2018). With smart contracts in use, the need for trusted intermediaries between transacting parties is minimized. Because of automatized processes and payments efficiency is enhanced. Smart contracts execute exactly as they are programmed, accordingly, they reduce the risk of fraud, third-party interference, or delay in transactions.

Christidis and Devetsikiotis (2016) studied transactions through smart contracts deployed in blockchains and concluded that they could cause significant transformation across several industries.

Faccia and Mosteanu (2019) suggested that use of blockchain in accounting and bookkeeping would be helpful to reduce the risk of error and fraud mechanism. Norberg (2019) proposed that integrating blockchain technology into the customs process offers potential to allow the simplification and modernization of customs procedures. Blockchain technology in customs and border-crossing procedures has potential to tackle security concerns thanks to the unalterable records on every aspect of transaction (Lehmacher & McWaters, 2017). Comprehensive surveys have been conducted on blockchain applications in supply chains management and logistics to evaluate the effects of digitalization in this field to reduce process delays (Civelek & Ozalp, 2018; Yang, 2019). Opportunities for using various blockchain technologies for the purpose of tracking and tracing trade goods location and condition have been studied. Jain et al. (2018) proposed a decentralized system of digital storage of documents using blockchain to prevent fraud and tamper attempts compared to the traditional database storage options. When data is added to the blockchain, it is shared with all participants in the network. This makes it nearly impossible to modify data and easy to track modification attempts.

Blockchain has been identified as a possible future area of application to modernize tax administration systems (Owens, 2017; Risius & Spohrer, 2017). Peters and Panayi (2016) proposed that blockchain has a great potential for applications related to international trade financing. Maesa and Mori (2020) studied the use of blockchain technology to implement a system for the protection of intellectual property of digital contents in conjunction with ownership proof. One of the main aims of using blockchain is to ensure data security and reliability of data sharing. Liu et al. (2019) suggested that a blockchain system provides a higher level of data security and stronger resistance to attacks than a traditional database does.

All these applications have direct and indirect relation with international trade and improvements in these areas add positive values to international trade mainly by decreasing the complexity, reducing cost in trade finance and supply chains, digitization of products (Ganne, 2018), and reducing fraud risks.

Despite the many benefits of blockchain technology, their use also poses some significant challenges compared to the traditional databases (McKinsey Digital, 2018). Main challenges of applying blockchain technology for a project lie in scalability in terms of time needed for processing and validating transactions, interoperability between different blockchains, high sustainability costs, legal and regulatory uncertainties, privacy risks, cyber attack risks, usages in underground economy (Biswas & Gupta, 2019; Juma et al., 2019; Knirsch et al., 2019). Even though blockchain reduces the probability for the original information to be modified significantly, it does not prevent false information from being recorded into the database (Golosova & Romanovs, 2018). The blockchain technology requires a large amount of electrical energy and computer processing capacity in order to function (Ganne, 2018; Golosova & Romanovs, 2018). This can present a limitation for the use of blockchain as the cost of operation may outweigh the benefits.

Storing the entire data on the blockchain may cause privacy concerns for some applications since all data in the blockchain is visible to all users in the network (Maesa & Mori, 2020). The incentives for the participants to join a blockchain application may not be sufficient. As a result, this poses a risk to decentralized operation of this technology (Juma et al., 2019). The incentives to participate in the network as a node to contribute to the mining process in a blockchain with proof-of-work consensus mechanism are supplied with mining rewards and transaction fees awarded to miners who add the blocks of transactions to the blockchain. If these rewards are not sufficient, then participants may decide to stop functioning as a node (Golosova & Romanovs, 2018). Blockchain being only feasible in low transaction volumes is also a challenge which needs a solution (Vinod, 2020).

These challenges suggest that it will take time for blockchains to become widely applied. Continuous experimentation and development is needed for blockchain technology to meet the expectations successfully (Yang, 2019). Therefore, it should be carefully considered whether the use of blockchain technology would be useful and feasible, and which type of blockchain is the most suitable for the project (Pedersen et al., 2019). Patel and Ganne (2020) carried out a comprehensive study on currently used blockchain and DLT applications in international trade.

4 International Trade in Services

While historically being produced mainly for domestic consumption, services gradually become more international. Considering the limits of the manufacturing industry to push global growth, there has been a growing interest in services. Services do not face many of the trade barriers which goods exports do. Services are not just inputs for goods manufacturing anymore, they are also final products (Mishra et al., 2011). Today, services have become a crucial part of the global economy and international trade. In value-added terms, almost half of the world trade is services (World Trade Organization (WTO), 2021). In terms of international trade in services, total world services exports reached US\$ 6.1 trillion in 2019 having a share of around 25% in total world exports including goods (United Nations Development Statistics and Information Branch, 2021).

During the 2008 global financial crisis services trade proved to be more durable than merchandise trade (Borchert & Mattoo, 2010) thanks to its low sensitivity to demand shocks and lower dependence on supply finance. In 2009, world trade in goods fell by 22.3% compared to the previous year while world trade in services fell by 10.5% during the same period. Similarly during the economic slowdown in 2016, world trade in goods fell by 12.9% while world trade in services fell by only 4.6%. On the other hand, COVID-19 pandemic which started spreading swiftly around the world in late 2019, had a dramatic negative impact on commercial services trade in 2020. Pandemic caused lockdowns in countries across the world slowing down economic activity both at domestic and international level. Social distancing and similar contagion related measures taken by governments were especially

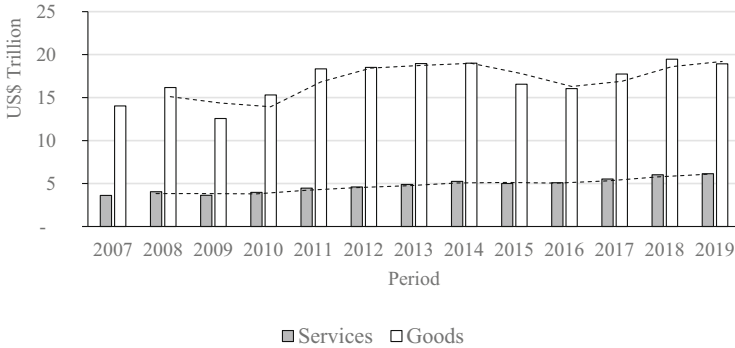


Fig. 2 Trade volume for world trade in goods and services. (Source: WTO (2021))

unfavorable for services which require physical proximity between consumers and service suppliers in situations where these services cannot be provided on the Internet. These include business travel and tourism, hotel and restaurant services, manufacturing maintenance and repair services, sea transport services and construction services. Health tourism and international education services have also been adversely affected due to travel restrictions or bans, even though efforts to deliver education services online provide some mitigation. Effects of the pandemic on communications, information, insurance, financial, audio-visual, and other business services exports are likely to be more limited as most of these services can still be delivered online. It can be estimated that nearly half of international trade in services have been drastically impacted by COVID-19 (Shinghal, 2020).

International trade in commercial services increased by 8.4% in 2018 and by 2.1% in 2019 as shown in Fig. 2. World merchandise trade increased by 2.9% in 2018 and declined by 0.1% in 2019 in volume terms. Services classified as “other commercial services” including telecommunications and financial services lead international commercial services trade with an amount of US\$ 3.3 trillion. Travel and transport services together amount to US\$ 2.5 trillion (WTO, 2020). In view of their growing importance, measuring service trade accurately and timely is of great importance for governments in terms of making informed policy and resource allocation choices.

4.1 Measuring Trade in Services

The previous research on measuring trade in services is limited. Lipsey (2006) studied measuring international trade in services underlining the problem of measurement of intangible corporate assets to foreign affiliates and suggested assigning intangible assets to countries of ownership as a possible solution. Feenstra et al. (2010) reported that services export and import price data are mostly unavailable. It is suggested that modest funding increases would result in more useful data for

research and policy analysis. Chang et al. (1999) carried out an extensive study on the modes of supply and statistics on trade in services. Mann (2019) explained about a new method to collect information in which companies report the percentage of their services in one mode. Magdeleine and Maurer (2008) discussed measuring General Agreement on Trade in Services (GATS) mode 4 presence of natural persons trade flow. Chiquiar et al. (2019) concluded that there is a lack of high-quality data on services trade flows.

Measurement of trade in services is more difficult compared to the measurement of trade in goods. This is mainly because services are abstract concepts rather than physical attributes. In terms of international trade, services do not cross the customs between two countries with necessary information such as an international code, description, quantity, origin, and destination for the services provided. This is why services exports and imports data depend on information gathered and calculated from the data such as reports from businesses or individuals, surveys, and estimation techniques (UN DESA, 2012).

Data on services can be collected through various methods such as enterprise survey, international merchandise trade statistics (IMTS), and an international transactions reporting system (ITRS), estimations using data models, credit/debit card expenses. Countries use a combination of different methods to collect and publish service trade statistics. IMTS relies mainly on customs records. These statistics reflect the physical movement of goods across borders. ITRS is a data collection system which obtains data from banks and companies.

According to the General Agreement on Trade in Services (GATS), trade in services are categorized into four modes of supply depending on the location of the supplier and the consumer (WTO, 2020). Cross-border supply (mode 1) covers cases where both the supplier and the consumer stay in their own territories, consumption abroad (mode 2) covers cases where consumers are outside their home territory to consume services, commercial presence (mode 3) covers cases where service suppliers are in the territory of the consumers to provide their services through establishing affiliates, and presence of natural persons (mode 4) is related with natural persons providing services in the territory of the consumers. An economy's balance of payments can be used to derive estimates covering trade in commercial services for modes 1, 2, and 4. Most of the data on services supplied through foreign affiliates that is required to estimate the size of mode 3 is not included in the balance of payments. Foreign affiliates statistics (FATS) is a framework related to affiliates in which foreign investors own more than 50% of the voting power or equity, and is used for collecting mode 3 data.

Exports and imports of commercial services are included in balance of payments statistics according to the sixth edition of the International Monetary Fund Balance of Payments and International Investment Position Manual (BPM6) (International Monetary Fund (IMF), 2014) and 2010 edition of the Manual on Statistics of International Trade in Services.

In the sixth edition of the Balance of Payments Manual, the current account is subdivided into goods, services, primary income, and secondary income.

Table 1 Standard services items as contained in BPM6

Category
1. Manufacturing services on physical inputs owned by others
2. Maintenance and repair services
3. Transport
4. Travel
5. Construction
6. Insurance and pension services
7. Financial services
8. Charges for the use of intellectual property
9. Telecommunications, computer, and information services
10. Other business services
11. Personal, cultural, and recreational services
12. Government goods and services

Source: IMF (2014)

Commercial services include all services categories except government goods and services. The BPM6 contains 12 standard services as listed in Table 1.

Even though most of the countries in the world use the BPM6 for the records of services in their Balance of Payments, some countries do not report all services categories. Therefore, world and regional estimates of services trade may be inaccurate.

Although there has been improvement in services trade statistics in recent years, there are still some limitations regarding trade data (World Trade Organization (WTO), 2020). The services include a vast range of intangible and heterogeneous activities and products which are not easy to cover within a simple definition. Because of their intangible nature, services are mostly produced and consumed at the same time and require suppliers and consumers to be at the same location physically. Not all categories of services data are collected by all countries. Many developing countries do not have the sufficient resources to develop accurate statistics at detailed levels and to compile trade in services statistics on the basis of individual partner countries. Data collection for certain services can be challenging. Classifying some types of service items can be too complicated. Different data sources and estimation approaches lead to diverse results among the countries, as a result, this causes significant differences in terms of reported trade flows by origin and destination. ITRS, IMTS, and enterprise surveys are the main sources for the collection of services statistics. A great deal of countries operate a combination of these sources to collect services statistics. But these sources have some form of limitations. It may be difficult to specify the category of services transactions by using ITRS records. Customs-based IMTS is only a viable option to collect data on certain services categories such as transport. Quality of statistics obtained with surveys depends heavily on the samples, questionnaires, and the techniques used, causing the results to differ widely. Statistics on trade in services which lack reliability in many cases, still need significant improvements.

4.2 Use of Blockchain for Data Collection and Measurement of Trade in Services

Data collection and measurement process for trade in services involves government bodies and companies which provide services to domestic and international markets. Blockchain is a good choice for multiple parties interacting with each other through a decentralized database system. This makes blockchain suitable for this use case. Through a computer program built for service provider companies to use for inputting required information such as category/subcategory, amount, domestic/international market of the services provided into a database powered by blockchain while completing a transaction or issuing an invoice. Rather than being implemented as a stand-alone program, the aforementioned computer program can be integrated with accounting or ERP computer programs which companies already use. When transactions are recorded into the accounting and ERP computer programs during manual or automated bookkeeping processes, related data can be automatically recorded into the blockchain database with the help of the blockchain-based computer program. The category for the services listed in the computer program for companies to choose can be fetched from the Services Sectoral Classification List published by WTO. This would further help the government bodies measure trade in services in line with international standards. Government bodies have accurate real-time access to the services trade data in the system with no limitation. On the other hand, companies can only access their own trade data. System would make it impossible for a company to see trade secrets of another company. This system would not only make it possible to obtain instant results about trade in services, it would also present categories and subcategories of the services in transactional level which is difficult to achieve with current data collection methods, if not impossible. Using a shared blockchain-based database for keeping trade in services records would prevent data inconsistency. The tamper-resistant character of blockchains provide the trust for validity of the stored data. It is also helpful for auditing purposes, maintaining the history of all transactions in the system. As a pilot project, the system can be implemented for limited companies at first to test the viability of executing the project at full scale. The main benefit of using a blockchain-based computer program instead of a database with central administrator privileges is the immutability provided by the blockchain system. In the latter, database administrators can modify the data whereas in the former, data cannot be modified without a consensus. Since companies and government bodies would have no option to change the data once they are recorded into the system, there should also be a protocol to follow in case false records are entered into the system mistakenly.

As described in Sect. 2, the main types of blockchains in use are public, private, and hybrid. The choice for a type of blockchain usually depends on whether a controlling mechanism is needed for accessing and participating in the network. Private blockchains allow predetermined participants to the network. This type of blockchain is chosen when there is a need for deciding which users can participate in the network and initiate a transaction. Therefore, private blockchains are more

suitable for data collection and measurements of trade in services. Another advantage of using private blockchains is that they do not require a computationally intensive consensus mechanism compared to public blockchains.

Even though there are indications that employing a blockchain for data collection and measurement of trade in services provide many benefits, there are also challenges such as scalability, complexity, costs, and privacy which should be taken into consideration before starting a blockchain project. It is important to test blockchain projects and traditional database systems for similar use cases in terms of performance to make a comparison between them.

5 Conclusion

The number of commercial blockchain and DLT projects applied in international trade increases every year. “Infosys Finacle,” “Komgo,” “People’s Bank of China Blockchain Trade Finance Platform,” “Skuchain,” “TradeFinex,” and “We.trade” are some of the leading blockchain projects active in trade financing. These projects support complete set of business functions such as open account, letters of credit, bank guarantees, bill collections, consumer-to-consumer (C2C) and business-to-business (B2B) transactions, and invoice financing. “Calista” and “Tradelens” are live and running blockchain projects active in shipping, logistics, and supply chain fields. They provide a platform for connecting the whole supply chain ecosystem. “CamelONE,” “Cargodocs,” “CargoX,” “DltLegders,” “Ecom Asia,” “Edox Online,” “TradeWindow,” “VAKT,” and “Wave” are examples of commercial blockchains functioning in digitization of trade documents and contracts. These projects mainly digitalize the entire trade process. “Fasttrack Trade” is a platform that automates simple and secure workflows of business functions related to financing. TradeCloud is a web-based portal using DLT where producers, consumers, and traders negotiate contracts and make deals.

In this paper, it is aimed to identify whether adopting a blockchain solution for accurate and timely data collection and measurements of trade in services is suitable. Blockchain technology is examined in terms of benefits and challenges. In a blockchain network data flows between peers and therefore it is stored in multiple locations. Blockchain maintains a common record of transactions. It is more difficult for cyberattacks to be successful and this makes blockchain more secure in comparison to a conventional database where data flows between a central authority like a server and clients. It can also be interpreted that increasing use of digital currencies in the economy as an alternative to conventional currencies has a positive effect on blockchain application. Governments have been looking into the possibility of digital currencies and some already started real life trials.

It is observed that measurement of trade in services is characteristically more difficult than measurement of trade in goods. Current sources of data collection lead to inaccurate, inconsistent, and delayed results. Having accurate and timely services trade data would support governments in making strategic decisions about the

economy. Therefore, new approaches are needed to tackle this problem to improve the accuracy and quality of data collection and measurements of trade in services in a timely manner. The previous research on measuring trade in services is limited. It is proposed that use of blockchain in this field can lead to an instant access to the transactions made in the services sector, as a result, can contribute significantly to the data collection and measurement of trade in services in terms of time and accuracy.

In the future, a pilot blockchain project for this use case can be implemented, tested, and compared to the traditional database systems in terms of scalability, complexity, costs such as electrical energy and transaction fees and privacy to evaluate whether benefits outweigh the shortcomings. Future research could consist of new approaches for collecting data about imported trade in services to extend this study.

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Part VIII
Eurasian Economic Perspectives:
Regional Studies

The Design of Fiscal Rules in the European Monetary Union



Theodore Chatziapostolou and Nikolina Kosteletou

Abstract In recent years, the financial crises of 2007–2008 and the pandemic crises brought forth the issue of government debt, which again has drawn the attention of economists. The issue of debt becomes more complicated when the analysis concerns member states of a monetary union. In the case of EMU, though the need for fiscal cooperation is essential for the stability of the union, it is quite complex. Recently, fiscal rules have been criticized for been too strict and quite recessionary. This paper aims to shed light on these issues by analyzing fiscal design in monetary unions and assessing the framework of fiscal cooperation in the European Monetary Union. The first contribution of the paper is the comparative analysis of the alternative ways of fiscal cooperation in a monetary union (we discuss especially the case of the European Monetary Union). Accordingly, the second contribution of the paper is to critically examine the viability of the new (i.e., after financial crisis) fiscal framework. This analysis will reveal that the revised fiscal rules attempted to strengthen the pre-existing fiscal framework instead of, fundamentally, changing it. Thus, we conclude that procyclicality, high bureaucracy, and rigidities remained as the basic characteristics of the fiscal cooperation of EMU.

Keywords Fiscal policy · European Monetary Union · debt · Fiscal cooperation · Fiscal design · Pandemic crisis

1 Introduction

The pandemic crisis triggered a deep global economic recession, and the shadow of debt has returned. In the European Monetary Union, the activation of the general escape clause of the Stability and Growth Pact allowed member states to undertake the necessary fiscal measures to support their economies. This expansionary economic policy triggered a surge in debt levels, which, in some eurozone member

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states, increased to levels well above 100%. The heterogeneous preferences over fiscal policy have led to large differences in fiscal positions across the EMU countries, which questioned the ruled-based fiscal framework of EMU, putting some member states in liquidity and solvency risk (Ferguson & Kane, 2020). Under this development, there has been a wide agreement that both fiscal rules and fiscal institutional framework need to be re-designed (Buti et al., 2020; Della Posta & Tamborini, 2021) because, under the present incomplete economic governance, any economic measure taken by European Union will fail (Howarth & Quaglia, 2021). Some studies focus on the asymmetry between its decentralized fiscal policy and the centralized monetary policy (e.g., Verdun, 1996; Howarth & Verdun, 2020), while others focus on the strict detailed policy prescriptions (Hodson, 2020) while others emphasize to the intervention of the European Commission which, under European Semester, has more authority to influence national policies (Bauer & Bekker, 2014; Savage & Verdun, 2016). But previous studies criticized fiscal policy focusing on a specific aspect of fiscal framework of the EMU. In this paper, we wish to contribute to this literature departing in two ways. First, we provide a comparative theoretical analysis of all three alternative approaches for fiscal monitoring, namely, imposition of restrictive numerical fiscal rules, construction of procedural arrangements (i.e., assigning specific tasks to institutions such as (common) central bank and/or fiscal institutions) and finally, leaving stabilization to the corrective mechanism of the free market. Second, we attempt to show that the new fiscal framework (designed after the financial crises) was simply reproducing the foundation of austerity and procyclicality, which characterized the Stability and Growth Pact, instead of establishing a new paradigm of fiscal cooperation.

In the final part, we conclude by arguing that present fiscal coordination in the European Monetary Union is ineffective for four main reasons. First, it creates high bureaucratic cost both for the member states and at the European Union level. Moreover, sanctions proved to be ineffective because they could not be applied uniformly in all countries. Further, the no-bail-out clause was proved inadequate and has been circumvented by the creation of the European Stability Mechanism, and finally, the financial assistance of the European Stability Mechanism to its member states was linked to the implementation of policy conditions specified in a Memorandum of Understanding (MoU). Those Economic Adjustment Programs are pro-cyclical.

This paper is organized as follows: The first section gives a brief literature review for the reasons for debt accumulation. The second section examines the alternative methods of fiscal discipline within a monetary union. Our conclusions are drawn in the final section.

2 Why Nations Accumulate Debt

A salient issue of the theory of debt accumulation that should be analyzed is the “common pool problem.” The common pool problem “is promising and powerful in explaining the emergence of large and persistent deficits” (Poterba & von Hagen, 1999, p. 10). This approach pointed out that problems arise when the financing source is a common property. Under this view, anyone has the incentive to take a larger part than its contribution to this common source. In other words, the common pool problem reveals the free-riding behavior. The existing literature on this topic can be divided into three main strands. The first attempts to provide answers to debt accumulation dates to the work of Buchanan and Wagner (1977). The Political Business Cycle explains debt as an effort of governments to manipulate public spending with the purpose of being re-elected. This opportunistic behavior is based on the assumption that voters do not fully understand the policy implication of large deficits. Thus, they overestimate present consumption and underestimate future tax burden. This “fiscal illusion” (Alesina & Perotti, 1994) is the basis of debt accumulation. This approach has been criticized on the basis that voters are not deluded by opportunistic politicians. This argument was developed by Rogoff (1990), who pointed out that voters cannot observe the projects undertaken by governments, due to which they cannot properly assess the purpose of deficit creation, but they do observe the increase of debt.

A second strand on the debt accumulation theory posits, in close relation to the first strand, that political parties accumulate debt to serve specific interests. This political approach has been highly debated and has many different interpretations. One of these focused on distinct preferences that politicians have. Attempting to tie the hand of their successors, political parties create high deficits according to their preferences. Alesina and Tabellini (1990) developed a model with two political parties with different preferences on the composition of public spending. The incumbent has the incentive to spend more on the goods they prefer and passes the cost of repayment into the future government. In the same line of argument, Persson and Svensson (1989) presented a model wherein the officials differ in their views about the optimal size of the budget. Accordingly, the current officials, who prefer a small deficit, would cut taxes to compel the next government to keep the spending down. The more the level of polarization between political parties, the more the strength of the predictive power of both models. The empirical test of these theories was the point of numerous articles. To measure the degree of polarization, Alesina et al. (1999) examined the relationship between electoral systems and fiscal performance for countries in Latin America for the period 1990–1995. The findings indicated that countries with more proportional electoral system and more political parties produce larger deficits. Neto and Borsani (2004) examined a series of indicators, including the ideology of the government, the degree of centralization of budget institutions and election time. Results showed that right-wing governments with the stability of ministers produced balance budgets. Generally, the results

illustrated a weak empirical support for the above theories, due to political, legal, and economic differences between the countries.

A third strand of theories emphasizes the role of voters. This approach was first presented by Weingast (1981), who related high debt with geographically dispersed interests. Thus, each part claims a bigger share from the budget to satisfy the geographical interest. Similarly, Alesina and Tabellini (2005) pointed out that the same results could be observed in an economy during a boom period. This is because groups with competing interest strive for increased resources and consequently, the debt soars. Distributional conflicts have also provided the grounding for the influential theory of Alesina and Drazen (1989), who elaborated a model where the cost of fiscal stabilization is unequally shared between different groups. Therefore, each group seeks to avoid the cost of stabilization. Thus, a “war of attrition” arises. This situation lasts until one of the groups concedes. This group is considered the first loser, and afterwards a second round starts involving the remaining groups. Therefore, according to Alesina and Drazen (1989), this conflict is a zero-sum game. Following these authors’ work, Velasco (2000) modified the “war of attrition” approach, pointing out that reforms for fiscal stabilization are taken when the cost of extra deficit makes delays unfavorable for all groups.

3 Fiscal Design in the European Monetary Union (EMU)

3.1 Fiscal Stabilization through Market Mechanism

The issue of debt becomes more complicated when the analysis concerns member states of a monetary union. In the case of EMU, several flaws make the need for fiscal cooperation essential for the stability of the union, but they are quite complex. According to Bordo and Jonung (1999), these flaws concern the lack of a lender of last resort, the lack of democratic control and accountability of ECB, the size of EU, and the diversity of the economies that make the decision-making procedures difficult and, finally, the absence of central coordination of fiscal policy that makes the union vulnerable to asymmetric shocks. Thus, the need for fiscal prudence is imperative, and the question is whether this task can be achieved either by imposing restrictive numerical fiscal rules, by constructing procedural arrangements (i.e., assigning specific task to institutions such as (common) central bank and/or fiscal institutions) or, finally, by leaving stabilization to the corrective mechanism of free market. We analyze these alternatives below.

Starting from the last choice, the proponents of market mechanism argued that price signals can provide the incentives to discipline the fiscal behavior of the governments. For example, in case of an efficient financial market (and ignoring taxation), differences in the nominal interest rates on public debt capture three components, namely the expected risk of currency depreciation, exchange rate risk premium, and national default risk premium. Thus, when a country’s borrowing becomes more expensive, the signal of the increase in the nominal interest rate of

government bonds leads to a more restrictive fiscal position. An alternative market mechanism that could restore fiscal sustainability is the price level. This issue has been discussed in depth in the first part of this thesis, and as it was shown, the validity of the price mechanism is controversial. Advocates of market mechanism assume that markets, especially financial markets, are frictionless. Lane (1993) identifies four conditions that must be met for market discipline to be effective: The capital market should not be restrictive, lenders should be fully informed on the borrowers' liabilities, the borrowers must respond to the market signals and, finally, there should be no anticipation of bail out. The last condition is critical and has been the focus of much research. For example, Baskaran and Feld (2013) found that under a credible no-bail out regime risk, the premia of the cantons of Switzerland was reduced by about 25 basis points. Another interesting insight in the field was provided by Bernoth et al. (2012), who analyzed the impact of fiscal policy on interest rates in the eurozone and found that spreads of eurozone countries versus Germany and the US were positively correlated by debt and debt service ratio. Thus, credit markets monitor fiscal performance and exert disciplinary pressure on governments.

However, markets are anything but perfect. As Lamfalussy (1989, p. 125) stressed in the Delors Report, a future increase in taxation and/or monetization of debt may lead to governments not reacting promptly to the deficit increasing this way the deficit. In the case of a monetary union, the fiscal behavior is based mainly on the solidarity of preserving the stability of the currency. Otherwise, a member state might expect a bail out by ignoring the market signals. This is the main reason for the failure of market discipline. A further implication of market mechanism refers to the inability of the interest to accurately reflect fiscal policy developments. This becomes clearer in times of economic distress as market signals—with regard to prices or interest rates—tend to overreact. To analyze this, Bergman et al. (2013) conducted a research on the four southwest euro area periphery countries (Portugal, Ireland, Italy, and Spain), and found that market signals are unreliable and inconsistent. Aizenman et al. (2011) reached the same conclusion by estimating the pricing of sovereign risk for 60 countries based on fiscal space (debt/tax, deficits/tax) and other economic fundamentals over the years from 2005–2010. Their results indicate that the market “price” default risk of countries in the eurozone periphery was higher than the other countries in 2010. This may be partly explained by the fact that the market discounts future, and not current, fiscal developments. Another explanation is the market's inability to effectively assess the risk in the eurozone periphery. De Grauwe and Ji (2013) focus on the relation between the spread of government bonds of the eurozone and the default risks, which, in turn is determined by several fundamental variables. Among them, the most critical one was the government debt-to-GDP ratio. During 2000–2008, these fundamental variables diverged between countries of the eurozone; yet, the spreads were remarkably close. In the aftermath of the financial crisis, the spread differences were quite divergent at a level that could not be explained by the differences of fundamental variables. Thus, the question is whether the market mispriced the default risk before or after the crisis. Due to this under-estimation (or over-estimation) of default risk,

“government bond markets in a monetary union are more fragile and more susceptible to self-fulfilling liquidity crises” (De Grauwe & Ji, 2013, p. 878).

3.2 Fiscal Rules in the European Monetary Union

As highlighted above, an alternative for fiscal control through market mechanism are fiscal rules. The design of appropriate fiscal rules has been heavily debated, especially after the establishment of the European Monetary Union. Based on the relevant literature, we may distinguish two kinds of fiscal rules. First, there are policy rules that are imposed on economic institutions, mainly in the central bank and governments, which seek to balance the economic decision between them. Second, there are specific numerical targets imposed mainly on the governments to avoid fiscal profligacy. In the former case, a schema of policy coordination should be established, while in the latter, monitoring and sanction procedures should be enacted.

Considering the former case, the coordination between fiscal and monetary policy confronts the externalities—positive or negative—that fiscal policy may impose in other countries of a monetary union. Examples of positive externality are public goods that a country finances, which may have positive spill-over effects on another country. Another example of positive externality is the fiscal expansion of a country, which increases consumption and imports, thereby supporting exports and production and diminishing unemployment in other economies. Examples of negative externalities include other economies potentially suffering from increases in interest rates and the cost of a government’s borrowing due to the fiscal expansion of a country. One way to tackle these externalities is by assigning specific tasks on (common) the central bank and/or the governments as an instrument to avoid excessive debts. According to Dixit and Lambertini (2003), the agreement between the central bank and fiscal authorities on the appropriate level of inflation and output reassures ideal equilibrium even in the absence of commitment by the central bank, regardless of whether the central bank or the government decides first its policy. Under this framework, any additional fiscal rules may be proved counterproductive. The importance of fiscal policy was further highlighted by Kirsanova et al. (2007). According to them, if output increases in one country in the monetary union and falls in another country, then inflation will gradually appear in the first country. This inflation inertia will diminish the real interest rate, which, in turn, will further increase output and inflation. Given that the nominal interest rate does not change, the monetary policy will not change either. Therefore, fiscal policy is the only way to stabilize an economy. Moreover, due to lower interest rate, real government debt will decrease, leaving room for further increase in government spending. Thus, the reaction of fiscal policy to debt will be proved inflationary. Again, constraints on fiscal policy might be counterproductive—fiscal policy provides a valid policy for inflation and output but destabilizes when reacting to a government’s debt changes. The effects of fiscal policy on output and debt sustainability have also been

examined by Furceri and Mourougane (2010). Based on empirical evidence, they found that an increase in public investments increases the GDP by 1.1%. The same results were derived by public consumption as well, though in a smaller degree, and public transfers have the smallest impact on GDP. As far as taxes are concerned, a decrease in tax wage increases employment and output by 0.4% in the first year, while in the long run, the impact vanishes and increases the debt-to-GDP ratio by 0.8% after 10 years. Finally, a cut in consumption tax increases the GDP by 0.25%. In sum, fiscal policy is an effective tool to boost economy; however, the impact varies according to the fiscal instrument. The above analysis highlights the effects of fiscal policy and provides the theoretical framework for the coordination of fiscal and monetary policy.

A further implication of monetary union is the response to shocks. If shocks are not idiosyncratic, the response of fiscal and/or monetary authority could be uniform and support the economy. In the opposite case, a country needs to fully control fiscal and monetary policies to respond appropriately to fiscal shocks. The loss of monetary autonomy due to participation in a monetary union may prove to be precarious. Thus, the appropriate reaction of economic policy is determined by the relation between the fiscal and monetary policies. A strand of literature attempts to shed light on the issue of coordination between fiscal and monetary policy. Cooper and Kempf (2000) distinguished three cases. In the first case, the fiscal policy is constrained, and the stabilization policy is undertaken by the central bank, which has the authority to print and allocate money in decentralized fiscal authorities. This case is optimal under the condition of identical shocks between economies. The second case involves both the fiscal and monetary policy being constrained. Adding more constraints does not improve the welfare as stabilization tools are completely lacking. Finally, if fiscal authorities decide their fiscal policy in a non-cooperative manner and the central bank passively finances their debt, the result will be high inflation. Along the same lines, Beetsma (1995) pointed out that when the central bank is unable to commit, and the government is myopic (i.e., the fiscal policy does not reflect the preference of the society), monetary unification leads to excessive debt. Thus, the second-best solution is to make the central bank more conservative (i.e., attach higher priority to price stability). If the central bank is conservative and governments are myopic, further fiscal restraints should be imposed. A different angle of the relations between common central banks and governments was given by Beetsma and Bovenberg (1999), who introduced the size of a monetary union as an explanatory variable of the coordination of fiscal and monetary policies. In particular, as monetary union becomes larger, the fiscal position of specific member states to create inflation in a monetary union diminishes. This will discipline the fiscal behavior of member states and improve welfare as it restrains inflation, public spending, and public debt. However, this model does not introduce the relevant magnitude of each economy, i.e., the fiscal position of big economies may influence inflation on a larger scope and determine monetary decisions or fiscal rules. This is the central hypothesis that this thesis attempts to highlight.

The above discussion presents the choices and tasks that should be assigned in monetary (central bank) and fiscal (governments) policies so that a monetary union

can enable the improvement of welfare. An alternative to framing economic policy decisions is to set fiscal rules. In most cases, this is done through numerical targets that each country of a monetary union must follow. The debt ceiling rules must be simple and straightforward. Moreover, they must be accompanied by monitoring procedures that do not create considerable bureaucratic costs. Finally, a necessary supplement of the fiscal rules is the sanctions that must be imposed on the countries that violate the rules. All three elements of fiscal policy described above are necessary and sufficient conditions for the efficient functioning of a monetary union. However, the competence to successfully establish such a framework is questionable and has led to a lively debate. Nevertheless, even if fiscal rules are well established, a further issue concerns the cost of imposing fiscal constraint in the member countries of a monetary union, jeopardizing their economic viability. All things considered, fiscal design is at the core of monetary unions; yet, guaranteeing the stability of currency and economic efficiency is far from being an easy task. This is because numerical targets create incentives of achieving them at any cost. In his ten commandments of fiscal rules in EMU, Buiters (2003) elucidated the characteristics of fiscal rules: fiscal rules should be simple, ensure solvency, be neutral, establish efficient coordination between government and central banks, avoid cyclical behavior, be achievable in the long run, be efficient both in EU and member states level, be credible, ensure enforceability, and allow for differences in economic structure and initial conditions. As it can be seen, Buiters (2003) did not refer to elasticity in the case of dire economic conditions. What was ruled out instead was the cyclical behavior of fiscal policy. In this manner, fiscal policy serves the need of stability of the monetary union, but not the stability of a particular economy. On the other hand, the idiosyncratic character of fiscal policy spreads negative externalities in the monetary union. Inman (1996) identified six characteristics for the success of fiscal rules: there must be ex post deficit accounting, the policies must be suspended by a simple majority rule, enforced by a politically independent authority, the participation of all members to the monitoring of the violation of rules should be allowed, it should be accompanied by sanctions and, finally, with costly amendments of the rules. Thus, the balance of dealing with asymmetric shocks and the preservation of the stability of a monetary union is the bet that fiscal design must win. This balance should consider the trade-offs between simplicity and flexibility, simplicity and adequacy, as well as flexibility and enforceability (Buti & van den Noord, 2004). Even if fiscal rules are appropriately designed and have all the abovementioned characteristics, there are several exogenous features that might open a window for breaching those rules (Von Hagen, 2002). The use of off-budget funds allows a government to deviate from fiscal rules and serve special interests. Further, fiscal rules might be diverted by certain exogenous economic developments that affect public spending and taxes, i.e., the indexation may increase public spending. Moreover, some spending is difficult to be managed as they are either mandatory from non-financial laws or inelastic (e.g., defense spending). The exact definition of the constituent elements of a budget should be made a part of fiscal rules (i.e., what should be included in the public spending, how deficit and debt are calculated, etc.). This will avoid the substitution of debt instruments (Von Hagen,

1991) as governments bypass fiscal rules. Kiewiet and Szakaty (1996) identified that the borrowing of constraints is associated with the larger debt of sub-central entities (municipalities). A final substitution effect was analyzed by Von Hagen and Eichengreen (1996), who found that central governments tend to have a higher debt-to-GDP ratio when strict numerical constraints are imposed in the sub-government. In the case of a monetary union, if taxes are in the control of the member states, the no-bail-out rules should be strong and straightforward. This is because if taxes remain decentralized, any sub-central government has the financial means to collect revenues to service its own debt. Otherwise, sub-central governments will ask either for financing or for a bail out. This will further increase free-riding behavior on the part of sub-central governments.

4 Conclusion

The above discussion reveals that fiscal rules involve not only economic issues but also the political environment, the administrative structure, and social preferences. The analysis attempted to separately analyze the three aspects of fiscal cooperation (namely institutional cooperation, numerical tasks, and market mechanism); yet, they should not be perceived as distinct. In the real world, these aspects act concurrently. Thus, the question is whether they act appropriately. The key issue to assess fiscal policy in the framework of a monetary union is to examine whether shocks are idiosyncratic or affect the monetary union altogether. In the first case and under strict no-bail-out rules, as in the case of EMU, individual member states are left with only one option—implementing pro-cyclical fiscal policies in case of violation of the fiscal rules. On the other hand, if shocks affect the monetary union altogether, the options are to activate a general escape clause or to bail out or both. In the case of a bail out, the fiscal rules will not be violated, but institutional cooperation should be re-defined, and central banks should act together with fiscal authorities so that expansionary policies will be fully effective. On the other hand, the former option restores fiscal policy at a national level. This might jeopardize the stability of the currency if member states overreact. When fiscal rules are re-activated, fiscal consolidation might prove to be a difficult task. Under this circumstance, stringent fiscal rules will force member states to pro-cyclical measures that might prove ineffective both for member states and for the union in total. A crucial issue is to examine whether it is possible to impose front-loaded programs of fiscal adjustments in the bigger countries of a monetary union and how this will affect the union altogether.

The conclusion of this analysis is that fiscal cooperation in the European Monetary Union is ineffective due to four main reasons:

1. Fiscal coordination in the EMU creates high bureaucratic cost both at the member states and the European Union level.

2. Sanctions proved to be ineffective because they could not be applied uniformly in all countries.
3. The no-bail-out clause has proved inadequate and has been circumvented by the creation of the European Stability Mechanism.
4. The financial assistance of the European Stability Mechanism to its member states was linked to the implementation of policy conditions specified in a Memorandum of Understanding (MoU). Those Economic Adjustment Programs are pro-cyclical.

The pandemic crisis shed light on the weaknesses of the European Monetary Union. A growing literature analyses the impact of the pandemic crisis on the European Monetary Union. Some studies examine the financial threats and the impact on borrowing cost of the member states (Delatte & Guillaume, 2020; Ortmans & Tripier, 2020), which increases the government's bond spread. The literature also examines the necessity of transferring more competencies in the European level (Barbier-Gauchard et al., 2021), while Celi et al. (2020) propose that a viable solution would be a further fiscal integration. In the same line, Tooze and Schularick (2020) pointed out that pandemic crisis requires a huge coordinated fiscal policy. Just a decade after a financial crisis that led to the European sovereign debt crisis, the euro area today is facing an existential challenge, which will either strengthen the fiscal integration or continue the struggle with ad hoc management of future crisis.

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The Perspectives on Non-state Social Protection



Richmond Baah and Tatjana Volkova

Abstract COVID-19 has deepened the vulnerability of millions of people. This has reinforced the need for stronger social protection systems globally. Literature on social protection have emphasized the role of government even though it is not the main provider of social protection in many parts of Africa. The aim of this research is to explore non-state social protection from different perspectives identified in literature. A critical literature review was conducted on literature selected from the Scopus database limited to the period 2010–2021, and the main non-state social protection providers are limited to Africa. The paper finds that private corporate entities are among the key non-state actors providing social protection in some low- and medium-income countries. Based on five perspectives identified in literature, this research explains the forms and characteristics of non-state social protection, with emphasis on Africa. The paper concludes that contrary to the realities of the western world, populations in Africa generally survive by some form of non-state social protection services. These are services provided by non-state actors such as private corporate entities as a part of creating shared value for the society.

Keywords Social protection · Non-state social protection · COVID-19 · Social responsibility · Africa

1 Introduction

COVID-19 has deepened the vulnerability of millions of people around the world. Quantitative evidence systematically obtained from nine low- and medium-income countries (LMICs) in Africa, Asia, and Latin America shows significant rise in

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unemployment and decline in income and food security, which have exposed populations to the risk of high morbidity and mortality, among other adverse consequences (Egger et al., 2021). The disruptions that the pandemic has caused in national economies have reinforced the need for stronger social protection systems globally (Egger et al., 2021). Despite the varying nature and degrees of poverty, vulnerability, and inequality in different parts of the world, consensus about the notion that social protection is an effective way of addressing these problems is growing (Barrientos & Hulme, 2009). Evidence from many countries show that progressive expansion of social protection coverage reduces poverty and inequality and facilitates inclusive growth and development (Hailu & Soares, 2008; ILO, 2017; Leubolt, 2014; Lustig et al., 2014; Pouw et al., 2018; Zhuang, 2008).

Social protection is defined by Standing (2007, p. 512) as the “full range of protective transfers, services, and institutional safeguards supposed to protect the population” who are perceived to be at risk or in need due to their vulnerability. Extant literature on social protection emphasizes the important role the state plays and pays limited attention to non-state actors. The sole responsibility of the state or governments to provide social protection services, usually in the form of public goods and services to address welfare issues in a failed market, seems to be well established in public sector economics literature (Barr, 2020; Palley, 2020). However, evidence on the impact of pandemic in LMICs (Egger et al., 2021) seems to be amplifying a view held within the scant literature on non-state social protection that in many part of the world the state is not the main provider of social protection services (Awortwi & Walter-Drop, 2018). Even in good times, the state is not the main provider of social protection in LMICs (Awortwi & Walter-Drop, 2018). Evidence from Bangladesh, Burkina Faso, Colombia, Ghana, Kenya, Nepal, Philippines, Rwanda, and Sierra Leone shows that the pandemic has caused further significant deterioration in the capacity of governments to provide social protection for populations who have been pushed into extreme poverty (Egger et al., 2021). This research conducts a critical review of literature to highlight the main perspectives and forms of non-state social protection as well as its importance to the wellbeing and survival of many people, particularly those living in Africa. The research also highlights the role of private companies in the provision of non-state social protection services.

The main research questions are: What are the perspectives identified in literature regarding non-state social protection? What are the main forms of non-state social protection providers in Africa? The authors explore non-state social protection from five different perspectives identified in the literature. Through these perspectives, the authors elucidate the characteristics and forms of non-state social protection with particular attention to Africa. The paper also shines light on the importance of non-state actors in the provision of social protection services to enhance the livelihood of populations in Africa. This understanding is particularly important within the context of post-pandemic recovery planning in Africa.

The paper is structured as follows. The research methodology section explains the approach for searching, selecting, and analysing existing literature on non-state social protection. The results and discussion section is presented in two main

parts. The first part explains the rationale for non-state social protection and identifies a definition for non-state social protection that is considered suitable by the main authors on the subject, as identified in this research. The second part of the results and discussion section explains the five perspectives on non-state social protection identified in literature, including the forms of non-state social protection. The conclusion section highlights the key findings of the research and recommends areas for further research.

2 Research Methodology

A critical literature review approach was used for this research. This approach is effective for searching, selecting, and critically analysing existing literature on a subject in a systematic way (Leonidou et al., 2018). The authors selected this methodology because it favours transparent scientific research which can be replicated (Christofi et al., 2017) and allows for synthesizing accumulated knowledge on a subject matter in a systematic way for possible generalization (Wang & Chugh, 2014). The authors adapted the methodology outlined in Leonidou et al. (2018) and in Kirkwood and Price (2014) for this research. As a starting point, the authors formulated the research questions and aim of the research. The research questions formulated are: *What are the perspectives identified in literature regarding non-state social protection? What are the main forms of non-state social protection providers in Africa?* Accordingly, the aim of this research is to explore non-state social protection from different perspectives identified in literature. The analysis also provides insight into the main forms of non-state social protection in Africa. Secondly, the authors defined and applied a review protocol. Finally, the articles selected were analysed. Figure 1 depicts the literature search criteria applied in this research.

To ensure a wide coverage of international peer-reviewed literature on the subject, the Scopus data for research was selected. The Scopus database indexes more than 5000 international publishers including publications from Elsevier, Emerald, Sage, Springer, Taylor & Francis, and Wiley-Blackwell, among others. To obtain a wide range of literature on the subject a “loose phrase” search was performed by applying double quotation marks to search for *social protection* (i.e. TITLE-ABS-KEY (“social protection”)). This search returned all documents where *social protection* appears together in the title, abstract, or keywords of articles. This was to cover a wide range of peer-reviewed literature on the broad subject of social protection within which we find non-state social protection. This research resulted in 5663 documents. The authors then conducted a search within these results by applying double quotation marks on the phrase *non-state social protection* and it resulted in 16 documents. The full text of the 16 articles for eligibility by checking their relevance to the subject matter was assessed. Articles eligible to be include were those that contained conceptual and/or empirical analysis of non-state social protection. Those that only mention or identify non-state social protection but do not

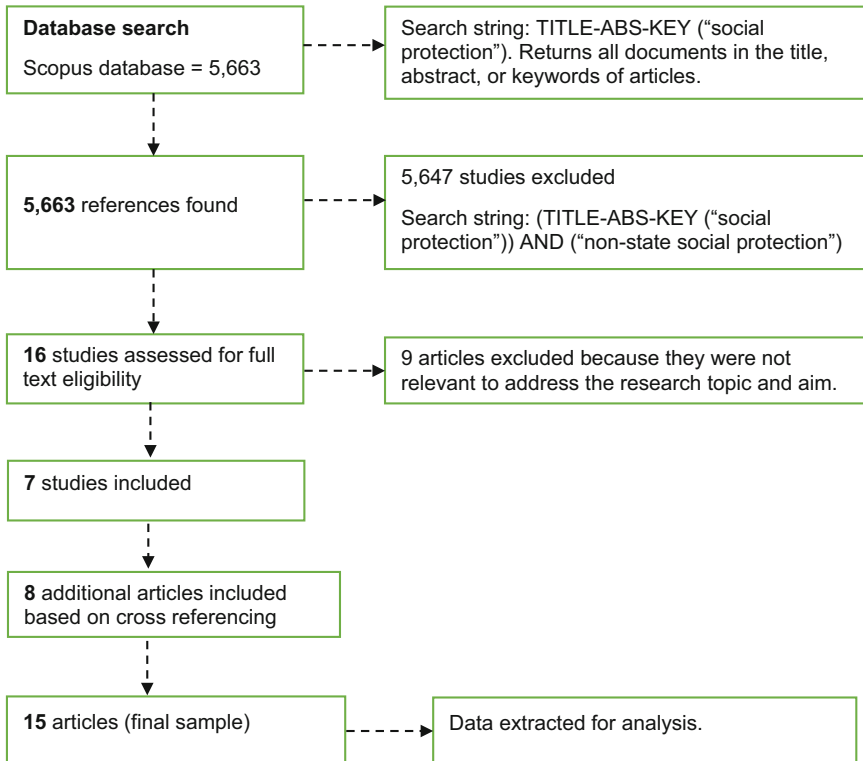


Fig. 1 Literature search strategy. (Source: developed by authors)

discuss it in detail were excluded. Nine articles were excluded from the list at the end of the eligibility test. Since the remaining seven articles were high quality peer-reviewed articles which contained detailed discussions on non-state social protection, they referenced authors who have done significant work on non-state social protection and the conceptualization of social protection in general. A total of 8 articles were selected based on cross-referencing. Finally, a total of 15 articles were selected for analysis.

Most of the literature on non-state social protection focuses on developing countries in Africa and Asia, and the earliest publication on the subject in the search results was done in 2011. The search results confirm the assertions made by Awortwi and Walter-Drop (2018) and Cammett and MacLean (2014) that non-state social protection is under-researched.

3 Results and Discussion

3.1 *Non-state Social Protection*

The quality and the extent of coverage of social protection depends not only on the government's commitment to address inequality and vulnerability, but also on the fiscal space to fund these programmes and ensure their long-term sustainability. But the gross domestic product (GDP) of many developing countries, particularly in Africa is not adequate to provide the required social protection without plunging the countries into economic recession (Awortwi & Walter-Drop, 2018). In addition, the predominant informal sectors (including employment) in many African countries constrain the government's institutional and bureaucratic capacity to deliver social protection to large populations (Awortwi & Walter-Drop, 2018). The "social welfare contract between the state and citizens" is effectively unfulfilled (Darkwah et al., 2018, p. 88) under these circumstances of limited statehood (Risse, 2011). Indeed, in Africa, the state is not the dominant provider of social protection. Contrary to the realities of the western world, populations in Africa *generally* "survive poverty and vulnerability through some form of non-state social protection services (NSSPS)" (Awortwi, 2018, p. 898).

Non-state social protection refers to social protection services provided by non-state actors (Awortwi & Walter-Drop, 2018; Cammett & MacLean, 2014). Awortwi and Walter-Drop (2018) argue that for the purpose of non-state social protection research, scholars prefer to look at social protection based on the definition provided by Devereux and Sabates-Wheeler (2004). They define social protection as:

all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalised; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalised groups. (Devereux & Sabates-Wheeler, 2004, p. 9)

3.2 *Perspectives and Forms of Non-state Social Protection*

This section discusses non-state social protection from five different perspectives based on the literature reviewed. Firstly, we explore non-state social protection using Devereux and Sabates-Wheeler's (2004) typology of social protection. Secondly, the different providers of non-state social protection and the forms of protection they provide are explored (Awortwi & Walter-Drop, 2018; Cammett & MacLean, 2014). Thirdly, the degree of organizational formalization of non-state social protection is explored. Next is a discussion of the different modes of non-state social protection provision based on the relative capacity of the state and the NSSPS provider, using

Cammett and MacLean's (2014) analytical framework. Finally, we explore the dimensions of non-state social protection.

3.2.1 Non-state Social Protection Based on Devereux and Sabates-Wheeler's Typology

Devereux and Sabates-Wheeler (2004) categorize social protection programmes into four types, namely: *protective, preventive, promotive, and transformative*. This classification is essential in understanding non-state social protection from the perspective of functions and objectives. Generally, non-state social protection actors who have strong cultural understanding and social connect to influence behaviour lack scale and resources, while those that have the scale and resources lack cultural understanding (Awortwi, 2018). Table 1 explains non-state social protection using this typology.

Studies conducted on non-state social protection in six African countries have shown that most non-state social protection services fall within the first three

Table 1 Categories of social protection programmes by function or objective

Categories	Explanations with perspectives on non-state social protection
Protective social protection	Refers to programmes, initiatives, or interventions that provide relief from deprivation. These measures serve as safety nets, and they include social assistance for the chronically poor. Examples include disability benefits, social pensions for the elderly poor, single parent allowance (Devereux & Sabates-Wheeler, 2004), food aid, and cash transfer (Awortwi, 2018)
Preventive social protection	These programmes, initiatives or measures focus on poverty alleviation. Examples include social insurance programmes like health insurance, maternity benefits as well as crop or income diversification strategies (Devereux & Sabates-Wheeler, 2004). In Africa, these may include welfare associations, burial groups, and credit unions (Awortwi, 2018; Awortwi & Walter-Drop, 2018; Darkwah et al., 2018). Indeed, Darkwah et al. (2018) found that in Ghana, one needs to join three welfare associations to receive optimum benefits, and that joining more than three associations leads to negative returns
Promotive social protection	Promotive social protection seeks to enhance livelihoods. They include microfinance and school feeding programmes (Devereux & Sabates-Wheeler, 2004). In Africa, these may also include credit unions and skills training programmes (Awortwi & Walter-Drop, 2018)
Transformative social protection	Transformative social protection deals with social equity issues including enacting or making changes to policies and regulations to protect vulnerable groups as well as advocacy aimed at influencing the behaviour or attitudes of the general public (Devereux & Sabates-Wheeler, 2004). Examples include affirmative action and advocacy for human rights for disadvantaged groups (Awortwi & Walter-Drop, 2018). Non-state social protection makes limited contribution to this objective

Source: Prepared by authors based on literature reviewed

categories: *protective*, *preventive*, and *promotive*. While some NGOs try to engage in *transformative* services due to their resources, they do not have adequate cultural knowledge to effectively pursue socially and politically sensitive issues (Awortwi, 2018).

3.2.2 Forms and Providers of Non-state Social Protection Providers in Africa

There are different forms of and many non-state social protection providers in Africa. In fact, studies conducted in 1567 districts in Ghana, Kenya, Tanzania, Senegal, Uganda, and Ethiopia identified 6986 non-state social protection providers. With the ratio of population per non-state social protection provider in the sample districts being 251, the studies estimated the total number of non-state social protection actors in the six countries to be more than 760,000 (Awortwi & Walter-Drop, 2018). MacLean (2017) argues that the variation in extent of proliferation of providers of NSSPS across countries in Africa is moderated by colonial legacies and opportunities created by the neoliberal democratization of many African states during the 1980s and 1990s. This research identified the following providers of non-state social protection based on the literature reviewed: (1) profit-oriented private entities (Cammatt & MacLean, 2014); (2) community-based organizations (CBOs) (Awortwi & Walter-Drop, 2018); (3) faith-based organizations (FBOs) (Jennings, 2014); and (4) secular non-governmental organization (NGOs) (Awortwi & Walter-Drop, 2018; Cammatt & MacLean, 2014).

Domestic companies and multinational companies (MNCs) in some developing countries play important roles in the provision of social protection in the communities where they operate. In some developing countries like Ghana, both domestic companies and MNCs fully fund or contribute to the construction of infrastructure used to provide basic health care services and basic education, among others (Cammatt & MacLean, 2014). As cited by Agyemang-Duah et al. (2019), AngloGold Ashanti, a multinational mining company operating in Ghana, supported the Ghana Health Service's "Roll Back Malaria" programme. The programme aimed at equipping health facilities and educating communities to reduce malaria cases. Newmont Ghana Gold Limited has also contributed to the provision of social services and public goods to communities in Ghana. A survey conducted in the Asutifi South and North Districts shows that more than 50% of respondents were satisfied with the social services (including malaria control programmes and provision of drinking water) provided by Newmont Ghana Gold Limited (Agyemang-Duah et al., 2019). Studies conducted on foreign oil companies (FOCs) in Azerbaijan found that the FOCs were involved in the provision of social services and public goods including the renovation and overhauling of water supply systems to improve the general welfare of communities in which they operate (Luong, 2014). Social protection services provided by profit-oriented entities fall into three main categories (Cammatt & MacLean, 2014). Firstly, the private company may provide social services as a supplement to the government's efforts in a particular sector.

This is done for various reasons, including building social capital with local communities. Such services are performed in the form of corporate social responsibility (CSR). Secondly, a private company may provide social services based on delegated authority from the government via contracts. Thirdly, a private company may create a market to provide services otherwise provided by the government (Cammett & MacLean, 2014).

Most non-state social protection providers in Africa are community-based organizations (CBOs). Studies conducted in six countries in Africa show that more than 87% of the NSSP providers are CBOs (Awortwi & Walter-Drop, 2018). Community-based organizations are “self-organized grassroots associations formed to serve the shared, vested interests of the members of a neighbourhood or community” (Cammett & MacLean, 2014, p. 48). It is important to note that “small grassroots organizations are by far the most universal and direct channel” of social protection in Africa (Awortwi, 2018, p. 909). CBOs often emerge from existing institutions in communities including churches, mosques, ethnic groups or cultural associations, and schools, among others (Cammett & MacLean, 2014). CBOs may be in the form of rotational savings and credit associations, welfare associations, burial groups, friends and family networks or associations, women’s or men’s or youth groups (Awortwi & Walter-Drop, 2018) as well as mutual aid or cooperative associations formed by sellers and/or producers of a service or product (Cammett & MacLean, 2014).

As Owusu (2000) noted, people join both formal and informal associations for economic, cultural, and social benefits. In many countries in Africa, the activities of burial groups provide both preventive and protective social protection services to members (Awortwi & Walter-Drop, 2018). Studies have shown that burial groups have existed for decades in western Ugandan societies, where these groups provide economic and psychosocial support for widows, widowers, and orphans during funerals. Some burial group also run savings and loan schemes for members (Asingwire et al., 2018). In Ghana, people join multiple welfare and credit associations with the expectation to receive support in times of shock and adversity. These informal associations provide social insurance to member through risk-pooling and hedging, according to Darkwah et al. (2018). The oldest non-state social protection provider in Ghana is the family. Nuclear and extended family members as well as neighbours provide support to themselves through land sharing, volunteerism, and other communal approaches based on established customs of reciprocity (Darkwah et al., 2018). In the Ashanti kingdom in Ghana, systems of social welfare where chiefs bring people together to help resolve the needs of others predate colonial regimes of the country (MacLean, 2017).

Faith-based organizations (FBOs) are among the oldest non-state social protection providers in many developing countries. FBOs are charitable organizations connected to a religious institution (Cammett & MacLean, 2014). Some FBOs operate at the global level while others tend to be deeply rooted in local communities. It is on record that faith leaders financially supported the \$4 billion bond, which was launched by the British prime minister in November 2006 to finance global immunization programmes (Jennings, 2014). In Ghana, missionaries have played

very an important role in the establishment of basic and secondary schools across the southern part of the country (Miller, 1993). Those who school in Ghana from the basic school level to the university will most likely attend a missionary school at a point in their educational journey. In Tanzania, FBOs considered social development as a means of putting their faith into practice and in the 1960s, churches built and renovated schools and hospitals in the countries (Jennings, 2014). As cited by Jennings (2014), Muslim leaders and groups in Uganda were actively involved in the fight against the spread of HIV/AIDS in the country. Religious beliefs form the foundation of the activities of FBOs, and members usually have a strong attachment to such organizations and their goals. Some scholars find FBOs problematic due to their strong stance on issues such as family planning and sexual rights (Jennings, 2014).

Secular non-governmental organizations (NGOs) also play a key role in delivering basic services to poor and vulnerable people in many developing countries. Secular NGOs, both international and domestic NGOs, provide social services to improve the wellbeing of disadvantaged populations in areas where the government does not have the capacity or commitment to provide the infrastructure for meeting basic needs (Cammatt & MacLean, 2014). Secular NGOs usually receive funding from governments and international donors (Awortwi & Walter-Drop, 2018). These international donors usually have clearly defined agenda or goals for their funds. As a result, the activities of NGOs tend to be short-term and project-based to satisfy donor requirement (Awortwi, 2018), even though social protection services need to be long-term and sustainable (Awortwi & Walter-Drop, 2018). For example, more NGOs provided social protection services to mitigate the effects of HIV/AIDs when many international donors were financing such activities (Awortwi, 2018). Based on studies in Mozambique and Nepal, the European Commission raised accountability issues about NGOs indicating that some of them only served as channels for receiving funds (Awortwi & Walter-Drop, 2018).

3.2.3 Degree of Organizational Formalization of Non-state Social Protection

The third perspective to be explored is *the degree of formalization* within NSSP providers (Cammatt & MacLean, 2014). Some NSSP providers have formal and legal structures while others work based on solidarity and established norms of reciprocity within communities, families, and friends (Awortwi, 2018). Formal NSSP providers include profit-oriented entities (Cammatt & MacLean, 2014), NGOs, and some FBOs (Awortwi, 2018). These NSSP providers are usually funded by institutional donors and benevolent individuals who are independent of the state (Awortwi, 2018). Most CBOs are informal organizations with formal management structures and reporting relationships (Awortwi & Walter-Drop, 2018). For informal NSSP providers, trust among members and regular attendance of meeting are probably the most important ways to ensure accountability (Awortwi, 2018; Darkwah et al., 2018).

3.2.4 Non-state Social Protection Service and the Relative Capacity of the State

Each non-state social protection provider has a unique relationship with the state, which have implications for the services provided. This is the fourth perspective by which this research explores non-state social protection. Cammett and MacLean (2014, p. 50) provide a framework for characterizing the *nature of relationships between NSSP providers and the state based on their relative capacities* to “finance, deliver and regulate social welfare”. A combination of the relative capacities of the state and NSSP providers produces four modes of state-NSSP provider relations, namely: *co-production, substitution, state domination, and appropriation*.

A relation of appropriation arises where the capacities of the state and the NSSP provider are both low. In this relationship the NSSP provider controls access to deliver public services. A typical example is informal brokers in some developing countries who act as agents to assist citizens to access state entitlements, including pension benefits. Studies in north India found that the “naya netas” (meaning, new leaders) play an important role in the lives of villagers by helping them “gain access to protection, opportunities and benefits of the democratic state” (Krishna, 2014, p. 175). Majority of villagers consult with the naya netas who mediated on the villagers’ behalf for services such as: (a) dealing with the land administration agency or the police; (b) getting a bank loan; (c) replacing a nonperforming teacher in a school; and (d) getting wage employment (Krishna, 2014).

Where the capacities of the state and the NSSP provide are both high, they cooperate to deliver welfare services to the population. The cooperation may be in the form of *co-production* or *delegation*. In a co-production relationship, the state and NSSP provider jointly finance and deliver the social welfare services (Cammett & MacLean, 2014). Examples could be found in Ghana where AngloGold Ashanti, a multinational mining company operating in Ghana, and the Ghana Health Service’s jointly implemented the “Roll Back Malaria” programme (Agyemang-Duah et al. 2019). A delegation relationship is one in which NSSP is given the primary responsibility for delivering the service, and the state finances and regulates the activity. This is more common in the United States (Allard, 2014).

Where the NSSP provider’s capacity is high and the state capacity is low, the relationship is that of *substitution* (Cammett & MacLean, 2014). The roles played by businesses in supporting the communities in which they operate during the early stages of the COVID-19 crisis are typical examples of this relationship. For example, during the early stage of the pandemic, private companies in Ghana set up the Ghana COVID-19 Private Sector Fund to pool resources and constructed the country’s first infectious disease hospital in record time for the “isolation and treatment of COVID-19 patients” (Sibiri et al., 2021, p. 14). In their study of the contributions of 25 companies in the United States of America during the early stages of the COVID-19 crisis, Mahmud et al. (2021) found that the companies donated more than US\$ 0.5 billion to, among others, support their global community to deal with the vulnerabilities induced by the pandemic. These companies, including Cisco

Systems, Intel, Citigroup, Johnson & Johnson, Hewlett Packard Enterprise, among others, provided “direct relief efforts through cash and in-kind aids and the creation of funds and donations to nonprofit organizations” (Mahmud et al., 2021, p. 10). This relationship is also typical of most CBOs in Africa.

In situations where the state capacity to provide welfare services is high and the capacity of the NSSP provider is low, there is state domination in the provision of the social protection services. China exemplifies this kind of relationship (Cammett & MacLean, 2014).

3.2.5 The Dimensions of Non-state Social Protection

The fifth perspective to be explored is the *dimensions of social protection*. The perspectives on non-state social protection already discussed have implications for the following dimensions of social protection: *access*, *accountability*, and *financing* (Cammett & MacLean, 2014; Ulrichs & White-Kaba, 2019). *Access* refers to the degree to which people’s basic needs are met through social protection (Cammett & MacLean, 2014). According to Ulrichs and White-Kaba (2019), *access* includes the scope of services covered by social protection as well as the breadth of coverage of the protection. The scope of services relates to the types of risks that are covered by social protection. Programmes or initiatives in this area focus on expanding social protection to cover more risks. The breadth of coverage relates to the percentage of a particular population that receives social protection. Initiatives, programmes, or interventions that target coverage focus on extending social protection to those not already covered (Ulrichs & White-Kaba, 2019). Equity and sustainability are at the core of access issues in social protection (Cammett & MacLean, 2014).

Accountability in social protection refers to the ability of and the extent to which people can hold providers of social welfare services responsible for quality and quantity of services including issues of equity and sustainability (Cammett & MacLean, 2014). According to Ulrichs and White-Kaba (2019), *financing* relates to the how much money goes into social protection, the sources of funds, and the proportion of financing provided by beneficiaries and other parties or stakeholders. Accordingly, programmes and interventions targeting this area focus on increasing financial benefits. These dimensions provide the basis for measuring the effectiveness of social protection. For example, the World Social protection Report 2017–2019 uses the breadth of coverage and reports on the percentage of global and country population that receive some of social protection (ILO, 2017).

The dimensions of non-state social protection are summarized in Table 2.

For informal NSSP providers such as CBOs, members of the group provide financing for the social services that are provided, and access to these services is limited to members (Awortwi, 2018). According to Oduro (2010), the very poor can be excluded from social protection provided by informal NSSP providers that require members to make financial contributions. Even though informal NSSP providers have access and financing limitations, they are extremely efficient in the use of their resources as they deliver services directly to specific most needy beneficiaries

Table 2 Dimensions of non-state social protection

NSSPs	Access	Accountability	Financing
Profit-oriented private entities	Access generally open to the public. Focus on limited risks	Accountable mainly to shareholders and the Board. Generally, no accountability to beneficiaries	From profits/reserves. Usually strategy-driven even if losses are incurred
Community-based organization	Access limited to member of the group. Some economic, social, and psychological risks are covered	Directly to members based on trust and through regular attendance of meetings. Instances of mismanagement found	Financing provided by members
Faith-based organizations	Access generally open to the public. Wide range of risks covered	Accountable mainly to the religious institution. Sometime, there is partial accountability to beneficiaries	Funds provided by religious institutions
Secular non-governmental organizations	Dependent on organizational mandate and donor requirements	Accountable to donors. Limited or no accountability to beneficiaries	Funds are provided by donors. Beneficiaries do not contribute to funding

Source: Prepared by authors based on literature reviewed

(Awortwi, 2018). Informal NSSP providers do not have formal organizational structures and they operate according to unwritten rules, which they collectively agree on during their informal meetings (Awortwi & Walter-Drop, 2018). CBOs are accountable directly to the beneficiaries who are the members of the group. Trust among members and regular attendance of meeting are probably the most important ways to ensure accountability in informal NSSP providers (Awortwi, 2018; Darkwah et al., 2018). However, informal NSSP providers, like every human institution, have accountability issues. Some studies of CBOs have found instances of mismanagement of funds (Oduro, 2010).

Formal NSSP providers such as profit-oriented entities, secular NGOs, and some FBOs have formal organizational structures and are financed through their income-generating activities, state, or donor funding. As a result, formal NSSP providers are accountable to their boards, donors, or funding partners in accordance with their financing structure unlike CBOs which are accountable to their beneficiaries (i.e. members) (Awortwi & Walter-Drop, 2018). Due to their scale and resources, they can provide social services to more people than informal NSSP providers. However, they lack the social connection and cultural understanding to deliver specific services to the neediest in society (Awortwi, 2018). Depending on their mandates and the restrictions that may be attached to their funding by donors, formal NSSP providers are not obliged to serve all those who are poor and vulnerable. As a result, it is difficult for the poor or beneficiaries to identify formal NSSP providers

and/or hold them responsible for poor quality or insufficient services (Cammett & MacLean, 2014).

In Africa, it is usual for a household to experience more than one shock that led to significant declines in welfare during brief recessions (Oduro, 2010). While households use different coping strategies for shocks, these strategies which include risk-sharing, hedging, and insurance are inadequate to deal with covariate shocks (Oduro, 2010). Devereux (2001) argued that informal social protection is not robust enough to deal with covariates shocks because those contributing to or providing the protection are themselves poor and vulnerable. The large informal sector in most African countries (Awortwi & Walter-Drop, 2018) and limited state capacity (Cammett & MacLean, 2014) limit the application of western style social protection programmes and initiatives which are heavily dependent on government funding.

4 Conclusion and Recommendation

Quantitative evidence from some low- and medium-income countries (LMICs) shows that economic downturn caused by the pandemic has further incapacitated governments in Africa to provide social protection to their populations (Egger et al., 2021). This has highlighted the role played by non-state actors in the provision of social protection, a concept referred to as non-state social protection. This research identified one of the key rationales for non-state social protection—the fact that many governments lack the capacity to provide social protection for a significant proportion of their people. This rationale has been referred to as the unfulfilled “social welfare contract between the state and citizens” (Darkwah et al., 2018, p. 88), limited statehood (Risse, 2011), or persistent state weakness (Jackson & Rosberg, 1982).

The research further discussed non-state social protection through five main perspectives identified in literature. Most of the non-state social protection services identified from the literature reviewed fall within the first three categories of Devereux and Sabates-Wheeler’s (2004) typology of social protection: *protective*, *preventive*, and *promotive* social protection. Based on existing literature, the research identified profit-oriented private entities, community-based organizations, faith-based organizations, and secular non-governmental organizations as the main providers of non-state social protection in many parts of the world, particularly in Africa. While these non-state social protection providers play important roles to improve the welfare of people, their relative capacity to provide specific services compared to the state informs the relationship they form with the government to provide social protection services. In many parts of the world, profit-oriented private entities *co-produce* social protection services with the state. In situations where the state lacks the capacity to provide services, non-state social protection providers take over the provision of social protection—*substitution*. Typical examples include the roles played by private companies in Ghana during the early stages of the COVID-19 pandemic when they pooled resources and constructed the country’s first infectious

disease hospital to isolate and treat COVID-19 patients. It is clear from the existing literature reviewed that in many parts of Africa, non-state social protection is the main way by which people survive. This validates data on state-funded social protection in Africa published by the International Labor Organization in 2017, which showed the percentage coverage of state-funded social protection to be generally low in Africa.

With this understanding, and considering the impact of the pandemic, it would be crucial to conduct further research on how Africa survived the pandemic. Specifically, it is important for future research to investigate the specific roles played by non-state actors, particularly corporate entities during the COVID-19 pandemic and the impact their contributions have on the economic growth of the countries that will be studied. Management research in this area may also focus on investigating the key factors that inform corporate decisions to contribute to non-state social protection in Africa, and whether these factors may still be applicable after the pandemic or in other continents. The case of Africa is different from the rest of the world. A good insight into and consideration of the role played by non-state social protection actors is important in the continent's post-pandemic economic recovery.

As a key limitation, this research focused mainly on studies conducted on non-state social protection in low- and medium-income countries, with more emphasis on countries in Africa. Therefore, the context of Africa is key to the findings and conclusions. As a result, an emphasis on a different geographical context may lead to different findings and conclusions. Another limitation of the research is the period and criteria which were applied in the literature search and selection. Variations in these factors may also lead to the selection of a set of studies which may result in different findings and conclusions.

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