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Globalization and Development

Economic and Socio-Cultural Perspectives from Emerging Markets

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Nezameddin Faghih
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UNESCO Chair in
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Ali Faghih, PhD MIT 2015

Rose Taj Faghih, PhD MIT 2014

This book is dedicated to my children, Rose Taj and Ali, who shall experience more facets and future features of globalization that we foresee now.

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Disclaimers

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Introduction

Nezameddin Faghih

Abstract This introduction provides a summary of globalization and development with economic and sociocultural perspectives from emerging markets. It gives a brief synopsis of the properties of the link between globalization and development and multifarious facets, dimensions, aspects, elements, features, processes, structures, trends, and evidences of globalization and its convolution with development, presenting economic and sociocultural perspectives from emerging markets. It explains the contents of the book and various chapters contributed enthusiastically by many outstanding academics and experts, researchers, and scholars who are conducting research in the interdisciplinary (and multidisciplinary) field of globalization studies, exploring present and future issues and challenges in this area. Additionally, the research papers presented in this book can provide new insights into globalization studies and also international business for researchers interested in both comparative studies and development of new theories, especially because the rise of emerging markets is known as a remarkable opportunity for development of such theories.

In the wake of populist events such as "Brexit," screaming that localization should trump globalization, studying the impact of globalization on emerging markets is exciting and challenging. Though, it demands a wide range of globalization aspects and dimensions to be considered.

Contemporary globalization as a set of economic, societal, cultural, and political structures and processes, as well as its products and by-products, appears to be a shared journey of humanity throughout history. For instance, the idea of democratization through globalization goes back to Immanuel Kant (1795); in fact, some research studies indicate mutual feedback between democracy and globalization (Eichengreen and Leblang 2006). The importance of free trade policy dates back to 1776, when Adam Smith, in his famous book *The Wealth of Nations*, proposed free trade as a win-win situation and a wealth generator for all economies (Smith 1776; Sarfaraz et al. 2018). It seems that the philosophy of the World Trade

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Organization (WTO) is also based on understanding the fact that free trade would increase economic growth and development. Joseph Schumpeter also believed that free trade, capital flows, increase in the level of income, and economic development lead to demand for political development (Schumpeter 1934).

Recently, there is an emerging consensus on the relative capabilities and merits of multiple dimensions and aspects of globalization, that is, its distinct elements, such as foreign direct investment, trade, short-term capital flows, movements of labor, and knowledge. But some of the adverse effects relate to how globalization can affect the social and political equilibrium, in directions which may not always be productive for long-term growth (Stiglitz 2004). Though, globalization essentially refers to the integration of the world economies through free flows of trade, knowledge, technology, and finance, and it is one of the most hotly debated subjects in socioeconomics and international affairs in the recent years. Poverty reduction and rapid growth in many emerging market economies can be considered as positive impacts of globalization. But it has also provoked significant global repulsion over concerns that it has increased environmental degradation and inequality. Nevertheless, many countries have introduced enormous radical changes impacting education, employment, entrepreneurship, trade, and business systems for activation of their role and existence in the new world order (Goyal 2006; Faghih 2019).

However, since globalization may mean different things to different people, and thus arguments against its impacts are quite naturally expected, integrating perspectives from emerging markets can show how the future of an emerging market economy is convolved with the relationship it finally develops with globalization. This is an important target since most of the emerging markets are keen to speed up the pace of reform in order to take advantage of the opportunities presented by globalization.

Emerging markets constitute the main growth opportunity in the developing and evolving global economic order. The emerging markets' potential has already caused a shift in multinational corporations (Arnold and Quelch 1998). As established markets tend to saturation, multinational corporations shift increasingly to emerging markets as key locations for further future growth (London and Hart 2004).

Nonetheless, the effects of globalization are not limited to the economic dimensions, as globalization has become political, cultural, and even legislative, and political economy is the main transformation tool of states to globalization, especially in emerging market economies (Gwynne and Kay 2004; Faghih 2019). The link between economic and political development is a core issue in political economy. This is a topic that has recently drawn the attention of many researchers in related fields. A major goal of globalization studies is to shed light on the important issue of the connections between globalization (with its multifaceted dimensions) and political development in developing economies. This renders not only a better understanding of the situation (and meets intellectual and academic interests) but also can play a significant role in the strategic planning and policy-making for the emerging market economies.

The dynamics of globalization processes, structures, products, and by-products interact in a complex system of feedback loops, creating political competition in parallel to economic competition. In the contemporary world, globalization is ubiquitous. Oppositions to globalization even somehow constitute a part of it, i.e., are accomplished through the support of a technology which is product and outcome of globalization. Thus, at least technological globalization is irretrievable and irreversible. The term "globalization," however, refers to a condensed description of several meanings and a set of interdependent concepts and processes (Inglis 2005; Faghih 2019). In 2004, three consecutive articles discussed and analyzed populism and its emergence as a backlash against rationality, liberal democracy, and globalization, using a systemic approach (Faghih 2004a, b, c); in these articles, the positive and negative impacts of globalization in the South and the North were discussed, and the mutual interactions and feedbacks between them were analyzed (Faghih 2004a, b, c). Thus, it is not surprising that the British Empire—240 years after America's "Amexit" from British rule—has followed suit with its own "Brexit," to remove itself from EU rules. Simultaneously and harmoniously, a postmodern Amexit screams that *America first* trumps American Empire. This may also be an unconscious swan song for an empire's fall, setting off a climax, and a climatic bypass downhill toward a "Glexit," i.e., an exhibition of exiting global contrivances while sending shockwaves through all of globalization's formalities and linkages. Nevertheless, globalization appears to be a robust system of irreversible processes that has undergone historical cycles, with times of inertia higher than nightmares, ordering that localization should trump globalization. But a rising empire should trump a falling one. And the rise of a possible new-candidate empire may eventually lead to an ultimate finality for the planet Earth: "Earexit" may trump "Glexit" (Faghih 2019).

This book examines the link between globalization and development by integrating economic, sociocultural, and political perspectives from emerging market economies. It is an enthusiastic effort by many outstanding academics and experts, researchers, and scholars who are pursuing education and research in the interdisciplinary (and multidisciplinary) field of globalization studies, exploring present and future issues and challenges in this area.

The rise of emerging markets has been considered as one of the sources for the advancement, renewal, and expansion of international business theories (Fleury et al. 2018). It is hoped that this book is timely and appealing to a wide and ever-expanding global audience, can satisfy their scholarly and intellectual interests, provide innovative discussions, and serve as a research tool and a useful reference work in the field of globalization. The contents of the book include 19 chapters (with an Introduction) divided into 4 parts.

Part I contains seven chapters providing an overview of globalization and development in emerging market economies. The interconnection link between domestic and global dynamics is expected to be stronger in cross-national cooperation and agreements such as G20 (Group of Twenty). Thus, a chapter of this book undertakes a taxonomic study of globalization development within the Group of Twenty (G20) as indicated by globalization and innovation indices. This study

considers the impact of innovation promotion factors on the "globalization development degree" for the G20 member states and investigates how the globalization development of G20 members relates to the innovation promotion factors extracted from the *Global Innovation Index* (GII) indicators, used as the secondary data for the period 2012–2017. The KOF Index of Globalization is also used as the secondary data (the corresponding data for the period 2012–2017). KOF provides a globalization index and three sub-indices of globalization in its three main dimensions, i.e., economic globalization, social globalization, and political globalization. Consequently, the G20 member states (including the European Union) are compared with each other, and nine variables are considered during the time period 2012–2017: four variables are the KOF Index and its three sub-indices, and five variables correspond to GII country ranking scores, as well as two variables selected from the GII input sub-indices (institution and business sophistication) and the two output sub-indices, namely, knowledge and technology outputs and creative outputs. The results manifest and demonstrate coherence between G20 economies under the gravity of globalization: a good example for the emerging markets worldwide. Moreover, in the wake of Brexit, the findings of this research shed light on a historical irony: United Kingdom's leadership in globalization development during the recent years, followed by Germany, Canada, France, and the United States. Thus, the taxonomic study reported in this chapter provides an identification of country globalization development and presents relevant information to policy-makers, who seek to apply effective strategies and policies under the impact of globalization.

Since it has been documented that emerging markets are plagued by a large informal sector, a chapter is devoted to globalization and the informal economy in developing countries. There are a lot of studies addressing either the informal economies or globalization. However, the literature on whether and how globalization affects the informal sector is somewhat lacking. Several theories are formulated, but empirical studies do not all agree on what facets of globalization affect informality and how. Part of the problem is data deficiency and somewhat lacking synchronization of the existing informal sector data. There are some recent developments in this area that have furthered the subject. This chapter aims to provide an extensive overview on the topic of globalization and informality.

Additionally, the new rules of globalized trade play an important role in the emerging market economies. Neoliberal ideology forms the political backbone and background of present changes in economic and social systems. Trade policies are often used to preach the advantages of globalization. A chapter of this book argues that the new trade regime is heavily biased, tilting trade relations further against small economies and the South. Rather than being a rule-based system upholding the rule of law and protecting the contractual rights of Southern or smaller economies in general, it is a pseudo-legal club to beat weaker economies with, even though bigger Southern economies, such as India or China, are not always defenseless. Larger economies can choose whether to comply with dispute settlement findings or not. This chapter gives many examples. Recent attempts to change the dispute solution mechanism even more away from equal treatment before the law bode ill for weaker members. The much toted "Development Round" turned out not to have had much

development effects, serving Northern interests instead. Furthermore, the WTO offers itself publicly to outsmart parliaments and democracy. The chapter continues to argue: while the WTO has served to establish basic commitments, the North meanwhile prefer bilateral investment treaties in order to press WTO-plus obligations on the South, obligations that could not get through multilateral WTO negotiations. Present unilateral actions by the United States illustrate once again the weakness and limited usefulness of the WTO framework.

Moreover, in the course of overview, a chapter studies and discusses globalization ontology through the zeitgeists of historical eras. Zeitgeist or spirit of the age study of each influential age contributes dramatically to cogent comprehension of economic, social, political, cultural, and historical backgrounds and atmospheres, which have collectively molded globalization into a stupendous phenomenon. Moreover, the paper has scrutinized the concept of globalization to see whether it is an ancient concept in a new disguise or a modern all-inclusive phenomenon. Hence, the study is mostly analytical and rests upon secondary data through library study. The originality of the study lies not only in the philosophical application of zeitgeist concept for the analysis of globalization's nature but also in the introduction of subject matter's initial *Dismantling* (to its reductionistic integral characteristics) and its subsequent *Mantling* (to envisage them in their holistic crystallization) as a useful complementary approach to benefit both from *Reductionism* and *Holism* perspectives for the ontological discussions of immediately sophisticated and broad-ranging phenomena. Additionally, the potential implication of the study would be its contribution in theorizing globalization as a dialectical context-related phenomenon, which will undergo future metamorphic evolution by the changes in the requisites of *times* (*Zeit's*) and their spirits (*Geist's*).

Nonetheless, the link between globalization and institutional quality is an important topic for emerging market economies. Thus, a chapter of this book analyzes the theoretical relationship between globalization and institutional quality and the empirical analysis of this linking in emerging market economies. For this purpose, the chapter seeks to answer three main questions: (1) How do institutions affect globalization (trade openness)? (2) Can the economic globalization and trade openness cause institutional changes? If the answer is positive, does globalization lead to an improvement in the institutional quality or its deterioration? (3) Is there any causal relationship between globalization and institutional quality in developing economies?

To answer these questions, analytical-descriptive methods and econometric methods including Granger-type causality test based on panel vector error correction (PVECM) model are used.

The theoretical findings of this chapter show that the good institutional quality via various channels affects the volume, structure, and composition of the trade. Also, economic globalization may improve (or deteriorate) the quality of institutions, but the kind and the extent of its influence depends on the type of institutional system and institutional structure of economies. The descriptive analysis of data (status of globalization and institutional quality) in developing economies indicates that the trend of economic globalization is not favorable in comparison with the world trend.

On the other hand, the position of institutional quality, the quality of regulation, and the effectiveness of governments (of the vital factors of trade expansion) have the worst situation. The results of Granger-type's causality test show that there is no causal relationship between economic globalization and legal-economic institutions (such as the rule of law and government effectiveness) in the short term, but there is at least one causal relationship in the long run. This relationship with the index of the rule of law is bidirectional and with other indices is unidirectional. Also, the findings of this study show that in the short and long run, political globalization is the cause of political institutions (political stability and voice), and social globalization is the cause of social institutions. Therefore, the *globalization view of institutional change* can be cautiously supported.

Another chapter of this book restudies G20 (Group of Twenty) and proposes a taxonomy of country performance based on GDP and innovation indicators within G20 economies. This chapter considers the impact of GDP on the "development degree" for the G20 economies and investigates how the development of G20 economies relates to the innovation promotion factors extracted from the *Global Innovation Index* (GII) indicators, used as the secondary data for the period 2010–2016. Various variables are used, such as population (in millions), GDP (in USD billion), and seven indicators that are extracted from the GII data. Through the evaluation process, the seven indicators are divided into input and output data; five of them are the input data (institutions, human capital and research, infrastructure, market sophistication and business sophistication), and the other two are the output data (knowledge and technology output and creative output). The taxonomy provides the identification of country performance and presents relevant information to policy-makers, who seek to apply effective economic strategies and develop global policies.

The final chapter of this part of the book studies disruption and global implications of MOOCs for higher education. There has been a great deal of discussion on massive open online courses (MOOCs) since 2012 (considered by some as the year of the MOOCs). The emergence of MOOCs caused a great deal of interest among academics and technology experts as well as the general public. Some of the authors who wrote on MOOCs predicted it would be the next big thing to disrupt education. Other authors saw it as another fad that will go away once it had run its course (as most fads often do). But MOOCs did not turn out to be as such and they are still around. Most importantly, they have evolved into something that resembles a viable business model. This development will have global implications for higher education and raises the prospect of bridging the North-South divide. This chapter examines this phenomenon and its implications from the theoretical frameworks of disruptive innovations and explores its global dimension and its implications for higher education.

Part II is divided into four chapters related to Africa. First, the case of innovation capacity and knowledge absorption in Senegal is considered to study the barriers to technology transfer in sub-Saharan Africa, with respect to the Chinese foreign direct investment (FDI). Innovation capacity and knowledge absorption are recognized in the literature as two fundamental enablers to achieve growth through innovation.

Technology transfer is based on knowledge absorption that is crucial in the innovation process. In African countries, especially sub-Saharan countries, technology transfer is even more important since it allows countries to emerge from poverty and weak economic growth. Do China-Senegal partnerships favor Senegal's innovation capacity building? This chapter will review the importance of knowledge absorption and the difficulty of its construction in Senegal, before studying the links between Senegal and China. This chapter argues that although the Chinese foreign direct investment (FDI) flows in Senegal are growing in recent years, the relations between the two countries remain an opportunistic relation rather than a real transfer of knowledge.

Then the impact of trade on the economic development of African-emerging market economies is studied. Many scholars have investigated the association between trade openness and the economic development. Does the assumption "more trade, more wealth" as outlined by the World Trade Organization (WTO) work? This chapter focuses only on the African-emerging market economies during the years 1991–2016, and the impact of international trade on an economy's GDP and GNI per capita is analyzed. Empirically, the approach is based on panel regressions and Granger causality tests. A positive impact of international trade on a country's economic situation is found, that is, mainly driven by the export activity. However, it fails to statistically prove any impact of the import activity. Finally, the results of the Granger causality tests show that the relationship between international trade and GDP and GNI per capita is unidirectional. These findings lead to believe that scholars should investigate more carefully the role of barriers to trade in emerging market economies. This chapter encourages future researchers to conduct individual country analyses with multiple countries and to enrich academia for the cross-country variation in the findings.

Moreover, a chapter of this book considers fostering egalitarianism through globalization of Africa's indigenous knowledge and technology for enhanced industrial development and global competitiveness. There are arguments that globalization impacts significantly on Africa through methodical rearrangement of collaboration among its nations, by removing, among several others, cultural, commercial, and communication barriers. This chapter focuses on how the African economies can benefit from globalization and ensure stimulation of Africa's industrial development for global competitiveness. Relying on secondary and historical data, the chapter employs human factor theory and posits that capacity and capability building in indigenous technology development is a facilitator for nationwide advancement (besides other factors) to provide the required backing for growth in the key areas of the economy, mainly in farming and manufacturing. The main argument thus is that development of Africa's indigenous technology, an important and neglected African resource, its innovations, and adaptation are unequivocally mandatory for refining production techniques required to drive progress, African empowerment, and global competitiveness. This is so in that technology invented based on people's culture, tradition, and needs and which is adopted for use in their environment can be easily understood, adopted, and adapted for increased

productivity and industrial development. This will bring the countries in the continent to be equal participants and partners and beneficiary in the globalization process.

Additionally, the next chapter of the book studies economic globalization and development in Nigeria. This chapter argues that Nigeria has been committed to globalization in very elaborate contexts, and one evidence of this is the signing of the GATT and the WTO agreements to engage in trade according to their standards. Thus, this chapter examines trade liberalization statistics and Nigeria's key economic indicators after decades of embracing globalization, based on data obtained from WTO and World Bank databases and Central Bank of Nigeria Statistical Bulletin. Applying the auto-regressive distributive lag technique, the chapter examines the relationship between globalization and development. The results show that globalization has not led to economic development in Nigeria despite the evidence that tariffs have been lower, and the economy has become more open, and the volume of trade has increased. The stylized facts show that Nigerians have not been made better off by the opening of the economy; indices have worsened in some cases. The chapter recommends that the dynamics of globalization as embraced in the country be re-examined and deliberately refocused so that future engagements proceed in a manner that will target improvements in the development indicators.

Part III, which comprises three chapters, is devoted to the Middle East and North Africa (MENA). Not surprisingly, globalization produced resistance and conflicts. In the Arab-Muslim world, the globalizing process appears at odds with the ideological roots of Islamic universalism and cosmopolitanism. Thus, the first chapter of this part of the book studies the Islamic State's theoretical challenge in a globalized world.

The second chapter of this part of the book studies globalization and evolution of public administrative system in the Middle East and North Africa (MENA). This chapter describes the evolution of administrative system under globalization pressures in the MENA region. For this reason and for considering the adaptability of public administration in these economies, government performance as a result of administrative system reforms and globalization are analyzed according to six dimensions: government effectiveness, regulation quality, E-government, political stability, corruption control, and general governance. This study uses the panel data approach covering the period 2010–2017 for the MENA countries and employs methods for identifying patterns of behavior. Results indicate that globalization and government performance have strong and nonlinear relationship and their interactive pattern of behavior is oscillatory. In the interactive relationship between these two variables, administrative system reform activities are mediator variable.

The third chapter considers evolution of higher education in a MENA country (Oman) under the gravity of globalization and innovation. The influence of globalization and internationalization in higher education institutions has become a key theme in recent research. Higher education institutions are influenced by the social and economic diversity originating from globalization. In the present knowledge society, various new ideas are associated with higher education institutions' instruction framework. For instance, entrepreneurial universities and corporation

universities have emerged through the impact of globalization. The main objectives of this chapter are to examine the impact of globalization and innovation on the evolution of higher education in Oman and to explore the readiness of universities to embark on a second academic revolution in transforming traditional teaching universities into entrepreneurial universities by introducing the triple helix model of innovation. The chapter studies the entrepreneurial environment in higher education by reviewing the legislation, post-basic education, entrepreneurship education in the school curriculum, entrepreneurship education in the vocational training curricula, business simulation centers (BSCs), national and regional milieu, and existing support structures and clusters for practicing entrepreneurship education in Oman. The study is conceptual, and the approach consists of formulating proposals and definitions based on an extensive literature review. It has been concluded that based on the overview of the triple helix model from a neo-institutional perspective, the external forces provide a favorable environment for the initiation of entrepreneurial universities in Oman. There are many elements of the triple helix model which are now present in Oman, and the environment is propitious for the establishment of entrepreneurial universities.

Part IV includes four chapters related to Asia and Latin America. Cultural globalization and local identity are two indivisible words. There is a crucial debate whether cultural globalization thrives or deteriorates local identity. The main objective of this chapter is to justify whether cultural globalization is a threat on local identity. This study used a Qualitative Interpretive Meta-Synthesis (QIMS) that reviews literature on cultural globalization in the emerging market economies. Results showed that in many countries especially in the emerging markets, cultural globalization has emerged as a threat to local identity. As a result, these countries perceive a number of socioeconomic, cultural, and psychological problems such as poverty and social inequality, erasure of local cultures and heritages, regional disparity, and lack of development ownership. Many of these aspects are closely related with the threat on local identity. This chapter argues that there are many benefits of globalization, but the vast negative consequences are related with the scope of local identity such as cultural dislocation and displacement, cultural realm, breaking cultural autonomy, diffuse cultural traits, and destroy of local traditions and occupations. The finding would be useful to development thinkers, policy-makers, and cultural activists.

Moreover, a chapter of this book attempts to examine the relationship between the sub-indices of social globalization and consumer life satisfaction. The main purpose of this chapter is to examine whether a specific subcomponent of social globalization, namely, television viewing, is reflected in life satisfaction of individuals. This study adopts and uses the gratification theory to understand the gratification sought and obtained by adult consumers when watching various international television genres. Since the power of media mobilizes consumers to have connections with the world through television, this process creates the perception among people that they are global citizens. Studies have found that people's life satisfaction tends to be high when their social globalization level is high. This study argues that individuals who watch certain foreign TV genres, to perceive themselves as global citizens, tend to be

more satisfied with their lives. The study was undertaken in Malaysia, a multiethnic and fast-growing economy. A survey was conducted among 900 adult TV consumers. The results indicated that adult consumers who spend time watching specific TV genres tend to be more content with their lives. Although this study has shed light onto some implications of television viewing and life satisfaction of adults, a few limitations exist and are further discussed in this chapter.

Next, a spotlight on Latin America: Latin America embraces cultures and territories of different nations. Therefore, these countries are connected in multidimensional way since the 1980s, which is the initiation time of globalization of Latin America. The components of multidimensionality include language, religion, culture, eating habit, sports, trade, etc. The positive effects of globalization include trade, production, labor market, and demographic improvement, while the negative effects comprise divergence of communities, increased transitional, cross-border and rural-urban migration, and infrastructural deficit. However, in recent times, Latin America has been facing the reduction of the benefit of globalization for various reasons. This can be mitigated by filling up the gap between policy formulation and that of implementation. A snapshot of globalization of Latin America is described in this chapter of the book.

Furthermore, in a constantly changing global competitive world, it is crucial for organizations to understand their proper role. The global business environment has increased in complex trades between players as boundaries break down. In order to obtain competitive advantages from this environment, managers simply assume that their organization needs to go global. This chapter argues that these misconceptions and narrow views about globalization can lead managers to seek something that they do not really know what it is. Despite the economic, social, and technology development, importance of small- and medium-sized enterprises (SME), the question of the owner-manager's job, is generally handled intuitively and disassociated to their characteristics. This chapter examines the relationship between globalization and the SME owner-manager's job, with a focus in emerging market economies. Based on a theoretic review, an attempt has been made to show a snapshot of the subject through a systematic mapping study. The results of this theoretic review enhance the importance to analyze the owner-manager's job at a SME perspective and its multiple parts and layers, such as specificities, personal characteristics, and previous experience of his/her owner-manager. An understanding of SME owner-manager's job can help practitioners to better assess the SME's readiness to go global.

References

Arnold DJ, Quelch JA (1998) New strategies in emerging markets. Sloan Manag Rev 40(1):7–20
Eichengreen B, Leblang D (2006) Democracy and globalization, NBER working paper no. 12450, August 2006, JEL no. F0, F00, National Bureau of Economic Research, Cambridge, MA
Faghih N (2004a) Globalization and renewal of the world order: a systems approach. Polit Econ Ettelaat 201–202:58–69

Faghih N (2004b) Managing change and disorder in the process of globalization and convergence of civilizations: a systems approach. Polit Econ Ettelaat 203–204:58–71

Faghih N (2004c) Convergence and dialogue management in the process of globalization: a systems approach. Polit Econ Ettelaat 205–206:104–115

Faghih N (2019) An introduction to globalization and development – Entrepreneurship, innovation, business and policy insights from Asia and Africa. In: Faghih N (ed) Globalization and development – Entrepreneurship, innovation, business and policy insights from Asia and Africa, Contributions to management science. Springer, Cham

Fleury A, Fleury MT, Oliveira L (2018) The evolution of studies on emerging market multinationals: what is new? In: Paper presented at the 6th Copenhagen conference on: 'emerging multinationals': outward investment from emerging economies, Copenhagen, Denmark, 11–12 Oct 2018

Goyal KA (2006) Impact of globalization on developing countries (with special reference to India). Int Res J Financ Econ (5):166–172

Gwynne R, Kay C (2004) Latin America transformed globalization and modernity, 2nd edn. Hodder Education, an Hachette UK Company, London

Inglis D (2005) Culture and everyday life. Routledge, London, p 110

Kant I (1795) Perpetual peace and other essays on politics, history and morals. HPC Classics Series, Indianapolis, IN

London T, Hart SL (2004) Reinventing strategies for emerging markets: beyond the transnational model. J Int Bus Stud 35:350–370

Sarfaraz L, Mian SA, Karadeniz EE, Zali MR, Qureshi MS (2018) Female entrepreneurship, internationalization, and trade liberalization in Iran, Pakistan, and Turkey. In: Faghih N, Zali M (eds) Entrepreneurship ecosystem in the Middle East and North Africa (MENA), Contributions to management science. Springer, Cham

Schumpeter JA (1934) The theory of economic development. Harvard, Cambridge, MA

Smith A (1776) The wealth of nations. Random House, New York

Stiglitz JE (2004) Globalization and growth in emerging markets. J Policy Model 26:465–484

Part I
An Overview

Globalization Development Within the Group of Twenty (G20) as Indicated by Globalization and Innovation Indices

Nezameddin Faghih and Mahshid Sazegar

Abstract This chapter undertakes a taxonomic study of globalization development within the Group of Twenty (G20) as indicated by globalization and innovation indices. This study considers the impact of innovation promotion factors on the "globalization development degree" (fi) for the G20 member states and investigates how the globalization development of G20 members relates to the innovation promotion factors extracted from the *Global Innovation Index* (GII) indicators, used as the secondary data for the period 2012–2017. The KOF Index of Globalization is also used as the secondary data (the corresponding data for the period 2012–2017). KOF provides a globalization index and three subindices of globalization in its three main dimensions, i.e., economic globalization, social globalization, and political globalization. Consequently, the G20 member states (including the EU) are compared with each other, and nine variables are considered during the time period 2012–2017: four variables are the KOF index and its three subindices and five variables correspond to GII country ranking scores, as well as two variables selected from the GII input subindices (institution and business sophistication) and the two output subindices, namely, knowledge and technology outputs and creative outputs. The results manifest and demonstrate coherence between G20 economies under the gravity of globalization: a good example for the emerging markets worldwide. Moreover, in the wake of Brexit, the findings of this research shed light on a historical irony: United Kingdom's leadership in globalization development during the recent years, followed by Germany, Canada, France, and the United States. Thus, the taxonomic study reported in this chapter provides an identification of country globalization development and presents relevant information to policy-makers, who seek to apply effective strategies and policies under the impact of globalization.

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1 Introduction

Globalization, as a multidimensional process creating dependency among different territories across the globe, essentially refers to the integration of the world economies through free flows of trade, knowledge, technology, and finance, and it is one of the most hotly debated subjects in socioeconomics and international affairs in the recent years. Poverty reduction and rapid growth in many developing countries can be considered as a positive impact of globalization. Moreover, many countries have introduced enormous radical changes impacting the education, employment, entrepreneurship, trade, and business systems for activation of their role and existence in the new world order and the contemporary era of globalization (Goyal 2006; Faghih 2019; Fretwell et al. 1999).

Furthermore, there are mutual interactions between technical innovation and globalization and integration processes. The contemporary globalization is a phenomenon with deep historical roots in the international trade development. Globalization processes and structures are highly influenced by dynamics of technological and technical progress connected with knowledge, research, and innovation. However, globalization and integration structures and processes significantly affect the development of local economies and elevate the level of competition. Globalization interacts with innovation: that is, globalization accelerates technological and technical progress, and technological and technical progress accelerates processes of globalization (Kraft and Kraftova 2012; Faghih 2019).

The contemporary globalization is characterized by global integration through cross-national cooperation and agreements, mainly for flows of capital and labor (although a historical process of social change and not specific to the present epoch). General integration may be achieved in bilateral integration, regional integration, and global integration (Hatton and Williamson 2006; Wallerstein 1974; Sanderson and Kentor 2008; Daniels et al. 2009). Some examples are the World Trade Organization (WTO), EU[1] (European Union), G20[2] (Group of Twenty), ASEAN[3] (Association of Southeast Asian Nation), and NAFTA[4] (North American Free Trade Agreement).

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[1]European Union contains of 28 of the countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom).

[2]G20 countries (Argentina, Australia, Brazil, Canada, China, European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, and the United States).

[3]ASEAN Group (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam with two observers Papua and Timor-Leste).

[4]NAFTA Group (United States_Mexico_Canada Agreement) has two supplements: the North American Agreement on Environment Cooperation (NAAEC) and the North American Agreement on Labor Cooperation (NAALC).
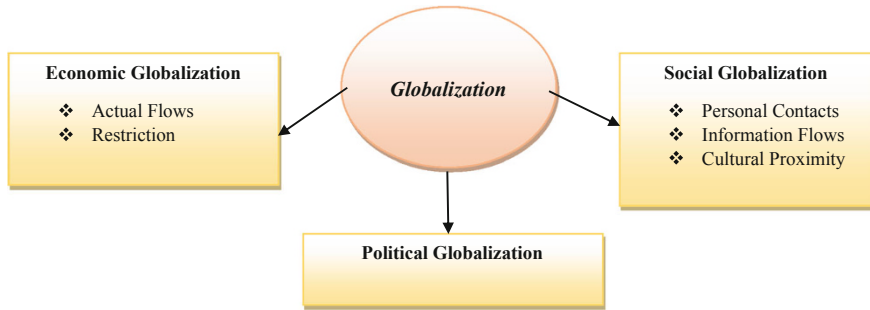
Fig. 1 The three dimensions of KOF (authors' own figure)

The contemporary globalization is also characterized by global measurements and indices. Some of these measures and indices attempt to trace and monitor the development of globalization, and various criteria of globalization may be used for this purpose.

In this chapter, KOF (one of the most widely accepted measures of globalization) is used. The KOF introduced indices in three categories of globalization in the year 2002 (Dreher 2006), and it was updated with some detail in the year 2008 (Dreher et al. 2008; Ying et al. 2014). KOF has three subindices reflecting the economic, social, and political dimension of globalization. More specifically, the three dimensions of the KOF index are defined as:

Economic globalization, characterized as long-distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges
Political globalization characterized by a diffusion of government policies
Social globalization, expressed as the spread of ideas, information, images, and people

The KOF Index of Globalization used in this research corresponds to the 2014 version.[5]

The scale of the KOF index measures from 1 to 100, and its variables are introduced by percent (Dreher et al. 2008). The three dimensions of KOF are also depicted in Fig. 1[6].

As shown in Fig. 1, there are three categorized subindices; one of them is economic globalization consisting of two parts:

- Economic actual flows (% of GDP) components: trade, FDI[7] (stocks), portfolio investment, income payments to foreign nationals (income derived from the use of intangible assets is excluded), as well as trade restriction components, hidden import barriers, mean tariff rate, taxes on international trade as a % of current revenue, and capital account restrictions.
- Social globalization is the second subindex divided into three components:
    - Personal contacts components: telephone traffic, transfers as a % of GDP, international tourism, foreign population as a % of total population, international letters.
    - The second component is information flows described by Internet users, television, and trade in newspapers—sum of exports and imports in newspapers and periodicals in percent of GDP[8] (World Bank 2016).
    - Cultural proximity is the third classified index of social globalization that includes items of cultural behavior such as national cinemas, sum of exports and imports in books and pamphlets (in per cent of GDP), etc. (Kluver and Fu 2004).
- Political globalization is the third dimension of globalization index that are described by embassies in a country, membership in international organizations, participation in UN security council missions, international treaties, etc. (Europa World Yearbook).

2 Methodology

The KOF Index of Globalization provides a globalization index and three subindices of globalization in its three main dimensions, i.e., economic globalization, social globalization, and political globalization (KOF index 2012–2017). The Global Innovation Index (GII) comprises two categories, input indices and output indices, each composed of subindices. The input subindices include institutions, human capital and resources, infrastructure, market sophistication, and business sophistication factors. The output subindices consist of two output elements, i.e., knowledge and technology outputs and creative outputs (Global Innovation Index 2012–2017). The research reported in this chapter uses the secondary data for the period 2012–2017, as summarized in Table 1.

In this chapter, the G20 member states (including the EU) are compared with each other, and nine variables are considered during the time period 2012–2017: four variables are the KOF index and its three subindices and five variables correspond to

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[7]FDI: foreign direct investment (FDI is an investment ownership in a business in one country by an entity based in another country).

[8]GDP (gross domestic product that is the standard measure of the value of the goods and services produced by a country during a reference period).

Table 1 A summary of the secondary data used for the period 2012–2017

KOF index and subindices
Globalization index
Economic globalization subindex
Social globalization subindex
Political globalization subindex
GII input subindices
Institution
Human capital and researcher
Infrastructure
Market sophistication
Business sophistication
GII output subindices
Knowledge and technology outputs
Creative outputs

Authors' own table

Step 1: Data Matrix Creation

Step 2: Standard Matrix Creation

Step 3: Compound Distances Matrix Calculation

Step 4: Specification of the Shortest Distance

Step 5: Obtaining of the Optimum Table

Step 6: Determining of Development Ranking

Step 7: Calculation of Development Degree

Step 8: Appointing of Countries Development Goals

Fig. 2 Methodological steps: a schematic description (authors' own figure)

GII country ranking scores, as well as two variables selected from the GII input subindices (institution and business sophistication) and the two output subindices, namely, knowledge and technology outputs and creative outputs. The numerical taxonomic process with both KOF and GII indices described that development can be created by globalization among the countries in the world as represented by twenty's group countries and European Union. Figure 2 depicts a schematic description of the methodological process (Forouharfar et al. 2018; Sazegar et al. 2018).

This analytical method starts by forming matrices with dimensionless elements which replace quantities having different dimensions (i.e., units of measurement), thus making indicators comparable by computing dimensionless (unitless) numbers as matrix elements (Forouharfar et al. 2018; Sazegar et al. 2018).

A method of selecting from a data matrix the characters most likely to lead to valid conclusions is put forward, based on the concept of a uniquely derived character and its logical consequences (Le Quesne 1969). Following final measurements, and as explained in the next section (and subsections), in this study a "globalization development factor" (fi) is obtained with a value in the range 0–1, such that a country scoring a factor value closer to zero (and less than others) would be more developed in globalization than those closer to unity (and higher than others).

3   Computations of Comparative Indices

This section describes the seven-step computational procedure of taxonomic analysis in the following subsections (Le Quesne 1969; Phillips 1983; Forouharfar et al. 2018; Sazegar et al. 2018).

3.1   Step 1: Development of the Data Matrix

Consider:

$$X_{oj} = \left(\sum_{i=1}^{n} X_{ij} \right) / n \qquad (1)$$

The purpose of step 1 is to create a matrix with "n" members (1, 2, 3, . . ., n) to present the variables as a group. The variables are demonstrated with "m" (as an indicator of each study). The matrix, as it is shown in Eq. (1), contains of "i" rows and "j" columns. Thus, the data matrices of the G20 countries are formed by using the data corresponding to the KOF and GII indices and subindices during the time period 2012–2017, as shown in Tables 2, 3, 4, 5, 6, and 7. "X_{ij}" is an element of the data matrix, and "X_{oj}" represents an element of the average matrix obtained from Eq. (1). It should be noted that each indicator (for the scores of the indices and subindices) was normalized. In the following tables, the KOF and GII data for each year appear in columns. Additionally, four values of KOF, i.e., globalization index, economic globalization, social globalization, and political globalization (1–4), and two subindices of institution and business sophistication (5–6) besides the two subindices of knowledge (scientific outputs) and creative outputs (7–8) comprise the KOF index and subindices and the GII input and output indices, respectively.

Table 2 Data matrix for G20 countries in 2012

2012 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	58.94	44.42	49.12	93.09	34.4	50.7	34.2	25.6	47.5
Australia	81.6	76.26	79.65	91.77	51.9	89.4	48.2	30.9	53.1
Brazil	59.36	53.54	40.69	94.02	36.6	53.8	38	26.5	37.2
Canada	85.53	76.05	88.72	94.16	56.9	93.3	49.3	44.4	56.5
China	59.37	51.25	48.09	86.7	45.4	48.3	42.9	56.4	31.9
France	84.12	72.41	85.65	98.21	51.8	79	46.1	44.3	49
Germany	81.53	72.52	82.16	93.15	56.2	82.5	45.9	49.1	54.7
India	51.88	43.73	31.67	91.98	35.7	51.9	28.3	34.5	38.6
Indonesia	56.26	60.96	30.01	87.1	35.7	37.2	25	24.3	40.8
Italy	81.02	75.18	74.5	98.43	44.5	73.6	44.1	41.7	43
Japan	64.13	45.84	64.57	88.91	51.7	83.5	47.4	44.6	38.7
Mexico	59.96	59.74	51.11	72.86	32.9	61.8	28.9	23.4	42.4
Russia	67.35	54.56	66.96	85.69	37.9	56	36.1	30.4	30.8
South Africa	64.42	65.81	46.83	87.52	37.4	70.1	31.5	24.7	37.8
Republic of Korea	62.39	60.13	45.75	89.2	53.9	76	43.3	47.8	41.3
Turkey	69.99	59.26	64.16	93.21	34.1	55.8	25.7	30.4	37.8
United Kingdom	85.54	77.73	85.5	96.43	61.2	88.4	52.3	51.1	57.5
United States	74.88	60.83	76.24	92.47	57.7	86	59.2	53.6	49.2
European Union	82.551	81.634	79.8796429	87.626	49.866	77.814	49.596	45.468	44.168
Sum	1330.821	1191.854	1191.260	1722.526	865.766	1315.114	775.996	729.168	831.968
Ave. (X_{oj})	70.043	62.729	62.698	90.659	45.567	69.217	40.842	38.377	43.788

Source: Authors' own work based on KOF and GII data

Table 3 Data matrix for G20 countries in 2013

2013 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	58.3	42.61	48.79	93.59	37.66	49.1	32.9	25.2	36.9
Australia	81.59	76.41	79.82	91.29	53.07	88.9	43.9	38.5	52.5
Brazil	59.21	52.37	40.89	94.73	36.33	53.9	39.3	28.1	33.6
Canada	85.38	75.77	88.59	94.13	57.6	92.7	48	43.7	48.3
China	59.43	51.12	48.94	85.85	44.06	48.3	41.8	59	35.7
France	83.86	71.72	85.78	97.98	52.83	78.6	47.4	44.2	45.5
Germany	81.08	71.55	82.23	92.66	55.83	82.7	46.1	53.1	50.4
India	51.57	42.71	31.63	92.21	36.17	50.8	28	32.2	28.6
Indonesia	55.2	58.54	29.89	86.53	31.95	38.1	22.8	23.2	39.2
Italy	81.01	74.75	75.02	98.21	47.85	73.2	40	42.7	37.5
Japan	63.73	44.01	64.85	89.47	52.23	84.1	46.8	47.2	38.1
Mexico	59.25	59.94	49.42	72.27	36.82	61.8	29.9	26.9	32.9
Russia	67.78	55.55	67.19	85.57	37.2	56.4	34.3	37.6	31.4
Saudi Arabia	67.49	69.58	69.03	62.4	41.21	60	37.6	25.7	45
South Africa	64.39	64.61	74.72	87.78	37.6	69.9	32.7	29.1	32.7
Republic of Korea	62.31	59.61	45.75	89.06	53.31	75.8	42.7	54.5	42.2
Turkey	69.02	56.08	64.62	93.24	36.03	54.9	25.4	32.3	41.2
United Kingdom	85.39	78.01	85.19	95.93	61.25	88.6	50.2	56.4	56.6
United States	74.76	60.33	76.56	92.31	61.14	86.2	53.7	58.1	46.5
European Union	82.430	81.591	79.811	87.316	49.861	80.004	43.046	39.586	49.264
Sum	1393.180	1246.861	1288.721	1782.526	920.001	1374.004	786.546	797.286	824.064
Ave. (X_{oj})	69.659	62.343	64.436	89.126	46.000	68.700	39.327	39.864	41.203

Source: Authors' own work based on KOF and GII data

Table 4 Data matrix for G20 countries in 2014

2014 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	58.38	39.53	52.61	93.06	35.13	48	36.3	22.2	36.5
Australia	82.93	77.66	82.24	91.26	55.01	89.3	47.4	34.8	56.5
Brazil	59.78	51.59	43.61	94.72	36.29	55.8	41.6	25.4	29.6
Canada	85.63	76.11	88.91	94.12	56.13	92.7	49.3	41.9	50.9
China	60.5	50.72	52.42	85.87	46.57	54	44.9	58	35.1
France	82.76	67.88	86.7	97.76	52.18	81.7	49.3	41.1	50.8
Germany	79.47	65.73	83.71	92.44	56.02	83.2	49.2	53.4	52.8
India	50.41	41.67	29.85	92.52	33.7	50	26.4	30.1	25.9
Indonesia	56.41	58.03	34.18	86.51	31.81	39.8	24.6	20.9	30.8
Italy	80.31	70.28	77.94	97.71	45.65	73.8	40.6	41.2	37.6
Japan	65	45.44	66.58	89.96	52.41	86.5	50.4	48.6	39.6
Mexico	60.78	61.59	51.79	72.74	36.02	61.5	36.9	29.4	35
Russia	65.42	51.56	64.77	85.66	39.14	56.6	38.4	36.6	30.1
Saudi Arabia	67.69	66.35	72.65	62.34	41.61	60.4	35.8	25.1	42.9
South Africa	65.23	65.11	50.06	87.51	38.25	71.6	34	28.3	31.1
South Korea	64.79	59.89	52.05	90.15	55.27	76.1	45.2	56.7	43.6
Turkey	68.2	53.23	65.67	92.74	38.2	55.8	26.3	27.2	40.6
United Kingdom	83.72	72.31	86.07	96.19	62.37	87.3	53.6	54.9	60.5
United States	74.94	59.19	77.96	92.47	60.09	86.8	55.4	58	47.8
European Union	82.215	80.487	80.400357	87.169	49.555	79.850	42.211	42.475	46.114
Sum	1394.565	1214.357	1300.170	1782.899	921.405	1390.750	827.811	776.275	823.814
Ave. (X_{oj})	69.728	60.718	65.009	89.145	46.070	69.538	41.391	38.814	41.191

Source: Authors' own work based on KOF and GII data

Table 5 Data matrix for G20 countries in 2015

2015 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	57.48	37.52	52.07	92.83	34.3	47.2	30.8	18	25.3
Australia	81.64	74.33	82.11	91.03	55.22	88.8	45	34.3	48.2
Brazil	59.74	50.96	44.24	94.23	34.95	55.3	37	23.7	23.6
Canada	85.03	75.48	88.36	93.39	55.73	91.7	46.5	40.9	47.1
China	60.15	49.8	52.61	85.32	47.47	55.2	53.8	53.3	42.7
France	82.65	67.85	86.5	97.51	53.59	80.4	48	41.3	49.8
Germany	78.86	64.1	83.75	92.17	57.05	84.1	48.3	51.6	56.3
India	50.77	42.84	29.98	91.74	31.74	50.7	32.2	31	22.5
Indonesia	57.39	42.84	34.36	87.57	29.79	41.6	23.7	23	25.2
Italy	79.51	68.25	77.79	97.52	46.4	72.8	37.8	38.7	41.8
Japan	65.87	47.57	66.58	90.1	53.97	87.1	52.8	46.9	39.2
Mexico	60.77	62.14	51.52	72.24	38.03	60.5	29.8	23.3	29.9
Russia	65.9	53.27	64.8	84.91	39.32	57.9	37.5	31.9	28.7
Saudi Arabia	65.27	57.99	74.18	62.44	40.65	57.9	31.3	22.4	34.6
South Africa	64.82	65.04	48.89	87.53	37.45	69.1	32.2	24.7	26.5
South Korea	64.65	59.3	51.95	90.37	56.26	75.4	50.1	54.1	47.4
Turkey	69.02	55.63	65.23	92.97	37.81	54.6	27.6	29.1	42
United Kingdom	82.96	70.53	85.84	95.93	62.42	87.6	49.2	50.2	62.5
United States	74.81	58.77	77.95	92.41	60.1	85.7	52.4	56.5	51.6
European Union	82.038	79.471	80.6817857	87.119	50.093	80.246	44.189	40.614	48.296
Sum	1389.328	1183.681	1299.392	1779.329	922.343	1383.846	810.189	735.514	793.196
Ave. (X_{oj})	69.466	59.184	64.970	88.966	46.117	69.192	40.509	36.776	39.660

Source: Authors' own work based on KOF and GII data

Table 6 Data matrix for G20 countries in 2016

2016 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	57.11	34.49	52.42	92.88	30.24	46.4	33.6	17.6	27.6
Australia	81.93	73.64	83.43	90.64	53.07	87.4	45.4	32.1	46.1
Brazil	60.5	50.8	44.95	94.31	33.19	51.8	37.2	18.9	26.6
Canada	85.67	76.12	89.26	93.17	54.71	91	47.8	38.7	44.8
China	60.73	49.97	53.32	84.81	50.57	54.8	54.5	56.4	45.3
France	82.61	66.53	87.14	97.29	54.04	80.7	50.6	38.5	51.4
Germany	78.24	61.08	84.53	91.94	57.94	83.5	51.4	51.1	55.9
India	51.26	41.91	30.45	91.78	33.61	51.4	34.6	30.3	25.9
Indonesia	57.75	59.07	34.83	87.34	29.07	41.2	26.2	20.9	28.1
Italy	79.59	67.02	78.4	97.53	47.17	71.9	39.6	36.1	42.9
Japan	67.86	50.77	68.31	89.41	54.52	87.4	54.5	47.1	40.8
Mexico	61.65	64.06	51.57	72.29	34.56	58.5	30.8	21.5	32.6
Russia	69.4	54.91	66.55	92.1	38.5	56.1	40.3	27.6	31
Saudi Arabia	67.35	61.82	75.9	62.85	37.75	52.4	35	21.6	28.4
South Africa	65.26	67.53	46.97	87.27	35.85	66.3	34.4	21.5	28
South Korea	65.42	59.83	52.64	90.14	57.15	74.5	51.1	54.7	49.4
Turkey	69.95	55.42	67.33	92.53	39.03	50.6	29.3	27.6	43.4
United Kingdom	81.97	67.62	86.08	94.95	61.93	88.4	52.2	46.5	60.5
United States	75.71	59.4	79.15	92.19	61.4	86.2	56.4	54.4	53.5
European Union	82.124	79.156	81.4575	86.880	49.139	55.221	42.821	40.225	47.261
Sum	1402.084	1201.146	1314.688	1782.300	913.439	1335.721	847.721	703.325	809.461
Ave. (X_{oj})	70.104	60.057	65.734	89.115	45.672	66.786	42.386	35.166	40.473

Source: Authors' own work based on KOF and GII data

Table 7 Data matrix for G20 countries in 2017

2017 (X_{ij})	Globalization index	Economic globalization	Social globalization	Political globalization	GII score ranking	Institutions	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	58.54	38.26	52.6	92.61	32	46.4	33.6	17.6	27.6
Australia	82.97	76.17	84.13	91.17	51.83	87.4	45.4	32.1	46.1
Brazil	61.4	52.3	45.58	94.3	33.1	51.8	37.2	18.9	26.6
Canada	86.51	79.08	89.22	92.45	53.65	91	47.8	38.7	44.8
China	62.02	52.84	54.23	84.26	52.84	54.8	54.5	56.4	45.3
France	87.19	79.41	87.11	97.29	54.18	80.7	50.6	38.5	51.4
Germany	84.57	78.06	85.49	91.71	58.39	83.5	51.4	51.1	55.9
India	52.38	44.36	31.08	91.23	35.47	51.4	34.6	30.3	25.9
Indonesia	59.65	64.02	35.14	86.83	30.1	41.2	26.2	20.9	28.1
Italy	82.19	73.43	79.37	97.25	46.96	71.9	39.6	36.1	42.9
Japan	72.26	63.47	68.89	88.1	54.72	87.4	54.5	47.1	40.8
Mexico	62.29	65.95	51.72	71.72	35.79	58.5	30.8	21.5	32.6
Russia	68.25	52.06	66.58	91.34	38.76	56.1	40.3	27.6	31
Saudi Arabia	67.74	63.35	76.24	62.01	36.17	52.4	35	21.6	28.4
South Africa	66.72	68.91	48.74	88.04	35.8	66.3	34.4	21.5	28
South Korea	67.03	63.14	53.93	89.58	57.7	74.5	51.1	54.7	49.4
Turkey	71.33	58.61	68.22	68.22	38.9	50.6	29.3	27.6	43.4
United Kingdom	87.26	82.99	85.83	94.67	60.89	88.4	52.2	46.5	60.5
United States	79.73	71.58	78.82	91.43	61.4	86.2	56.4	54.4	53.5
European Union	83.782	83.114	82.0414286	86.649	49.853	79.307	45.350	38.104	47.346
Sum	1443.812	1311.104	1324.961	1750.859	918.503	1359.807	850.250	701.204	809.546
Ave. (X_{oj})	72.191	65.555	66.248	87.543	45.925	67.990	42.513	35.060	40.477

Source: Authors' own work based on KOF and GII data

Considering that the European Union (EU) is also a G20 member, consisting of 28 countries, the data for the EU was obtained as an average of each indicator for the EU members within the time span of 2012–2017.

3.2 Step 2: The Standard Matrix Formation

As explained earlier, the indices have different units (dimensions). Thus, a "standard matrix" is formed, containing dimensionless elements Z_{ij}:

$$S_j = \sqrt{\sum_{i=1}^{n} \left(X_{ij} - \overline{X_j}\right)^2 / n} \tag{2}$$

$$Z_{ij} = \left(X_{ij} - X_{oj}\right) / S_j \tag{3}$$

S_j is the standard deviation for "j" indicators, which are derived from the KOF and the GII elements for the time period 2012–2017. "X_{ij}" and "X_{oj}" represent the data matrix and the average matrix obtained from Eq. (1). So, in this data analysis, "i" represents the G20 countries during 2012–2017. The corresponding standard matrices were computed and presented in the following tables. Moreover, elimination of the discrepancy between the indicators' units, by generation of scale-free indices, yields average $= 0$ and standard deviation $= 1$ in the Z matrix. It is to be noted that in the year 2012, Saudi Arabia was missing in the KOF data. Nevertheless, the "Z" matrix acceptability could be checked for the required computations, as shown in Tables 8, 9, 10, 11, 12, and 13.

3.3 Step 3: Calculation of Compound Distances Among the G20 Countries

Compound distances between the G20 countries are computed by

$$D_{ab} = \sqrt{\sum_{i=1}^{n} \left(Z_{aj} - Z_{bj}\right)^2} \tag{4}$$

where D_{ab} is the distance between any two countries "a" and "b." Therefore,

$$D_{aa} = 0$$

$$D_{bb} = 0$$

$$D_{ab} = D_{ba}$$

Table 8 Standard matrix for 2012

2012 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−1.024	−1.607	−0.746	0.446	−1.227	−1.170	−0.714	−1.217	0.496
Australia = 2	1.066	1.188	0.932	0.204	0.696	1.276	0.791	−0.712	1.244
Brazil = 3	−0.986	−0.807	−1.210	0.617	−0.985	−0.974	−0.306	−1.131	−0.880
Canada = 4	1.429	1.169	1.430	0.643	1.245	1.522	0.909	0.574	1.698
China = 5	−0.985	−1.008	−0.803	−0.727	−0.018	−1.322	0.221	1.716	−1.588
France = 6	1.299	0.850	1.262	1.386	0.685	0.618	0.565	0.564	0.696
Germany = 7	1.060	0.859	1.070	0.457	1.169	0.840	0.544	1.021	1.457
India = 8	−1.676	−1.668	−1.706	0.243	−1.084	−1.095	−1.349	−0.369	−0.693
Indonesia = 9	−1.272	−0.155	−1.797	−0.654	−1.084	−2.024	−1.703	−1.340	−0.399
Italy = 10	1.013	1.093	0.649	1.427	−0.117	0.277	0.350	0.316	−0.105
Japan = 11	−0.546	−1.482	0.103	−0.321	0.674	0.903	0.705	0.593	−0.679
Mexico = 12	−0.930	−0.262	−0.637	−3.268	−1.392	−0.469	−1.284	−1.426	−0.185
Russia = 13	−0.248	−0.717	0.234	−0.912	−0.843	−0.835	−0.510	−0.760	−1.735
South Africa = 14	−0.519	0.270	−0.872	−0.576	−0.897	0.056	−1.004	−1.302	−0.800
Rep. of Korea = 15	−0.706	−0.228	−0.932	−0.268	0.916	0.429	0.264	0.897	−0.332
Turkey = 16	−0.005	−0.305	0.080	0.468	−1.260	−0.848	−1.628	−0.760	−0.800
United Kingdom = 17	1.430	1.317	1.253	1.060	1.718	1.213	1.232	1.212	1.831
United States = 18	0.446	−0.167	0.744	0.332	1.333	1.061	1.974	1.450	0.723
European Union = 19	1.154	1.659	0.945	−0.557	0.472	0.543	0.941	0.675	0.051
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 9 Standard matrix for 2013

2013 year	G20s countries standard matrix (Z_{oj})								
Argentina = 1	−1.037	−1.658	−0.865	0.539	−0.900	−1.220	−0.763	−1.263	−0.566
Australia = 2	1.089	1.182	0.851	0.261	0.763	1.258	0.543	−0.118	1.485
Brazil = 3	−0.954	−0.838	−1.302	0.677	−1.044	−0.922	−0.003	−1.013	−1.000
Canada = 4	1.435	1.128	1.336	0.604	1.252	1.494	1.030	0.330	0.933
China = 5	−0.934	−0.943	−0.857	−0.396	−0.209	−1.270	0.294	1.648	−0.724
France = 6	1.296	0.788	1.181	1.069	0.737	0.616	0.959	0.373	0.565
Germany = 7	1.043	0.774	0.984	0.427	1.061	0.872	0.805	1.140	1.209
India = 8	−1.651	−1.650	−1.815	0.372	−1.061	−1.115	−1.346	−0.660	−1.657
Indonesia = 9	−1.320	−0.320	−1.911	−0.314	−1.517	−1.905	−1.963	−1.435	−0.263
Italy = 10	1.036	1.043	0.585	1.097	0.200	0.280	0.080	0.244	−0.487
Japan = 11	−0.541	−1.541	0.023	0.042	0.673	0.959	0.888	0.632	−0.408
Mexico = 12	−0.950	−0.202	−0.831	−2.036	−0.991	−0.430	−1.120	−1.117	−1.092
Russia = 13	−0.172	−0.571	0.152	−0.430	−0.950	−0.766	−0.597	−0.195	−1.289
Saudi Arabia = 14	−0.198	0.608	0.254	−3.228	−0.517	−0.542	−0.205	−1.220	0.499
South Africa = 15	−0.481	0.191	0.569	−0.163	−0.907	0.075	−0.787	−0.927	−1.118
Rep. of Korea = 16	−0.671	−0.230	−1.034	−0.008	0.789	0.442	0.401	1.261	0.131
Turkey = 17	−0.058	−0.526	0.010	0.497	−1.076	−0.859	−1.654	−0.652	0.000
United Kingdom = 18	1.436	1.317	1.148	0.822	1.647	1.239	1.292	1.424	2.025
United States = 19	0.466	−0.169	0.671	0.385	1.635	1.090	1.707	1.571	0.696
European Union = 20	1.166	1.618	0.850	−0.219	0.417	0.704	0.442	−0.024	1.060
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 10 Standard matrix for 2014

2014 year	G20s countries standard matrix (Z_{oj})								
Argentina = 1	−1.078	−1.842	−0.699	0.477	−1.159	−1.362	−0.578	−1.345	−0.492
Australia = 2	1.254	1.473	0.972	0.258	0.947	1.250	0.682	−0.325	1.605
Brazil = 3	−0.945	−0.793	−1.207	0.680	−1.036	−0.869	0.024	−1.086	−1.215
Canada = 4	1.510	1.338	1.348	0.607	1.066	1.465	0.898	0.250	1.018
China = 5	−0.876	−0.869	−0.710	−0.399	0.053	−0.983	0.398	1.553	−0.639
France = 6	1.237	0.623	1.223	1.051	0.647	0.769	0.898	0.185	1.007
Germany = 7	0.925	0.436	1.055	0.402	1.054	0.864	0.886	1.181	1.217
India = 8	−1.834	−1.656	−1.983	0.412	−1.311	−1.236	−1.702	−0.705	−1.603
Indonesia = 9	−1.265	−0.234	−1.739	−0.321	−1.511	−1.881	−1.906	−1.450	−1.089
Italy = 10	1.005	0.831	0.729	1.045	−0.045	0.270	−0.090	0.193	−0.376
Japan = 11	−0.449	−1.328	0.089	0.099	0.672	1.073	1.023	0.792	−0.167
Mexico = 12	−0.850	0.076	−0.745	−2.001	−1.065	−0.508	−0.510	−0.762	−0.649
Russia = 13	−0.409	−0.796	−0.013	−0.425	−0.734	−0.818	−0.339	−0.179	−1.163
Saudi Arabia = 14	−0.194	0.490	0.431	−3.269	−0.473	−0.578	−0.635	−1.110	0.179
South Africa = 15	−0.427	0.382	−0.843	−0.199	−0.829	0.130	−0.839	−0.851	−1.058
Rep. of Korea = 16	−0.469	−0.072	−0.731	0.123	0.975	0.415	0.432	1.448	0.253
Turkey = 17	−0.145	−0.651	0.037	0.438	−0.834	−0.869	−1.713	−0.940	−0.062
United Kingdom = 18	1.329	1.008	1.188	0.859	1.727	1.124	1.386	1.302	2.024
United States = 19	0.495	−0.133	0.730	0.405	1.486	1.092	1.590	1.553	0.693
European Union = 20	1.186	1.718	0.868	−0.241	0.369	0.652	0.093	0.296	0.516
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 11 Standard matrix for 2015

2015 year	G20s countries standard matrix (Z_{oj})								
Argentina = 1	−1.168	−1.899	−0.728	0.474	−1.177	−1.410	−1.043	−1.562	−1.234
Australia = 2	1.186	1.328	0.967	0.253	0.906	1.257	0.482	−0.206	0.734
Brazil = 3	−0.948	−0.721	−1.170	0.645	−1.112	−0.891	−0.377	−1.088	−1.380
Canada = 4	1.517	1.428	1.320	0.542	0.957	1.443	0.644	0.343	0.639
China = 5	−0.908	−0.823	−0.698	−0.447	0.135	−0.897	1.428	1.375	0.261
France = 6	1.285	0.760	1.215	1.047	0.744	0.719	0.805	0.376	0.871
Germany = 7	0.915	0.431	1.060	0.393	1.089	0.956	0.837	1.233	1.430
India = 8	−1.822	−1.433	−1.975	0.340	−1.431	−1.186	−0.893	−0.480	−1.475
Indonesia = 9	−1.177	−1.433	−1.728	−0.171	−1.626	−1.769	−1.806	−1.146	−1.243
Italy = 10	0.979	0.795	0.724	1.049	0.028	0.231	−0.291	0.160	0.184
Japan = 11	−0.350	−1.018	0.091	0.139	0.782	1.148	1.320	0.842	−0.040
Mexico = 12	−0.847	0.259	−0.759	−2.051	−0.805	−0.557	−1.151	−1.121	−0.839
Russia = 13	−0.348	−0.518	−0.010	−0.497	−0.677	−0.724	−0.323	−0.406	−0.942
Saudi Arabia = 14	−0.409	−0.105	0.520	−3.252	−0.544	−0.724	−0.989	−1.196	−0.435
South Africa = 15	−0.453	0.513	−0.907	−0.176	−0.863	−0.006	−0.893	−1.005	−1.131
Rep. of Korea = 16	−0.469	0.010	−0.735	0.172	1.010	0.398	1.030	1.441	0.665
Turkey = 17	−0.043	−0.312	0.015	0.491	−0.827	−0.936	−1.387	−0.639	0.201
United Kingdom = 18	1.315	0.995	1.178	0.854	1.623	1.180	0.934	1.117	1.963
United States = 19	0.521	−0.036	0.733	0.422	1.392	1.059	1.277	1.641	1.026
European Union = 20	1.225	1.778	0.887	−0.226	0.396	0.709	0.395	0.319	0.742
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 12 Standard matrix for 2016

2016 year	G20s countries standard matrix (Z_{oj})								
Argentina = 1	−1.300	−2.365	−0.740	0.470	−1.436	−1.252	−0.950	−1.376	−1.196
Australia = 2	1.183	1.257	0.983	0.191	0.688	1.266	0.326	−0.240	0.523
Brazil = 3	−0.961	−0.856	−1.155	0.649	−1.161	−0.921	−0.561	−1.274	−1.288
Canada = 4	1.557	1.486	1.307	0.507	0.841	1.487	0.585	0.277	0.402
China = 5	−0.938	−0.933	−0.690	−0.538	0.456	−0.736	1.309	1.663	0.448
France = 6	1.251	0.599	1.189	1.022	0.779	0.855	0.888	0.261	1.015
Germany = 7	0.814	0.095	1.044	0.353	1.141	1.027	0.974	1.248	1.433
India = 8	−1.885	−1.679	−1.960	0.333	−1.122	−0.945	−0.842	−0.381	−1.353
Indonesia = 9	−1.236	−0.091	−1.717	−0.222	−1.545	−1.572	−1.749	−1.118	−1.149
Italy = 10	0.949	0.644	0.704	1.052	0.139	0.314	−0.301	0.073	0.225
Japan = 11	−0.225	−0.859	0.143	0.037	0.823	1.266	1.309	0.935	0.030
Mexico = 12	−0.846	0.370	−0.787	−2.102	−1.034	−0.509	−1.252	−1.071	−0.731
Russia = 13	−0.070	−0.476	0.045	0.373	−0.667	−0.656	−0.225	−0.593	−0.880
Saudi Arabia = 14	−0.276	0.163	0.565	−3.282	−0.737	−0.884	−0.798	−1.063	−1.121
South Africa = 15	−0.485	0.691	−1.042	−0.231	−0.914	−0.030	−0.863	−1.071	−1.158
Rep. of Korea = 16	−0.469	−0.021	−0.727	0.128	1.068	0.474	0.942	1.530	0.829
Turkey = 17	−0.015	−0.429	0.089	0.427	−0.618	−0.994	−1.414	−0.593	0.272
United Kingdom = 18	1.187	0.700	1.130	0.729	1.513	1.328	1.061	0.888	1.860
United States = 19	0.561	−0.061	0.745	0.384	1.463	1.193	1.515	1.507	1.210
European Union = 20	1.203	1.767	0.873	−0.279	0.323	−0.710	0.047	0.396	0.630
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 13 Standard matrix for 2017

2017 year	G20s countries standard matrix (Z_{oj})								
Argentina = 1	−1.255	−2.177	−0.765	0.549	−1.333	−1.327	−0.961	−1.371	−1.196
Australia = 2	0.991	0.846	1.003	0.393	0.565	1.193	0.311	−0.233	0.522
Brazil = 3	−0.992	−1.057	−1.159	0.733	−1.228	−0.995	−0.573	−1.269	−1.288
Canada = 4	1.317	1.078	1.288	0.532	0.740	1.414	0.570	0.286	0.401
China = 5	−0.935	−1.014	−0.674	−0.356	0.662	−0.811	1.293	1.676	0.448
France = 6	1.380	1.105	1.170	1.057	0.790	0.781	0.872	0.270	1.014
Germany = 7	1.139	0.997	1.079	0.452	1.194	0.953	0.958	1.260	1.432
India = 8	−1.822	−1.690	−1.972	0.400	−1.001	−1.020	−0.853	−0.374	−1.353
Indonesia = 9	−1.153	−0.122	−1.745	−0.077	−1.515	−1.647	−1.759	−1.112	−1.149
Italy = 10	0.920	0.628	0.736	1.052	0.099	0.240	−0.314	0.082	0.225
Japan = 11	0.006	−0.166	0.148	0.060	0.842	1.193	1.293	0.946	0.030
Mexico = 12	−0.911	0.031	−0.815	−1.715	−0.971	−0.583	−1.263	−1.065	−0.731
Russia = 13	−0.362	−1.076	0.019	0.412	−0.686	−0.731	−0.239	−0.586	−0.880
Saudi Arabia = 14	−0.409	−0.176	0.560	−2.768	−0.934	−0.958	−0.810	−1.057	−1.121
South Africa = 15	−0.503	0.268	−0.982	0.054	−0.970	−0.104	−0.875	−1.065	−1.158
Rep. of Korea = 16	−0.475	−0.193	−0.691	0.221	1.128	0.400	0.926	1.543	0.828
Turkey = 17	−0.079	−0.554	0.111	−2.095	−0.673	−1.069	−1.425	−0.586	0.271
United Kingdom = 18	1.386	1.390	1.098	0.773	1.433	1.254	1.045	0.899	1.859
United States = 19	0.693	0.480	0.705	0.421	1.482	1.119	1.497	1.519	1.209
European Union = 20	1.066	1.400	0.886	−0.097	0.376	0.696	0.306	0.239	0.638
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on KOF and GII data

Table 14 Compound distance matrix for G20 countries in 2012 ("*D*" matrix)

2012	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	South Africa=14	Rep. of Korea=15	Turkey=16	United Kingdom=17	United States=18	European Union=19
Argentina=1	0.00	5.27	1.75	6.26	4.13	5.30	5.57	1.99	2.65	4.64	4.02	4.12	3.11	2.87	3.98	2.50	6.69	5.69	5.62
Australia=2	5.27	0.00	5.17	1.68	5.87	2.02	1.93	6.31	6.23	2.51	4.03	5.90	4.95	4.36	3.87	4.75	2.50	3.01	2.18
Brazil=3	1.75	5.17	0.00	6.24	3.46	5.11	5.56	1.83	2.41	4.14	3.68	4.20	2.43	2.12	3.41	2.21	6.63	5.50	5.18
Canada=4	6.26	1.68	6.24	0.00	6.30	1.72	1.12	7.19	7.35	2.91	4.47	7.10	5.98	5.62	4.34	5.69	1.04	2.53	2.50
China=5	4.13	5.87	3.46	6.30	0.00	5.32	5.34	3.39	4.23	4.68	3.03	4.88	3.06	3.97	2.66	3.95	6.41	4.72	4.77
France=6	5.30	2.02	5.11	1.72	5.32	0.00	1.42	6.15	6.42	1.42	3.89	6.72	4.94	4.80	3.75	4.47	1.98	2.55	2.27
Germany=7	5.57	1.93	5.56	1.12	5.34	1.42	0.00	6.37	6.58	2.47	3.82	6.50	5.30	5.05	3.52	5.02	1.35	2.10	2.13
India=8	1.99	6.31	1.83	7.19	3.39	6.15	6.37	0.00	2.30	5.32	4.14	4.23	3.18	2.97	3.81	2.87	7.53	6.29	6.22
Indonesia=9	2.65	6.23	2.41	7.35	4.23	6.42	6.58	2.30	0.00	5.51	5.22	3.32	3.25	2.57	4.49	2.89	7.75	6.95	6.08
Italy=10	4.64	2.51	4.14	2.91	4.68	1.42	2.47	5.32	5.51	0.00	3.74	6.10	4.10	3.87	3.40	3.52	3.21	3.23	2.30
Japan=11	4.02	4.03	3.68	4.47	3.03	3.89	3.82	4.14	5.22	3.74	0.00	5.03	3.28	3.72	1.83	4.05	4.81	2.89	3.78
Mexico=12	4.12	5.90	4.20	7.10	4.88	6.72	6.50	4.23	3.32	6.10	5.03	0.00	3.30	2.96	4.81	4.05	7.76	6.80	5.64
Russia=13	3.11	4.95	2.43	5.98	3.06	4.94	5.30	3.18	3.25	4.10	3.28	3.30	0.00	2.14	3.50	2.11	6.50	5.29	4.38
South Africa=14	2.87	4.36	2.12	5.62	3.97	4.80	5.05	2.97	2.57	3.87	3.72	2.96	2.14	0.00	3.24	2.06	6.21	5.41	4.31
Rep. of Korea=15	3.98	3.87	3.41	4.34	2.66	3.75	3.52	3.81	4.49	3.40	1.83	4.81	3.50	3.24	0.00	3.87	4.52	3.07	3.39
Turkey=16	2.50	4.75	2.21	5.69	3.95	4.47	5.02	2.87	2.89	3.52	4.05	4.05	2.11	2.06	3.87	0.00	6.21	5.59	4.62
United Kingdom=17	6.69	2.50	6.63	1.04	6.41	1.98	1.35	7.53	7.75	3.21	4.81	7.76	6.50	6.21	4.52	6.21	0.00	2.44	2.91
United States=18	5.69	3.01	5.50	2.53	4.72	2.55	2.10	6.29	6.95	3.23	2.89	6.80	5.29	5.41	3.07	5.59	2.44	0.00	2.79
European Union=19	5.62	2.18	5.18	2.50	4.77	2.27	2.13	6.22	6.08	2.30	3.78	5.64	4.38	4.31	3.39	4.62	2.91	2.79	0.00

Source: Authors' own work based on KOF and GII data

Table 15 Compound distance matrix for G20 countries in 2013 ("*D*" matrix)

2013	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.635	1.352	6.224	3.390	5.374	5.769	1.799	2.470	4.523	3.855	3.134	2.410	4.831	2.894	4.041	2.158	7.056	5.861	5.493
Australia=2	5.635	0	5.325	1.230	5.230	1.623	1.476	6.734	6.504	2.510	3.895	5.524	4.654	4.706	4.135	3.624	4.493	2.133	2.807	1.026
Brazil=3	1.352	5.325	0	5.853	3.070	4.986	5.449	1.974	2.740	4.010	3.627	3.082	2.272	4.805	2.671	3.581	2.553	6.712	5.490	5.114
Canada=4	6.224	1.230	5.853	0.000	5.524	1.247	1.281	7.261	7.336	2.546	3.950	6.219	5.076	5.495	4.637	3.937	5.172	1.672	2.340	1.742
China=5	3.390	5.230	3.070	5.524	0.000	4.739	4.624	3.487	4.311	4.096	2.951	3.786	2.656	4.775	3.719	2.362	3.608	5.879	4.300	4.920
France=6	5.374	1.623	4.986	1.247	4.739	0.000	1.309	6.453	6.594	1.669	3.512	5.752	4.272	5.330	3.997	3.506	4.351	2.218	2.318	1.804
Germany=7	5.769	1.476	5.449	1.281	4.624	1.309	0.000	6.745	6.821	2.445	3.461	5.855	4.629	5.200	4.463	3.131	4.706	1.447	1.721	1.765
India=8	1.799	6.734	1.974	7.261	3.487	6.453	6.745	0.000	2.473	5.340	4.500	3.226	2.985	5.598	3.583	4.418	3.170	8.065	6.694	6.522
Indonesia=9	2.470	6.504	2.740	7.336	4.311	6.594	6.821	2.473	0.000	5.513	5.602	2.870	3.425	4.677	3.715	5.013	2.837	8.051	7.259	6.135
Italy=10	4.523	2.510	4.010	2.546	4.096	1.669	2.445	5.340	5.513	0.000	3.477	4.785	3.208	4.992	2.899	3.204	3.365	3.579	3.291	2.230
Japan=11	3.855	3.895	3.627	3.950	2.951	3.512	3.461	4.500	5.602	3.477	0.000	4.388	3.254	4.959	3.515	2.014	4.014	4.657	2.674	4.069
Mexico=12	3.134	5.524	3.082	6.219	3.786	5.752	5.855	3.226	2.870	4.785	4.388	0.000	2.359	2.727	2.500	4.198	3.148	7.198	6.143	5.044
Russia=13	2.410	4.654	2.272	5.076	2.656	4.272	4.629	2.985	3.425	3.208	3.254	2.359	0.000	3.725	1.493	3.401	1.976	6.053	4.898	4.215
Saudi Arabia=14	4.831	4.706	4.805	5.495	4.775	5.330	5.200	5.598	4.677	4.992	4.959	2.727	3.725	0.000	3.650	4.720	4.281	6.307	5.748	4.108
South Africa=15	2.894	4.135	2.671	4.637	3.719	3.997	4.463	3.583	3.715	2.899	3.515	2.500	1.493	3.650	0.000	3.684	2.102	5.818	4.958	3.748
Rep. of Korea=16	4.041	3.624	3.581	3.937	2.362	3.506	3.131	4.418	5.013	3.204	2.014	4.198	3.401	4.720	3.684	0.000	3.857	4.249	2.759	3.620
Turkey=17	2.158	4.493	2.553	5.172	3.608	4.351	4.706	3.170	2.837	3.365	4.014	3.148	1.976	4.281	2.102	3.857	0.000	5.995	5.360	4.231
United Kingdom=18	7.056	2.133	6.712	1.672	5.879	2.218	1.447	8.065	8.051	3.579	4.657	7.198	6.053	6.307	5.818	4.249	5.995	0.000	2.356	2.624
United States=19	5.861	2.807	5.490	2.340	4.300	2.318	1.721	6.694	7.259	3.291	2.674	6.143	4.898	5.748	4.958	2.759	5.360	2.356	0.000	3.160
European Union=20	5.493	1.026	5.114	1.742	4.920	1.804	1.765	6.522	6.135	2.230	4.069	5.044	4.215	4.108	3.748	3.620	4.231	2.624	3.160	0.000

Source: Authors' own work based on KOF and GII data

It is observed in the following tables that the *compound distance matrices* "*D*" computed for the G20 countries are symmetric, with diameter elements equal to zero and each element D_{ab} showing the distance between two countries (*a*, *b*), as numbered in Tables 14, 15, 16, 17, 18, and 19.

Table 16 Compound distance matrix for G20 countries in 2014 ("*D*" matrix)

2014	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0.000	6.127	1.620	6.400	3.569	5.480	5.795	2.281	2.620	4.513	4.235	3.313	2.273	4.809	2.969	4.551	2.195	7.023	5.913	5.597
Australia=2	6.127	0.000	5.682	1.062	5.264	1.549	1.957	7.448	6.929	2.808	4.020	5.316	5.018	5.053	4.648	3.742	4.892	2.138	2.955	1.713
Brazil=3	1.620	5.682	0.000	5.874	3.171	5.064	5.419	2.386	2.612	3.867	3.855	3.001	1.995	4.824	2.102	3.965	2.583	6.621	5.441	5.020
Canada=4	6.400	1.062	5.874	0.000	5.246	1.209	1.597	7.666	7.320	2.583	3.848	5.706	5.107	5.561	4.902	3.716	5.186	1.773	2.493	1.802
China=5	3.569	5.264	3.171	5.246	0.000	4.559	4.116	4.022	4.405	3.784	2.661	3.334	2.275	4.595	3.365	2.164	3.694	5.379	3.833	4.386
France=6	5.480	1.549	5.064	1.209	4.559	0.000	1.339	6.895	6.653	1.990	3.270	5.294	4.386	5.397	4.428	3.269	4.407	2.002	2.244	1.998
Germany=7	5.795	1.957	5.419	1.597	4.116	1.339	0.000	7.030	6.908	2.590	2.881	5.280	4.491	5.307	4.707	2.623	4.777	1.467	1.327	2.140
India=8	2.281	7.448	2.386	7.666	4.022	6.895	7.030	0.000	2.064	5.548	5.235	3.774	3.191	5.682	3.311	5.158	3.277	8.299	7.039	6.645
Indonesia=9	2.620	6.929	2.612	7.320	4.405	6.653	6.908	2.064	0.000	5.246	5.773	2.962	3.137	4.603	2.812	5.384	2.827	8.114	7.209	6.016
Italy=10	4.513	2.808	3.867	2.583	3.784	1.990	2.590	5.548	5.246	0.000	3.298	4.274	3.136	4.843	3.004	3.045	3.210	3.663	3.230	1.911
Japan=11	4.235	4.020	3.855	3.848	2.661	3.270	2.881	5.235	5.773	3.298	0.000	4.213	3.149	5.035	3.739	1.931	4.147	4.088	2.264	3.810
Mexico=12	3.313	5.316	3.001	5.706	3.334	5.294	5.280	3.774	2.962	4.274	4.213	0.000	2.193	2.185	2.067	4.034	3.097	6.557	5.519	4.334
Russia=13	2.273	5.018	1.995	5.107	2.275	4.386	4.491	3.191	3.137	3.136	3.149	2.193	0.000	3.587	1.936	3.321	2.128	5.876	4.609	4.036
Saudi Arabia=14	4.809	5.053	4.824	5.561	4.595	5.397	5.307	5.682	4.603	4.843	5.035	2.185	3.587	0.000	3.658	4.900	4.083	6.422	5.778	4.197
South Africa=15	2.969	4.648	2.102	4.902	3.365	4.428	4.707	3.311	2.812	3.004	3.739	2.067	1.936	3.658	0.000	3.504	2.256	5.944	4.998	3.700
Rep. of Korea=16	4.551	3.742	3.965	3.716	2.164	3.269	2.623	5.158	5.384	3.045	1.931	4.034	3.321	4.900	3.504	0.000	4.056	3.709	2.326	3.250
Turkey=17	2.195	4.892	2.583	5.186	3.694	4.407	4.777	3.277	2.827	3.210	4.147	3.097	2.128	4.083	2.256	4.056	0.000	5.995	5.299	4.174
United Kingdom=18	7.023	2.138	6.621	1.773	5.379	2.002	1.467	8.299	8.114	3.663	4.088	6.557	5.876	6.422	5.944	3.709	5.995	0.000	2.085	2.977
United States=19	5.913	2.955	5.441	2.493	3.833	2.244	1.327	7.039	7.209	3.230	2.264	5.519	4.609	5.778	4.998	2.326	5.299	2.085	0.000	3.104
European Union=20	5.597	1.713	5.020	1.802	4.386	1.998	2.140	6.645	6.016	1.911	3.810	4.334	4.036	4.197	3.700	3.250	4.174	2.977	3.104	0.000

Source: Authors' own work based on KOF and GII data

Table 17 Compound distance matrix for G20 countries in 2015 ("*D*" matrix)

2015	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	6.194	1.620	6.720	4.585	6.084	6.492	1.893	1.649	4.898	5.040	3.516	2.588	4.569	3.033	5.404	2.777	7.360	6.473	6.231
Australia=2	6.194	0	5.305	0.837	4.596	1.343	1.926	6.604	6.800	1.969	3.327	5.076	4.148	5.256	4.217	3.339	4.116	2.125	2.606	1.134
Brazil=3	1.620	5.305	0	5.814	3.873	5.260	5.731	1.686	2.153	4.040	4.294	3.083	1.983	4.510	1.921	4.461	2.494	6.568	5.687	5.279
Canada=4	6.720	0.837	5.814	0	4.896	1.191	1.777	7.096	7.348	2.179	3.526	5.715	4.634	5.851	4.787	3.573	4.614	1.815	2.464	1.383
China=5	4.585	4.596	3.873	4.896	0	4.236	3.843	4.223	4.951	4.019	2.510	4.340	3.042	4.852	4.109	2.010	3.912	4.816	3.398	4.351
France=6	6.084	1.343	5.260	1.191	4.236	0	1.385	6.528	6.813	1.675	3.069	5.595	4.178	5.807	4.581	3.100	4.019	1.684	2.055	1.755
Germany=7	6.492	1.926	5.731	1.777	3.843	1.385	0.0	6.744	7.108	2.511	2.717	5.739	4.475	5.815	5.036	2.519	4.447	1.160	1.053	2.090
India=8	1.893	6.604	1.686	7.096	4.223	6.528	6.744	0.000	1.564	5.315	5.069	3.560	2.995	5.048	3.029	5.091	3.450	7.653	6.576	6.500
Indonesia=9	1.649	6.800	2.153	7.348	4.951	6.813	7.108	1.564	0.000	5.466	5.809	3.190	3.068	4.525	3.089	5.806	3.141	7.984	7.125	6.639
Italy=10	4.898	1.969	4.040	2.179	4.019	1.675	2.511	5.315	5.466	0.000	3.287	4.491	3.067	5.022	3.254	3.197	2.648	3.070	3.033	1.963
Japan=11	5.040	3.327	4.294	3.526	2.510	3.069	2.717	5.069	5.809	3.287	0.000	4.840	3.372	5.237	4.122	1.819	4.152	3.669	2.091	3.626
Mexico=12	3.516	5.076	3.083	5.715	4.340	5.595	5.739	3.560	3.190	4.491	4.840	0.000	2.254	1.922	2.056	4.789	3.089	6.597	5.894	4.759
Russia=13	2.588	4.148	1.983	4.634	3.042	4.178	4.475	2.995	3.068	3.067	3.372	2.254	0.000	3.064	1.804	3.633	1.916	5.435	4.524	3.963
Saudi Arabia=14	4.569	5.256	4.510	5.851	4.852	5.807	5.815	5.048	4.525	5.022	5.237	1.922	3.064	0.000	3.610	5.407	3.929	6.677	6.055	4.903
South Africa=15	3.033	4.217	1.921	4.787	4.109	4.581	5.036	3.029	3.089	3.254	4.122	2.056	1.804	3.610	0.000	4.121	2.272	5.810	5.184	4.081
Rep. of Korea=16	5.404	3.339	4.461	3.573	2.010	3.100	2.519	5.091	5.806	3.197	1.819	4.789	3.633	5.407	4.121	0.000	4.060	3.326	2.003	3.306
Turkey=17	2.777	4.116	2.494	4.614	3.912	4.019	4.447	3.450	3.141	2.648	4.152	3.089	1.916	3.929	2.272	4.060	0.000	5.205	4.774	3.980
United Kingdom=18	7.360	2.125	6.568	1.815	4.816	1.684	1.160	7.653	7.984	3.070	3.669	6.597	5.435	6.677	5.810	3.326	5.205	0.000	1.848	2.453
United States=19	6.473	2.606	5.687	2.464	3.398	2.055	1.053	6.576	7.125	3.033	2.091	5.894	4.524	6.055	5.184	2.003	4.774	1.848	0.000	2.820
European Union=20	6.231	1.134	5.279	1.383	4.351	1.755	2.090	6.500	6.639	1.963	3.626	4.759	3.963	4.903	4.081	3.306	3.980	2.453	2.820	0.000

Source: Authors' own work based on KOF and GII data

3.4 Step 4: Designation of the Shortest Distances

In this stage of the methodology, the cell represents the gaps between the countries. Every matrix "*D*" line defines the distances between the countries; i.e., the lowest value in each line is marked to be the shortest distance of that country in the year of measurement. For instance, there is the most approximation among two countries if "*a*" and "*b*" have the shortest distance, that is, country "*b*" is a model for country "*a*"

Table 18 Compound distance matrix for G20 countries in 2016 ("*D*" matrix)

2016	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1		6.249	1.718	6.893	4.908	6.293	6.561	1.882	2.726	5.100	5.271	3.928	2.809	4.896	3.530	5.628	3.131	7.280	6.748	6.112
Australia=2	6.249		5.213	0.905	4.613	1.469	2.290	6.308	6.003	1.743	3.130	4.915	3.663	5.182	4.069	3.416	3.894	2.215	2.786	2.243
Brazil=3	1.718	5.213		5.856	4.407	5.415	5.848	1.778	1.940	4.112	4.630	3.200	1.874	4.498	2.101	4.787	2.569	6.456	6.022	5.062
Canada=4	6.893	0.905	5.856		4.970	1.425	2.245	6.920	6.694	2.113	3.376	5.673	4.247	5.844	4.753	3.690	4.549	2.010	2.687	2.543
China=5	4.908	4.613	4.407	4.970		4.266	3.572	4.291	5.128	4.110	2.528	4.676	3.579	5.150	4.496	1.906	4.050	4.487	3.361	4.199
France=6	6.293	1.469	5.415	1.425	4.266		1.494	6.425	6.440	1.761	2.853	5.715	3.816	5.992	4.773	3.113	4.022	1.415	2.020	2.586
Germany=7	6.561	2.290	5.848	2.245	3.572	1.494		6.495	6.770	2.627	2.288	5.858	4.288	6.068	5.248	2.367	4.416	1.097	0.847	3.049
India=8	1.882	6.308	1.778	6.920	4.291	6.425	6.495		2.300	5.216	4.989	3.717	3.115	5.109	3.183	4.972	3.541	7.244	6.547	6.106
Indonesia=9	2.726	6.003	1.940	6.694	5.128	6.440	6.770	2.300		4.959	5.810	2.565	3.040	4.194	2.279	5.556	2.980	7.364	7.032	5.388
Italy=10	5.100	1.743	4.112	2.113	4.110	1.761	2.627	5.216	4.959		3.119	4.544	2.540	5.107	3.394	3.205	2.612	2.907	3.153	2.144
Japan=11	5.271	3.130	4.630	3.376	2.528	2.853	2.288	4.989	5.810	3.119		5.010	3.425	5.390	4.336	1.829	4.169	3.125	1.978	3.996
Mexico=12	3.928	4.915	3.200	5.673	4.676	5.715	5.858	3.717	2.565	4.544	5.010		3.098	2.043	2.093	4.967	3.188	6.457	6.156	4.450
Russia=13	2.809	3.663	1.874	4.247	3.579	3.816	4.288	3.115	3.040	2.540	3.425	3.098		3.840	2.061	3.755	1.693	4.930	4.563	3.475
Saudi Arabia=14	4.896	5.182	4.498	5.844	5.150	5.992	6.068	5.109	4.194	5.107	5.390	2.043	3.840		3.603	5.659	4.119	6.703	6.385	4.575
South Africa=15	3.530	4.069	2.101	4.753	4.496	4.773	5.248	3.183	2.279	3.394	4.336	2.093	2.061	3.603		4.346	4.346	5.728	5.503	3.981
Rep. of Korea=16	5.628	3.416	4.787	3.690	1.906	3.113	2.367	4.972	5.556	3.205	1.829	4.967	3.755	5.659	4.346		4.061	3.081	2.108	3.578
Turkey=17	3.131	3.894	2.569	4.549	4.050	4.022	4.416	3.541	2.980	2.612	4.169	3.188	1.693	4.119	4.346	4.061		4.967	4.887	3.410
United Kingdom=18	7.280	2.215	6.456	2.010	4.487	1.415	1.097	7.244	7.364	2.907	3.125	6.457	4.930	6.703	5.728	3.081	4.967		1.507	3.252
United States=19	6.748	2.786	6.022	2.687	3.361	2.020	0.847	6.547	7.032	3.153	1.978	6.156	4.563	6.385	5.503	2.108	4.887	1.507		3.585
European Union=20	6.112	2.243	5.062	2.543	4.199	2.586	3.049	6.106	5.388	2.144	3.996	4.450	3.475	4.575	3.981	3.578	3.410	3.252	3.585	

Source: Authors' own work based on KOF and GII data

Table 19 Compound distance matrix for G20 countries in 2017 ("*D*" matrix)

2017	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.759	1.342	6.394	4.858	6.450	6.951	1.809	2.534	4.915	5.453	3.348	2.158	4.231	2.926	5.463	3.907	7.486	6.865	5.992
Australia=2	5.759	0	5.049	0.831	4.380	1.310	1.995	5.954	5.793	1.504	2.347	4.721	3.763	4.971	3.948	3.270	4.466	2.228	2.471	1.042
Brazil=3	1.342	5.049	0	5.673	4.495	5.729	6.297	1.673	1.964	4.202	4.811	2.893	1.731	4.068	1.870	4.861	3.825	6.790	6.236	5.228
Canada=4	6.394	0.831	5.673	0	4.637	1.079	1.634	6.532	6.431	1.892	2.438	5.377	4.334	5.517	4.574	3.451	5.081	1.851	2.184	1.225
China=5	4.858	4.380	4.495	4.637	0	4.502	4.089	4.285	5.210	4.087	2.685	4.595	3.528	5.025	4.477	1.789	4.355	4.806	3.526	4.214
France=6	6.450	1.310	5.729	1.079	4.502	0	1.341	6.619	6.514	1.861	2.704	5.690	4.422	5.916	4.829	3.346	5.297	1.394	2.015	1.496
Germany=7	6.951	1.995	6.297	1.634	4.089	1.341	0.000	6.908	6.966	2.614	2.452	5.956	4.923	6.132	5.376	2.821	5.414	0.887	1.060	1.827
India=8	1.809	5.954	1.673	6.532	4.285	6.619	6.908	0.000	2.291	5.142	5.180	3.291	2.702	4.612	2.833	4.887	4.244	7.482	6.680	6.069
Indonesia=9	2.534	5.793	1.964	6.431	5.210	6.514	6.966	2.291	0.000	4.885	5.789	2.341	3.012	3.851	2.153	5.568	3.508	7.457	7.053	5.702
Italy=10	4.915	1.504	4.202	1.892	4.087	1.861	2.614	5.142	4.885	0.000	2.760	4.327	2.950	4.785	3.302	3.302	3.000	3.000	3.078	1.681
Japan=11	5.453	2.347	4.811	2.438	2.685	2.704	2.452	5.180	5.789	2.760	0.000	4.749	3.558	5.088	4.104	1.673	4.691	3.082	1.873	2.540
Mexico=12	3.348	4.721	2.893	5.377	4.595	5.690	5.956	3.291	2.341	4.327	4.749	0.000	2.855	1.947	1.986	4.837	1.903	6.482	6.052	4.558
Russia=13	2.158	3.763	1.731	4.334	3.528	4.422	4.923	2.702	3.012	2.950	3.558	2.855	0.000	3.455	2.035	3.835	3.081	5.497	4.893	3.953
Saudi Arabia=14	4.231	4.971	4.068	5.517	5.025	5.916	6.132	4.612	3.851	4.785	5.088	1.947	3.455	0.000	3.359	5.493	1.878	6.719	6.276	4.730
South Africa=15	2.926	3.948	1.870	4.574	4.477	4.829	5.376	2.833	2.153	3.302	4.104	1.986	2.035	3.359	0.000	4.355	3.203	5.825	5.466	4.003
Rep. of Korea=16	5.463	3.270	4.861	3.451	1.789	3.346	2.821	4.887	5.568	3.302	1.673	4.837	3.835	5.493	4.355	0.000	4.697	3.433	2.218	3.205
Turkey=17	3.907	4.466	3.825	5.081	4.355	5.297	5.414	4.244	3.508	3.000	4.691	1.903	3.081	1.878	3.203	4.697	0.000	5.981	5.624	4.213
United Kingdom=18	7.486	2.228	6.790	1.851	4.806	1.394	0.887	7.482	7.457	3.000	3.082	6.482	5.497	6.719	5.825	3.433	5.981	0.000	1.618	2.192
United States=19	6.865	2.471	6.236	2.184	3.526	2.015	1.060	6.680	7.053	3.078	1.873	6.052	4.893	6.276	5.466	2.218	5.624	1.618	0.000	2.464
European Union=20	5.992	1.042	5.228	1.225	4.214	1.496	1.827	6.069	5.702	1.681	2.540	4.558	3.953	4.730	4.003	3.205	4.213	2.192	2.464	0.000

Source: Authors' own work based on KOF and GII data

and country "*a*" is named a shade. The shortest distances between the countries in the years 2012–2017 are shown (highlighted in green) in Tables 14, 15, 16, 17, 18, and 19.

3.5   Step 5: Optimal Tableau Construction

In the construction of the optimum tableau, countries which have the most commonalities can be connected by the shortest distance toward the country which is considered as the model with the length equal to the shortest distance between the countries. For determining homogeneous countries, at first, upper line distance $d(+)$ and lower limit distance $d(-)$ were computed, using Eqs. (5) and (6), where d is the shortest distances' average and S_d is the standard deviation:

$$d(+) = d + 2\,S_d \tag{5}$$

$$d(-) = d - 2\,S_d \tag{6}$$

It is to be noted that 95.45% of data lie within a band around the mean in a normal (Gaussian) distribution with a width of four standard deviations, i.e., $-2S_d$ to $+2S_d$ (Le Quesne 1969; Phillips 1983).

Furthermore, after computing $d(+)$ and $d(-)$ for the G20 countries in 2012–2017 from Eqs. (5) and (6), it was observed that the distances among the countries should not be out of upper $d(+)$ and lower $d(-)$ limits range for the years 2012 to 2017; if each country is out of the range $d(-)$ and $d(+)$, it has to be set aside, and then the other countries pass through this process until the remaining countries are settled within $d(-)$ and $d(+)$ range. This leads to a homogenous group of countries that could be compared with one another. Thus, the optimal tables, for the years 2012–2017, can be arranged and constructed.

3.6   Step 6: Ranking of the Countries in Terms of Globalization Development

Based on step 5, if the G20 countries are not settled in homogeneous groups, then the new data matrix could be formed for homogenous group of countries, and again the standard matrix can be calculated. In the standard matrix, the largest value in each column can be found and named as the "ideal amount." It is noteworthy that for development being a positive function of the indicators, the largest value is the "ideal amount," and the lowest value is the shortest distance between two economies.

In this chapter, the Group of Twenty countries do not all settle in an equally seamlessly space. Therefore, the analysis process was followed to achieve a homogeneous group, by calculation in six steps for the year 2013 and two steps for each of the years 2012 and 2016, and in the first step for the rest of the years (2014, 2015, 2017), with the outranging data. Thus, an acceptable seamlessly space of distinct countries was obtained (with similar features) which could be measured and compared to distinguish the degree of globalization development in the corresponding

Table 20 The second round of the homogenization process for the year 2012 (the shortest distances between economies highlighted in green)

2012	Argentina =1	Australia =2	Brazil= 3	Canada =4	China= 5	France =6	Germany =7	India=8	Indonesia =9	Italy= 10	Japan= 11	Mexico= 12	Russia =13	South Africa= 14	Rep. of Korea= 15	Turkey= 16	United Kingdom =17	United States= 18
Argentina=1	0.00	5.38	1.77	6.41	4.48	5.53	5.73	2.04	2.95	4.86	4.24	3.49	3.11	4.20	2.54	6.91	5.91	5.86
Australia=2	5.38	0.00	5.27	1.82	6.06	2.47	2.05	6.43	6.43	2.91	4.12	5.17	4.54	3.98	4.87	2.79	3.14	2.40
Brazil=3	1.77	5.27	0.00	6.37	3.92	5.29	5.70	1.93	2.85	4.32	3.94	3.01	2.54	3.68	2.28	6.81	5.71	5.45
Canada=4	6.41	1.82	6.37		6.56	1.93	1.17	7.34	7.66	3.09	4.64	6.32	5.93	4.51	5.85	1.18	2.60	2.87
China=5	4.48	6.06	3.92	6.56		5.893	5.561	3.690	4.420	5.330	3.112	3.210	4.145	2.756	4.331	6.793	4.944	4.835
France=6	5.53	2.47	5.29	1.93	5.893		1.789	6.404	6.963	5.407	4.368	5.661	5.623	4.236	5.179	2.068	2.887	3.175
Germany=7	5.73	2.05	5.70	1.17	5.561	1.789		6.511	6.866	2.756	3.954	5.623	5.331	3.648	5.179	1.548	2.159	2.438
India=8	2.04	6.43	1.93	7.34	3.690	6.404	6.511		2.544	5.575	4.311	3.479	3.149	3.982	2.921	7.755	6.492	6.409
Indonesia=9	2.95	6.43	2.85	7.66	4.420	6.963	6.866	2.544		6.103	4.261	4.927	4.567	4.674	3.779	3.325	3.558	3.235
Italy=10	4.86	2.91	4.32	3.09	5.330	1.459	2.756	5.575	6.103		4.261	4.927	4.567	3.954	3.779	3.325	3.558	3.235
Japan=11	4.24	4.12	3.94	4.64	3.112	4.368	3.954	4.311	5.384	4.261		3.449	3.863	1.854	4.292	5.102	3.039	3.816
Russia=12	3.49	5.17	3.01	6.32	3.210	5.661	5.623	3.479	3.317	4.927	3.449	2.201		3.683	2.658	7.003	5.640	4.493
South Africa=13	3.11	4.54	2.54	5.93	4.145	5.407	5.331	3.149	4.567	3.863	2.603	2.201	3.423		4.117	6.656	7.453	4.453
Rep. of Korea=14	4.20	3.98	3.68	4.51	2.756	4.236	3.648	3.982	4.674	3.954	1.854	3.683	3.423	4.117		4.823	3.217	3.453
Turkey=15	2.54	4.87	2.28	5.85	4.331	4.727	5.179	2.921	3.189	3.779	4.292	2.658	7.003	6.656	4.823		6.436	5.823
United Kingdom=16	6.91	2.79	6.81	1.18	6.793	2.068	1.548	7.755	7.003	3.325	5.102	7.003	5.640	6.656	3.217	6.436		2.605
United States=17	5.91	3.14	5.71	2.60	4.944	2.887	2.159	6.492	7.270	3.558	3.039	5.729	5.640	3.453	5.823	2.605		3.019
European Union=18	5.86	2.40	5.45	2.87	4.835	3.175	2.438	6.409	6.241	3.235	3.816	4.453	4.453	3.453	4.901	3.472	3.019	

Source: Authors' own work based on KOF and GII data

Table 21 The sixth round of the homogenization process for the year 2013 (the shortest distances between economies highlighted in green)

2013	Argentina= 1	Australia =2	Brazil= 3	Canada= 4	France= 5	Germany= 6	India=7	Italy=8	Japan=9	Russia= 10	South Africa= 11	Rep. of Korea= 12	United Kingdom= 13	United States=1 4	European Union=15
Argentina=1	0.000	6.624	1.655	7.435	6.526	6.930	2.148	5.425	5.106	3.618	3.713	5.231	8.445	7.364	6.571
Australia=2	6.624	0.000	6.255	1.693	2.687	1.931	7.820	3.457	4.271	5.618	4.900	4.265	3.009	3.461	1.647
Brazil=3	1.655	6.255	0.000	6.939	5.959	6.502	2.553	4.785	4.769	3.765	3.755	4.737	7.937	6.823	6.224
Canada=4	7.435	1.693	6.939	0.000	1.872	1.658	8.609	3.274	4.540	6.505	5.854	4.832	2.069	2.844	2.872
France=5	6.526	2.687	5.959	1.872	0.000	2.177	7.795	2.000	4.557	6.154	5.616	4.813	2.665	3.247	3.668
Germany=6	6.930	1.931	6.502	1.658	2.177	0.000	7.970	3.261	3.879	5.827	5.553	3.738	1.917	2.064	2.632
India=7	2.148	7.820	2.553	8.609	7.795	7.970	0.000	6.426	5.720	3.969	4.351	5.479	9.559	8.241	7.619
Italy=8	5.425	3.457	4.785	3.274	2.000	3.261	6.426	0.000	4.600	5.151	4.541	4.527	4.250	4.378	3.964
Japan=9	5.106	4.271	4.769	4.540	4.557	3.879	5.720	4.600	0.000	4.212	4.355	2.332	5.427	3.206	4.457
Russia=10	3.618	5.618	3.765	6.505	6.154	5.827	3.969	5.151	4.212	0.000	1.927	4.272	7.702	6.387	4.811
South Africa=11	3.713	4.900	3.755	5.854	5.616	5.553	4.351	4.541	4.355	1.927	0.000	4.592	7.322	6.369	4.314
Rep. of Korea=12	5.231	4.265	4.737	4.832	4.813	3.738	5.479	4.527	2.332	4.272	4.592	0.000	5.238	3.507	4.188
United Kingdom=13	8.445	3.009	7.937	2.069	2.665	1.917	9.559	4.250	5.427	7.702	7.322	5.238	0.000	2.764	4.047
United States=14	7.364	3.461	6.823	2.844	3.247	2.064	8.241	4.378	3.206	6.387	6.369	3.507	2.764	0.000	4.075
European Union=15	6.571	1.647	6.224	2.872	3.668	2.632	7.619	3.964	4.457	4.811	4.314	4.188	4.047	4.075	0.000

Source: Authors' own work based on KOF and GII data

countries in order to present a benchmark pattern for development. The calculation processes are shown in Tables 20, 21, 22, 23, 24, and 25.

For instance, the results of the of the homogenization process for the year 2012 suggested elimination of Mexico in the second step of the homogenization process computation. These results are illustrated in Table 20.

Moreover, the results for the year 2013 again suggested elimination of Saudi Arabia in the first step, Mexico in the second, Indonesia in the third, China in the fourth, and Turkey in the fifth steps of homogenization process computations. The corresponding results are demonstrated in Table 21.

Table 22 The first round of the homogenization process for the year 2014 (the shortest distances between economies highlighted in green)

2014	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0.000	6.127	1.620	6.400	3.569	5.480	5.795	2.281	2.620	4.513	4.235	3.313	2.273	4.809	2.969	4.551	2.195	7.023	5.913	5.597
Australia=2	6.127	0.000	5.682	1.062	5.264	1.549	1.957	7.448	6.929	2.808	4.020	5.316	5.018	5.053	4.648	3.742	4.892	2.138	2.955	1.713
Brazil=3	1.620	5.682	0.000	5.874	3.171	5.064	5.419	2.386	2.612	3.867	3.855	3.001	1.995	4.824	2.102	3.965	2.583	6.621	5.441	5.020
Canada=4	6.400	1.062	5.874	0.000	5.246	1.209	1.597	7.666	7.320	2.583	3.848	5.706	5.107	5.561	4.902	3.716	5.186	1.773	2.493	1.802
China=5	3.569	5.264	3.171	5.246	0.000	4.559	4.116	4.022	4.405	3.784	2.661	3.334	2.275	4.595	3.365	2.164	3.694	5.379	3.833	4.386
France=6	5.480	1.549	5.064	1.209	4.559	0.000	1.339	6.895	6.653	1.990	3.270	5.294	4.386	5.397	4.428	3.269	4.407	2.002	2.244	1.998
Germany=7	5.795	1.957	5.419	1.597	4.116	1.339	0.000	7.030	6.908	2.590	2.881	5.280	4.491	5.307	4.707	2.623	4.777	1.467	1.327	2.140
India=8	2.281	7.448	2.386	7.666	4.022	6.895	7.030	0.000	2.064	5.548	5.235	3.774	3.191	5.682	3.311	5.158	3.277	8.299	7.039	6.645
Indonesia=9	2.620	6.929	2.612	7.320	4.405	6.653	6.908	2.064	0.000	5.246	5.773	2.962	3.137	4.603	2.812	5.384	2.827	8.114	7.209	6.016
Italy=10	4.513	2.808	3.867	2.583	3.784	1.990	2.590	5.548	5.246	0.000	3.298	4.274	3.136	4.843	3.004	3.045	3.210	3.663	3.230	1.911
Japan=11	4.235	4.020	3.855	3.848	2.661	3.270	2.881	5.235	5.773	3.298	0.000	4.213	3.149	5.035	3.739	1.931	4.147	4.088	2.264	3.810
Mexico=12	3.313	5.316	3.001	5.706	3.334	5.294	5.280	3.774	2.962	4.274	4.213	0.000	2.193	2.185	2.067	4.034	3.097	6.557	5.519	4.334
Russia=13	2.273	5.018	1.995	5.107	2.275	4.386	4.491	3.191	3.137	3.136	3.149	2.193	0.000	3.587	1.936	3.321	2.128	5.876	4.609	4.036
Saudi Arabia=14	4.809	5.053	4.824	5.561	4.595	5.397	5.307	5.682	4.603	4.843	5.035	2.185	3.587	0.000	3.658	4.900	4.083	6.422	5.778	4.197
South Africa=15	2.969	4.648	2.102	4.902	3.365	4.428	4.707	3.311	2.812	3.004	3.739	2.067	1.936	3.658	0.000	3.504	2.256	5.944	4.998	3.700
Rep. of Korea=16	4.551	3.742	3.965	3.716	2.164	3.269	2.623	5.158	5.384	3.045	1.931	4.034	3.321	4.900	3.504	0.000	4.056	3.709	2.326	3.250
Turkey=17	2.195	4.892	2.583	5.186	3.694	4.407	4.777	3.277	2.827	3.210	4.147	3.097	2.128	4.083	2.256	4.056	0.000	5.995	5.299	4.174
United Kingdom=18	7.023	2.138	6.621	1.773	5.379	2.002	1.467	8.299	8.114	3.663	4.088	6.557	5.876	6.422	5.944	3.709	5.995	0.000	2.085	2.977
United States=19	5.913	2.955	5.441	2.493	3.833	2.244	1.327	7.039	7.209	3.230	2.264	5.519	4.609	5.778	4.998	2.326	5.299	2.085	0.000	3.104
European Union=20	5.597	1.713	5.020	1.802	4.386	1.998	2.140	6.645	6.016	1.911	3.810	4.334	4.036	4.197	3.700	3.250	4.174	2.977	3.104	0.000

Source: Authors' own work based on KOF and GII data

Table 23 The first round of the homogenization process for the year 2015 (the shortest distances between economies highlighted in green)

2015	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	6.194	1.620	6.720	4.585	6.084	6.492	1.893	1.649	4.898	5.040	3.516	2.588	4.569	3.033	5.404	2.777	7.360	6.473	6.231
Australia=2	6.194	0	5.305	0.837	4.596	1.343	1.926	6.604	6.800	1.969	3.327	5.076	4.148	5.256	4.217	3.339	4.116	2.125	2.606	1.134
Brazil=3	1.620	5.305	0	5.814	3.873	5.260	5.731	1.686	2.153	4.040	4.294	3.083	1.983	4.510	1.921	4.461	2.494	6.568	5.687	5.279
Canada=4	6.720	0.837	5.814	0	4.896	1.191	1.777	7.096	7.348	2.179	3.526	5.715	4.634	5.851	4.787	3.573	4.614	1.815	2.464	1.383
China=5	4.585	4.596	3.873	4.896	0	4.236	3.843	4.223	4.951	4.019	2.510	4.340	3.042	4.852	4.109	2.010	3.912	4.816	3.398	4.351
France=6	6.084	1.343	5.260	1.191	4.236	0	1.385	6.528	6.813	1.675	3.069	5.595	4.178	5.807	4.581	3.100	4.019	1.684	2.055	1.755
Germany=7	6.492	1.926	5.731	1.777	3.843	1.385	0	6.744	7.108	2.511	2.717	5.739	4.475	5.815	5.036	2.519	4.447	1.160	1.053	2.090
India=8	1.893	6.604	1.686	7.096	4.223	6.528	6.744	0.000	1.564	5.315	5.069	3.560	2.995	5.048	3.029	5.091	3.450	7.653	6.576	6.500
Indonesia=9	1.649	6.800	2.153	7.348	4.951	6.813	7.108	1.564	0.000	5.466	5.809	3.190	3.068	4.525	3.089	5.806	3.141	7.984	7.125	6.639
Italy=10	4.898	1.969	4.040	2.179	4.019	1.675	2.511	5.315	5.466	0.000	3.287	4.491	3.067	5.022	3.254	3.197	2.648	3.070	3.033	1.963
Japan=11	5.040	3.327	4.294	3.526	2.510	3.069	2.717	5.069	5.809	3.287	0.000	4.840	3.372	5.237	4.122	1.819	4.152	3.669	2.091	3.626
Mexico=12	3.516	5.076	3.083	5.715	4.340	5.595	5.739	3.560	3.190	4.491	4.840	0.000	2.254	1.922	2.056	4.789	3.089	6.597	5.894	4.759
Russia=13	2.588	4.148	1.983	4.634	3.042	4.178	4.475	2.995	3.068	3.067	3.372	2.254	0.000	3.064	1.804	3.633	1.916	5.435	4.524	3.963
Saudi Arabia=14	4.569	5.256	4.510	5.851	4.852	5.807	5.815	5.048	4.525	5.022	5.237	1.922	3.064	0.000	3.610	5.407	3.929	6.677	6.055	4.903
South Africa=15	3.033	4.217	1.921	4.787	4.109	4.581	5.036	3.029	3.089	3.254	4.122	2.056	1.804	3.610	0.000	4.121	2.272	5.810	5.184	4.081
Rep. of Korea=16	5.404	3.339	4.461	3.573	2.010	3.100	2.519	5.091	5.806	3.197	1.819	4.789	3.633	5.407	4.121	0.000	4.060	3.326	2.003	3.306
Turkey=17	2.777	4.116	2.494	4.614	3.912	4.019	4.447	3.450	3.141	2.648	4.152	3.089	1.916	3.929	2.272	4.060	0.000	5.205	4.774	3.980
United Kingdom=18	7.360	2.125	6.568	1.815	4.816	1.684	1.160	7.653	7.984	3.070	3.669	6.597	5.435	6.677	5.810	3.326	5.205	0.000	1.848	2.453
United States=19	6.473	2.606	5.687	2.464	3.398	2.055	1.053	6.576	7.125	3.033	2.091	5.894	4.524	6.055	5.184	2.003	4.774	1.848	0.000	2.820
European Union=20	6.231	1.134	5.279	1.383	4.351	1.755	2.090	6.500	6.639	1.963	3.626	4.759	3.963	4.903	4.081	3.306	3.980	2.453	2.820	0.000

Source: Authors' own work based on KOF and GII data

Similarly, based on the results for the year 2014, all of the reviewed countries in homogenization process calculations are similar in their group. These results are depicted in Table 22. It is observed that within the G20 members, all members remained in the homogenization process after the first rounds of computations.

Subsequently, for the year 2015, in the first round, the results (as shown in Table 23) lead to formation of a homogenous group.

Table 24 The first round of the homogenization process for the year 2016 (the shortest distances between economies highlighted in green)

2016	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	European Union=19
Argentina=1	0.000	6.402	1.732	7.068	5.173	6.484	6.819	1.937	2.752	5.214	5.527	3.949	2.864	4.924	3.556	5.891	3.200	7.542	6.229
Australia=2	6.402	0.000	5.361	0.937	4.733	1.509	2.388	6.442	6.211	1.798	3.193	5.056	3.772	5.302	4.209	3.516	4.035	2.322	2.330
Brazil=3	1.732	5.361	0.000	6.025	4.656	5.599	6.098	1.821	2.008	4.226	4.866	3.228	1.923	4.526	2.125	5.046	2.658	6.713	5.182
Canada=4	7.068	0.937	6.025	0.000	5.068	1.453	2.306	7.070	6.922	2.185	3.411	5.836	4.373	5.984	4.914	3.761	4.712	2.088	2.636
China=5	5.173	4.733	4.656	5.068	0.000	4.352	3.652	4.503	5.426	4.223	2.617	4.919	3.764	5.352	4.731	1.960	4.278	4.590	4.269
France=6	6.484	1.509	5.599	1.453	4.352	0.000	1.551	6.588	6.679	1.854	2.898	5.884	3.957	6.136	4.947	3.178	4.200	1.486	2.654
Germany=7	6.819	2.388	6.098	2.306	3.652	1.551	0.000	6.709	7.067	2.759	2.343	6.092	4.492	6.276	5.485	2.407	4.650	1.125	3.146
India=8	1.937	6.442	1.821	7.070	4.503	6.588	6.709	0.000	2.355	5.308	5.194	3.750	3.161	5.150	3.215	5.187	3.609	7.470	6.203
Indonesia=9	2.752	6.211	2.008	6.922	5.426	6.679	7.067	2.355	0.000	5.114	6.101	2.610	3.145	4.252	2.360	5.864	3.061	7.671	5.554
Italy=10	5.214	1.798	4.226	2.185	4.223	1.854	2.759	5.308	5.114	0.000	3.219	4.632	2.609	5.180	3.491	3.319	2.701	3.057	2.179
Japan=11	5.527	3.193	4.866	3.411	2.617	2.898	2.343	5.194	6.101	3.219	0.000	5.231	3.609	5.576	4.547	1.883	4.405	3.191	4.081
Mexico=12	3.949	5.056	3.228	5.836	4.919	5.884	6.092	3.750	2.610	4.632	5.231	0.000	3.142	2.076	2.114	5.209	3.226	6.697	4.571
Russia=13	2.864	3.772	1.923	4.373	3.764	3.957	4.492	3.161	3.145	2.609	3.609	3.142	0.000	3.865	2.103	3.956	1.783	5.143	3.548
Saudi Arabia=14	4.924	5.302	4.526	5.984	5.352	6.136	6.276	5.150	4.252	5.180	5.576	2.076	3.865	0.000	3.633	5.863	4.163	6.919	4.672
South Africa=15	3.556	4.209	2.125	4.914	4.731	4.947	5.485	3.215	2.360	3.491	4.547	2.114	2.103	3.633	0.000	4.594	2.675	5.975	4.112
Rep. of Korea=16	5.891	3.516	5.046	3.761	1.960	3.178	2.407	5.187	5.864	3.319	1.883	5.209	3.956	5.863	4.594	0.000	4.296	3.142	3.661
Turkey=17	3.200	4.035	2.658	4.712	4.278	4.200	4.650	3.609	3.061	2.701	4.405	3.226	1.783	4.163	2.675	4.296	0.000	5.205	3.497
United Kingdom=18	7.542	2.322	6.713	2.088	4.590	1.486	1.125	7.470	7.671	3.057	3.191	6.697	5.143	6.919	5.975	3.142	5.205	0.000	3.376
European Union=19	6.229	2.330	5.182	2.636	4.269	2.654	3.146	6.203	5.554	2.179	4.081	4.571	3.548	4.672	4.112	3.661	3.497	3.376	0.000

Source: Authors' own work based on KOF and GII data

Table 25 The first round of the homogenization process for the year 2017 (the shortest distances between economies highlighted in green)

2017	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	Rep. of Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.759	1.342	6.394	4.858	6.450	6.951	1.809	2.534	4.915	5.453	3.348	2.158	4.231	2.926	5.463	3.907	7.486	6.865	5.992
Australia=2	5.759	0	5.049	0.831	4.380	1.310	1.995	5.954	5.793	1.504	2.347	4.721	3.763	4.971	3.948	3.270	4.466	2.228	2.471	1.042
Brazil=3	1.342	5.049	0	5.673	4.495	5.729	6.297	1.673	1.964	4.202	4.811	2.893	1.731	4.068	1.870	4.861	3.825	6.790	6.236	5.228
Canada=4	6.394	0.831	5.673	0	4.637	1.079	1.634	6.532	6.431	1.892	2.438	5.377	4.334	5.517	4.574	3.451	5.081	1.851	2.184	1.225
China=5	4.858	4.380	4.495	4.637	0	4.502	4.089	4.285	5.210	4.087	2.685	4.595	3.528	5.025	4.477	1.789	4.355	4.806	3.526	4.214
France=6	6.450	1.310	5.729	1.079	4.502	0	1.341	6.619	6.514	1.861	2.704	5.690	4.422	5.916	4.829	3.346	5.297	1.394	2.015	1.496
Germany=7	6.951	1.995	6.297	1.634	4.089	1.341	0.0	6.908	6.966	2.614	2.452	5.956	4.923	6.132	5.376	2.821	5.414	0.887	1.060	1.827
India=8	1.809	5.954	1.673	6.532	4.285	6.619	6.908	0.000	2.291	5.142	5.180	3.291	2.702	4.612	2.833	4.887	4.244	7.482	6.680	6.069
Indonesia=9	2.534	5.793	1.964	6.431	5.210	6.514	6.966	2.291	0.000	4.885	5.789	2.341	3.012	3.851	2.153	5.568	3.508	7.457	7.053	5.702
Italy=10	4.915	1.504	4.202	1.892	4.087	1.861	2.614	5.142	4.885	0.000	2.760	4.327	2.950	4.785	3.302	3.235	4.084	3.000	3.078	1.681
Japan=11	5.453	2.347	4.811	2.438	2.685	2.704	2.452	5.180	5.789	2.760	0.000	4.749	3.558	5.088	4.104	1.673	4.691	3.082	1.873	2.540
Mexico=12	3.348	4.721	2.893	5.377	4.595	5.690	5.956	3.291	2.341	4.327	4.749	0.000	2.855	1.947	1.986	4.837	1.903	6.482	6.052	4.558
Russia=13	2.158	3.763	1.731	4.334	3.528	4.422	4.923	2.702	3.012	2.950	3.558	2.855	0.000	3.455	2.035	3.835	3.081	5.497	4.893	3.953
Saudi Arabia=14	4.231	4.971	4.068	5.517	5.025	5.916	6.132	4.612	3.851	4.785	5.088	1.947	3.455	0.000	3.359	5.493	5.414	6.719	6.276	4.730
South Africa=15	2.926	3.948	1.870	4.574	4.477	4.829	5.376	2.833	2.153	3.302	4.104	1.986	2.035	3.359	0.000	4.355	3.203	5.825	5.466	4.003
Rep. of Korea=16	5.463	3.270	4.861	3.451	1.789	3.346	2.821	4.887	5.568	3.235	1.673	4.837	3.835	5.493	4.355	0.000	4.697	3.433	2.218	3.205
Turkey=17	3.907	4.466	3.825	5.081	4.355	5.297	5.414	4.244	3.508	4.084	4.691	1.903	3.081	5.414	3.203	4.697	0.000	5.981	5.624	4.213
United Kingdom=18	7.486	2.228	6.790	1.851	4.806	1.394	0.887	7.482	7.457	3.000	3.082	6.482	5.497	6.719	5.825	3.433	5.981	0.000	1.618	2.192
United States=19	6.865	2.471	6.236	2.184	3.526	2.015	1.060	6.680	7.053	3.078	1.873	6.052	4.893	6.276	5.466	2.218	5.624	1.618	0.000	2.464
European Union=20	5.992	1.042	5.228	1.225	4.214	1.496	1.827	6.069	5.702	1.681	2.540	4.558	3.953	4.730	4.003	3.205	4.213	2.192	2.464	0.000

Source: Authors' own work based on KOF and GII data

Furthermore, for the year 2016, the United States was eliminated in the second step of homogenization process calculations. The results are shown in Table 24.

Nevertheless, for the year 2017, in the first round, the results lead to forming a homogenous group, as shown in Table 25.

3.7 Step 7: Computation of the Globalization Development Degrees

In order to find the globalization development degree (fi) for each member within the G20 group, Co, i.e., the upper limit of the development pattern should be measured and then substituted in Eq. (7):

$$fi = (Cio/Co) \qquad (7)$$

In Eq. (7), Cio is development pattern over the upper limit of the development pattern, and Co is obtained from Eq. (8):

$$Co = \overline{Cio} + 2\ Sio, \qquad (8)$$

where $\overline{Cio}$ and Sio are the average and standard deviation of the development pattern corresponding to fi (Le Quesne 1969; Phillips 1983).

The globalization development degree is between "0" and "1," that is, when "fi" values get near to "0," the globalization is more developed than the case "fi" approaches to "1"; namely, the member state gets close to less developed in globalization characteristics. By measuring Cio and fi, the G20 member states were ranked based on the globalization development degrees. In this step, results obtained for the G20 members lead to the globalization development degree (fi) for each of the member states, as demonstrated in Tables 26, 27, 28, 29, 30, and 31.

Table 26 Globalization development degrees for 2012

2012 year	fi	Development ranking "fi"	
Argentina = 1	0.752	United Kingdom	0.115
Australia = 2	0.356	Canada	0.205
Brazil = 3	0.731	Germany	0.249
Canada = 4	0.205	France	0.264
China = 5	0.716	United States	0.288
France = 6	0.264	Australia	0.356
Germany = 7	0.249	Italy	0.374
India = 8	0.828	European Union	0.398
Indonesia = 9	0.882	Rep. of Korea	0.535
Italy = 10	0.374	Japan	0.558
Japan = 11	0.558	Turkey	0.706
Russia = 12	0.756	China	0.716
South Africa = 13	0.728	South Africa	0.728
Rep. of Korea = 14	0.535	Brazil	0.731
Turkey = 15	0.706	Argentina	0.752
United Kingdom = 16	0.115	Russia	0.756
United States = 17	0.288	India	0.828
European Union = 18	0.398	Indonesia	0.882

Source: Authors' own table

Table 27 Globalization development degrees for 2013

2013 year	fi	Development ranking "fi"	
Argentina = 1	0.833	United Kingdom	0.097
Australia = 2	0.347	Canada	0.242
Brazil = 3	0.777	Germany	0.258
Canada = 4	0.242	France	0.277
France = 5	0.277	United States	0.304
Germany = 6	0.258	Australia	0.347
India = 7	0.935	Italy	0.428
Italy = 8	0.428	European Union	0.446
Japan = 9	0.557	Rep. of Korea	0.548
Russia = 10	0.777	Japan	0.557
South Africa = 11	0.736	South Africa	0.736
Rep. of Korea = 12	0.548	Brazil	0.777
United Kingdom = 13	0.097	Russia	0.777
United States = 14	0.304	Argentina	0.833
European Union = 15	0.446	India	0.935

Source: Authors' own table

Table 28 Globalization development degrees for 2014

2014 year	fi	Development ranking "fi"	
Argentina = 1	0.785	United Kingdom	0.092
Australia = 2	0.251	Canada	0.203
Brazil = 3	0.733	Germany	0.218
Canada = 4	0.203	Australia	0.251
China = 5	0.610	France	0.256
France = 6	0.256	United States	0.273
Germany = 7	0.218	European Union	0.331
India = 8	0.908	Italy	0.412
Indonesia = 9	0.884	Rep. of Korea	0.437
Italy = 10	0.412	Japan	0.483
Japan = 11	0.483	China	0.610
Mexico = 12	0.723	South Africa	0.654
Russia = 13	0.660	Russia	0.660
Saudi Arabia = 14	0.707	Turkey	0.674
South Africa = 15	0.654	Saudi Arabia	0.707
Rep. of Korea = 16	0.437	Mexico	0.723
Turkey = 17	0.674	Brazil	0.733
United Kingdom = 18	0.092	Argentina	0.785
United States = 19	0.273	Indonesia	0.884
European Union = 20	0.331	India	0.908

Source: Authors' own table

Table 29 Globalization development degrees for 2015 (authors' own table)

2015 year	fi	Development ranking "fi"	
Argentina = 1	0.840	United Kingdom	0.116
Australia = 2	0.278	Germany	0.204
Brazil = 3	0.746	Canada	0.225
Canada = 4	0.225	France	0.241
China = 5	0.555	United States	0.252
France = 6	0.241	Australia	0.278
Germany = 7	0.204	European Union	0.293
India = 8	0.858	Italy	0.381
Indonesia = 9	0.899	Rep. of Korea	0.400
Italy = 10	0.381	Japan	0.446
Japan = 11	0.446	China	0.555
Mexico = 12	0.749	Turkey	0.618
Russia = 13	0.634	Russia	0.634
Saudi Arabia = 14	0.759	South Africa	0.663
South Africa = 15	0.663	Brazil	0.746
Rep. of Korea = 16	0.400	Mexico	0.749
Turkey = 17	0.618	Saudi Arabia	0.759
United Kingdom = 18	0.116	Argentina	0.840
United States = 19	0.252	India	0.858
European Union = 20	0.293	Indonesia	0.899

Table 30 Globalization development degrees for 2016 (authors' own table)

2016 year	fi	Development ranking "fi"	
Argentina = 1	0.868	United Kingdom	0.158
Australia = 2	0.293	Germany	0.220
Brazil = 3	0.764	Canada	0.227
Canada = 4	0.227	France	0.233
China = 5	0.537	Australia	0.293
France = 6	0.233	Italy	0.369
Germany = 7	0.220	European Union	0.373
India = 8	0.842	Rep. of Korea	0.381
Indonesia = 9	0.853	Japan	0.405
Italy = 10	0.369	China	0.537
Japan = 11	0.405	Russia	0.600
Mexico = 12	0.759	Turkey	0.620
Russia = 13	0.600	South Africa	0.669
Saudi Arabia = 14	0.781	Mexico	0.759
South Africa = 15	0.669	Brazil	0.764
Rep. of Korea = 16	0.381	Saudi Arabia	0.781
Turkey = 17	0.620	India	0.842
United Kingdom = 18	0.158	Indonesia	0.853
European Union = 19	0.373	Argentina	0.868

Table 31 Globalization development degrees for 2017 (authors' own table)

2017 year	fi	Development ranking "fi"	
Argentina = 1	0.833	United Kingdom	0.101
Australia = 2	0.307	Germany	0.130
Brazil = 3	0.762	United States	0.168
Canada = 4	0.251	France	0.209
China = 5	0.517	Canada	0.251
France = 6	0.209	European Union	0.300
Germany = 7	0.130	Australia	0.307
India = 8	0.825	Japan	0.345
Indonesia = 9	0.838	Italy	0.373
Italy = 10	0.373	Rep. of Korea	0.377
Japan = 11	0.345	China	0.517
Mexico = 12	0.743	Russia	0.625
Russia = 13	0.625	South Africa	0.670
Saudi Arabia = 14	0.764	Turkey	0.691
South Africa = 15	0.670	Mexico	0.743
Rep. of Korea = 16	0.377	Brazil	0.762
Turkey = 17	0.691	Saudi Arabia	0.764
United Kingdom = 18	0.101	India	0.825
United States = 19	0.168	Argentina	0.833
European Union = 20	0.300	Indonesia	0.838

Table 32 (on the left-hand side) shows the average values of the globalization development degrees "fi" for the Group of Twenty during the years 2012–2017. These results are also depicted in Fig. 3. It is noted (as explained in Sect. 3.7: step 7) that when "fi" values get close to "0," the globalization is more developed than the case "fi" approaches to "1." Thus, it is observed that globalization is, on average, developed within the Group of Twenty in an oscillatory mode during the above years.

The right-hand side of Table 32 renders the average value of the globalization development degree "fi" for each member of G20 during the years 2012–2017. The

Table 32 Average of the globalization development degrees "fi" for the years 2012–2017 (authors' own table)

Year	Average of development ranking "fi"	Countries	Average of "fi" during the years of 2012–2017	Countries	Sorted ave. of "fi" during the years of 2012–2017
2012	0.525	Argentina = 1	0.819	United Kingdom = 18	0.113
2013	0.504	Australia = 2	0.305	Germany = 7	0.213
2014	0.515	Brazil = 3	0.752	Canada = 4	0.225
2015	0.508	Canada = 4	0.225	France = 6	0.247
2016	0.524	China = 5	0.587	United States = 19	0.257
2017	0.491	France = 6	0.247	Australia = 2	0.305
		Germany = 7	0.213	European Union = 20	0.357
		India = 8	0.866	Italy = 10	0.389
		Indonesia = 9	0.871	Rep. of Korea = 16	0.426
		Italy = 10	0.389	Japan = 11	0.466
		Japan = 11	0.466	China = 5	0.587
		Mexico = 12	0.743	South Africa = 15	0.655
		Russia = 13	0.675	Turkey = 17	0.662
		Saudi Arabia = 14	0.749	Russia = 13	0.675
		South Africa = 15	0.655	Mexico = 12	0.743
		Rep. of Korea = 16	0.426	Saudi Arabia = 14	0.749
		Turkey = 17	0.662	Brazil = 3	0.752
		United Kingdom = 18	0.113	Argentina = 1	0.819
		United States = 19	0.257	India = 8	0.866
		European Union = 20	0.357	Indonesia = 9	0.871

results are also shown in Fig. 4. It is seen that during the above years, on average, the United Kingdom is leading in globalization development, followed by Germany, Canada, France, and the United States.
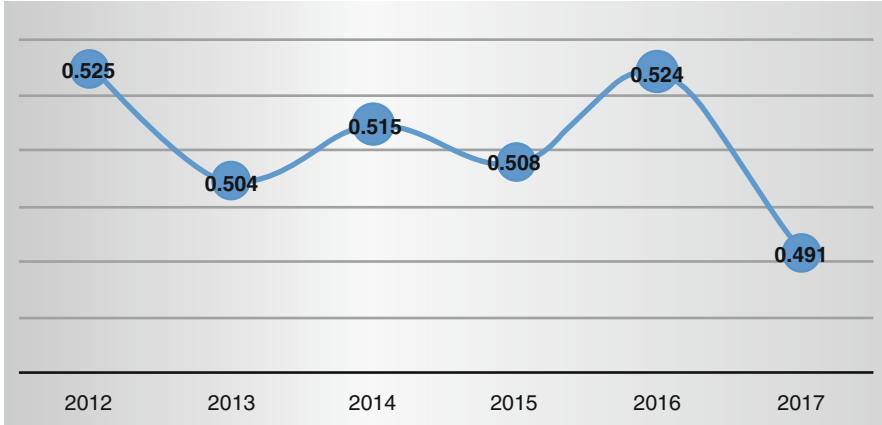
Fig. 3 Average of the globalization development degrees "fi" for the Group of Twenty during the years 2012–2017 (authors' own figure)
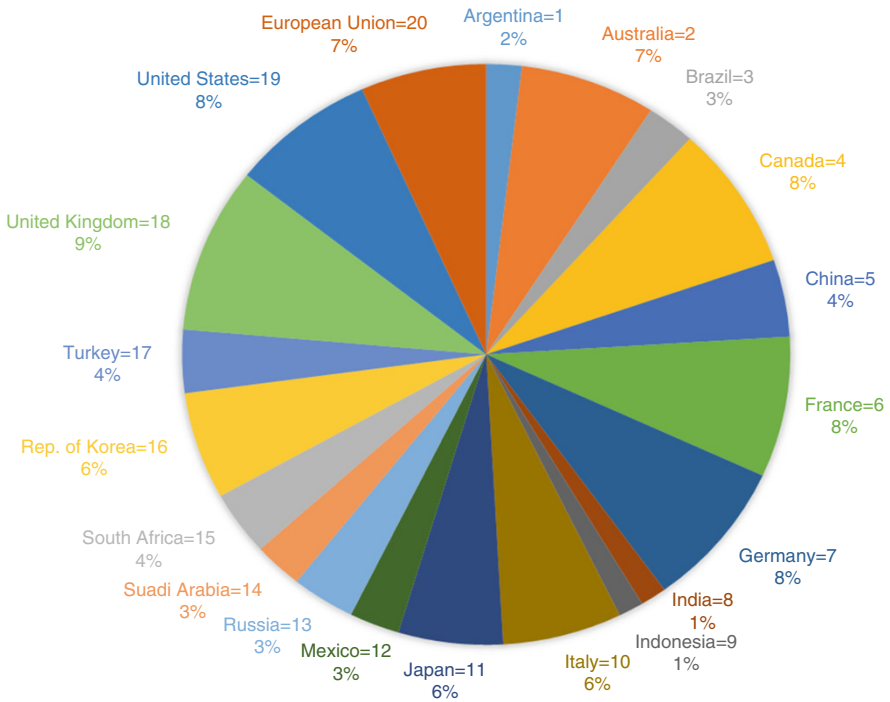
Fig. 4 Percent of globalization development degree for each country in the years 2012 to 2017 (authors' own figure)

4   Conclusion

The taxonomic analysis presented in this chapter used four elements of KOF Index of Globalization and its subindices, GII (Global Innovation Index) country ranking scores, and four of its related indicators corresponding to the years 2012–2017, to measure the globalization development degree "fi" for the G20 countries. The selected indicators were given in Tables 2, 3, 4, 5, 6, and 7, and the development degrees "fi" (for the years 2012–2017) were calculated and represented in Tables 26, 27, 28, 29, 30, and 31.

Compounding the KOF and GII (indices and indicators) leads to interesting results and remarkable observations. The taxonomic data analysis for the years 2012–2017, leading to rapid homogeneity within the group, demonstrated coherence between G20 economies under the gravity of globalization: a good example for the emerging markets worldwide. In fact, in the homogenization process, although in the first step of the group iterations (for G20 countries), Mexico, Saudi Arabia, and United States were eliminated for the years 2012, 2013, and 2016, respectively, all 20 members merged and stayed together in a homogenous group for the years 2014, 2015, and 2017. In the second step, only Mexico was eliminated in the homogenization iterations for the year 2013, and all economies merged to homogeneity for the years 2012–2014–2015–2016–2017. In the third, fourth, and fifth steps of the homogenization process for 2013, Indonesia, China, and Turkey were, respectively, eliminated, and all G20 members were homogenous for the years 2012–2014–2015–2016–2017.

The globalization development degrees (fi) were computed and presented for the G20 member states (during 2012–2017) in Tables 26, 27, 28, 29, 30, and 31. Moreover, the right-hand side of these tables rank the members based on their globalization development degrees.

The results indicated that during these years, the United Kingdom led in globalization development in the view of the KOF and GII compound criteria (except for 2012 that appeared to be led by Korea) and was followed by alternating leadership of Canada and Germany (except for 2017 that Canada was replaced by the United States).

Furthermore, from the results shown in Table 32 and Figs. 3 and 4, it was noted that, in the light of the KOF and GII compound criteria, on average, globalization developed within the Group of Twenty exhibits an oscillatory mode during the years 2012–2017, with the United Kingdom leading in globalization development, followed by Germany, Canada, France, and the United States. Thus, in the wake of Brexit, the findings of this research shed light on a historical irony: United Kingdom's leadership in globalization development during the recent years.

References

Daniels JD, Radebaugh LH, Sullivan DP (2009) International business: environment and operations. Prentice Hall, Upper Saddle River

Dreher A (2006) Does globalization affect growth? Evidence from a new index of globalization. Appl Econ 38(10):1091–1110

Dreher A, Gaston N, Martens P (2008) Measuring globalization – gauging its consequence. Springer, New York

Europa Publications (ed) Europa World Yearbook 2015. Routledge

Faghih N (2019) An introduction to globalization and development – entrepreneurship, innovation, business and policy insights from Asia and Africa. In: Faghih N (ed) Globalization and development – entrepreneurship, innovation, business and policy insights from Asia and Africa. Contributions to management science. Springer, Cham

Forouharfar A, Sazegar M, Hill V, Faghih N (2018) A taxonomic study of innovation in the MENA region economies: reflections on entrepreneurism in Egypt and Qatar. In: Faghih N, Zali M (eds) Entrepreneurship education and research in the Middle East and North Africa (MENA). Contributions to management science. Springer, Cham. https://doi.org/10.1007/978-3-319-90394-1_14

Fretwell D, Benus J, O'Leary CJ (1999) Evaluating the impact of active labor market programs: results of cross-country studies in Europe and Central Asia. Social Protection Discussion Paper No. 9915. World Bank, Washington, DC

Goyal KA (2006) Impact of globalization on developing countries (with special reference to India). Int Res J Finance Econ 5:166–172

Hatton TJ, Williamson JG (2006) Global migration and the world economy: two centuries of policy and performance. MIT Press, Cambridge

Kluver R, Fu W (2004) Measuring cultural globalization. mimeo, Nanyang Technological University, Singapore

Kraft J, Kraftova I (2012) Innovation – globalization – growth (selected relations). Eng Econ 23 (4):395–405

Le Quesne WJ (1969) A method of selection of characters in numerical taxonomy. Syst Biol 18 (2):201–205. https://doi.org/10.2307/2412604

Phillips RB (1983) Shape characters in numerical taxonomy and problems with ratios. Taxon 32 (4):535–544

Sanderson MR, Kentor J (2008) Foreign direct investment and international migration: a cross-national analysis of less-developed countries, 1985–2000. Int Sociol 23(4):514–539. https://doi.org/10.1177/0268580908090726

Sazegar M, Forouharfar A, Hill V, Faghih N (2018) The innovation-based competitive advantage in Oman's transition to a knowledge-based economy: dynamics of innovation for promotion of entrepreneurship. In: Faghih N, Zali M (eds) Entrepreneurship ecosystem in the Middle East and North Africa (MENA). Contributions to management science. Springer, Cham. https://doi.org/10.1007/978-3-319-75913-5_18

Wallerstein I (1974) The modern world-system: capitalist agriculture and the origins of the European world-economy in the sixteenth century. Academic, New York

World Bank (2007, 2011, 2013, 2015, 2016) World development indicators. World Bank, Washington, DC

Ying Y, Chang K, Lee C (2014) The impact of globalization on economic growth. Rom J Econ Forecast XVII(2):25–34

Globalization and the Informal Economy in Developing Countries

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Abstract It has been documented that developing countries are plagued by sizable informal sectors. There are a lot of studies addressing either the informal economies or globalization. However, the literature on whether and how globalization affects the informal sector is somewhat lacking. Several theories are formulated, but empirical studies do not all agree on what facets of globalization affect informality and how. Part of the problem is data deficiency and somewhat lacking synchronization of the existing informal sector data. There are some recent developments in this area that have furthered the subject. The goal of this chapter is to offer an extensive overview on the topic of globalization and informality.

1 Introduction

Globalization and informality are two distinctive phenomena with deep connections to developing countries worldwide. Technological advances and globalization have made the world an increasingly small place, providing access to international markets, foreign cultures, political movements, and environmental activities at a very fast pace. Large companies have become multinational in scope, with most production outsourced to developing countries that offer vast labor pools at low cost. Foreign direct investment (FDI) has turned into a staple in the economic analysis of developing countries, whose governments employ foreign investments as a major developing strategy.

The informal economy, on the other hand, has proved difficult to define. Opinions of researchers in economic development differ on the matter of legitimacy of informal economic activities. One group considers the informal sector to be illegal and proposes to hinder its existence by way of macroeconomic policies. On the opposite side of the argument are those who contend that the informal sector is essential for developing economies and suggest regulating it. It has been

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documented that developing countries are plagued by sizable informal sectors. There are a lot of studies addressing either informal economies or globalization. But, the literature on whether and how globalization affects the informal sector is somewhat lacking. There are some theories formulated, but empirical studies do not all agree on what facets of globalization affect informality and how. Part of the problem is the data deficiency and somewhat lacking synchronization of the existing informal sector data. Recent developments in this area have furthered the subject. The goal of this chapter is to offer an extensive overview on the topic of globalization and informality.

The rest of the chapter is structured in the following manner. Section 2 documents international evidence of the levels of, and trends in, the informal economies and their relationship to globalization and economic growth in developing countries. Recent evidence of cross-regional variation in informal sectors and informal employment rates is presented and discussed, followed by some stylized facts on informality, economic growth, and trade openness. Section 3 introduces definitions and measurements of the informal economy and informal entrepreneurs and provides some theoretical background on the treatment of informality in the literature. Section 4 begins with a discussion of definitions and measurements of globalization. It then offers a summary of the theoretical developments and empirical findings on the relationship between trade liberalization and informality, followed by a narrower focus on studies with a comprehensive treatment of globalization that goes beyond trade liberalization and its effect on the informal economy. Section 5 concludes the chapter.

2   International Evidence About Informality, Economic Growth, and Globalization in Developing Countries

2.1   Informal Economy and Informal Employment Rates

According to the most recent data released by the International Labour Organization (ILO) (ILO 2018), close to two billion people worldwide are employed in the informal economy. This constitutes nearly 60% of the world's working population. When agriculture is not taken into consideration, this figure goes down to 50%, which is still a significant amount. What is striking, however, is that the majority of informal employment worldwide is in developing countries. An overall representation of the geographic distribution of the world's informal employment in total nonagricultural employment is displayed in Fig. 1. In Africa, 72% of nonagricultural employment is informal. The corresponding proportion is 49% in Latin America (LA) and the Caribbean and 59% in Asia and the Pacific. There is a significant regional variation present. The largest differences are observed in Africa, where the proportion of informal employment is as low as 36% in the southern part of the continent, 56% in Northern Africa, and as high as 87% in Western Africa. LA and
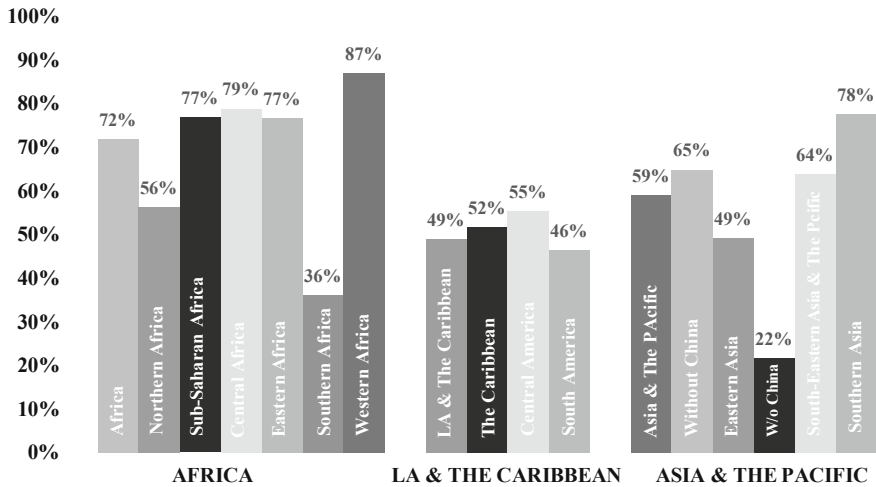
Fig. 1 Regional variation in the share of informal employment—2016. Source: ILO: Women and Men in the Informal Economy: A Statistical Picture (2018, pp. 28, 32, 26) (The list of countries used in the chart is presented in Appendix 1.1). Authors' own figure

the Caribbean exhibit a much closer distribution, between 46% for South America and 55% for Central America. In Asia and the Pacific region, the proportion is 49% for countries in Eastern Asia and as high as 78% for those located in Southern Asia. The effect that China has on the proportion of the region's informal employment, due to its sheer population size, is noteworthy.

Using data from Charmes (2012), I compare the incidence of informal employment in total nonagricultural employment over time (see Fig. 2), from 1985/1989 to 2005/2010, and across region. For three of the four regions presented on the graph, there is either a slight trend for an increase or a tendency to keep the proportion of informal employment at the same steady level. In Northern Africa, the proportion increased from 34% for 1985/1989 to 58% for 2005/2010. In a similar manner, in Southern and Southeastern Asia, the proportion increased from 53% in 1985/1989 to 70% over the following decade, but it stayed at the same level for the rest of the observed period. LA experienced a smaller incremental increase, between 1% and 2% per period, with the incidence of informal employment rising from 53% in 1985/1989 to 58% in 2005/2010. The sub-Saharan African region is the only exception where the proportion of informal employment increased from 73% in 1985/1989 to 87% in 1995/1999 and then dropped to 66% in 2005/2010.

The ILO also reports that schooling plays a significant role in the informal economy (ILO 2018, pp. 29–43) and that education is inversely related to the incidence of informality. For example, people with secondary and tertiary education are less likely to be employed in the informal economy in comparison to those with no education or primary education only. In Africa, for example, those with no education experienced 94% of informal employment as compared to 88.5% for those with primary education. The proportion decreased to 68.1% for those with
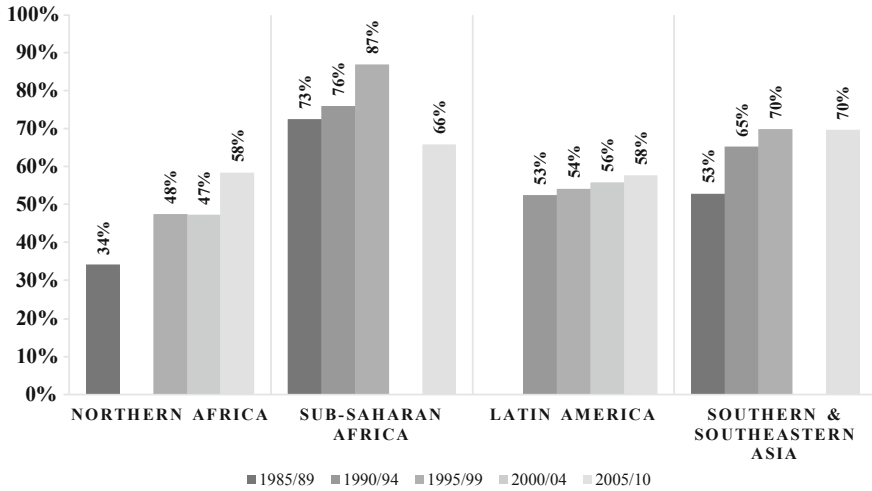
Fig. 2 Share of informal employment in total nonagricultural employment. Source: Charmes (2012, pp. 110–113) (The list of countries used in the chart is presented in Appendix 1.2). Authors' own figure

secondary and 27% for those with tertiary education, respectively (ILO 2018, p. 29). In LA and the Caribbean, the corresponding numbers are 82.2, 72.5, 50.8, and 33.5% (ILO 2018, p. 33), while in Asia and the Pacific region, the incidence of informal employment across the four levels of education are 94.9, 89.7, 58.9, and 30.7% (ILO 2018, p. 37).

2.2 Informality, Economic Growth, and Trade Openness

The cross-regional differences in informal employment, as seen above, and differences in the shadow economy measured in terms of informal activities as a percent of GDP (Charmes 2000) or through indirect measures (Schneider 2005; Schneider and Enste 2000) are closely related to the level of economic development (Bacchetta et al. 2009). The demonstrated links between education level and the incidence of informality (ILO 2018), and between skill levels and informality (Bacchetta et al. 2009, p. 32), may be associated with each country's capacity for economic growth and serve to account for differences in economic development. Figure 3 shows the relationship between the GDP growth rate and the size of the informal economy for 65 developing countries. The correlation between the two factors implies that policies focused on reducing the size of the informal economy could potentially serve to promote growth and economic development.

The third dimension in Fig. 3 represents the size of the FDI net inflows as a percent of the country's GDP—the bigger the size of each bubble, the larger the size of the FDI net inflows. Countries in the top left corner of the graph, such as
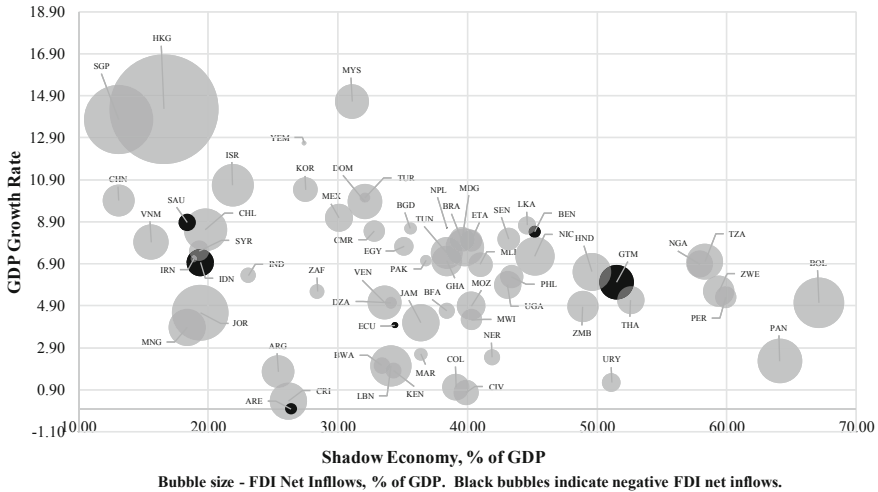
Fig. 3 GDP growth rate, the shadow economy, and FDI net inflows. Source: The World Bank (https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS) and Schneider (2005, pp. 627–629) (The list of countries used in the chart is presented in Appendix 1.3). Authors' own figure

Singapore and Hong Kong, experienced high GDP growth, small incidence of informality, and significant FDI net inflows. The FDI net inflows are 16.19% for Singapore and 41.07% for Hong Kong, respectively. Other countries, such as Jordan, Israel, and Chile, whose GDP growth rate may not be as high, also demonstrated relatively large FDI net inflows and low informality. Their FDI net inflows are 10.79, 6.08, and 6.24%, respectively.[1] Moving to the right on the graph, the shadow economy size increases, while the GDP growth rate shows a tendency to decrease, as do the FDI net inflows. The bubbles representing the FDI net inflows for the countries in the middle of the graph are much smaller than those for the aforementioned countries. The countries with the smallest FDI net inflows from the middle group are Turkey with 0.42%, Pakistan with 0.42%, and Bangladesh with 0.53%. Several countries have experienced negative FDI net inflows (shown with black bubbles on the graph)—Benin, Guatemala, Ecuador, Indonesia, Nepal, Saudi Arabia, and the United Arab Emirates. What is interesting, however, is that Bolivia and Panama who are in the bottom right corner of the graph have FDI net inflows (8.77 and 6.73%, respectively) at levels comparable to Jordan, Israel, and Chile. The somewhat ambiguous results indicate that there may be other factors that affect how the size of the informal sector and the FDI net inflows are related. Such factors may very well be region and country-specific. For example, Bolivia and Panama both belong to the LA and the Caribbean region, which is characterized with strict labor market regulations. Bacchetta et al. (2009) report similar findings, concluding that

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[1]The FDI net inflows for all participating countries are shown in Appendix 3.

when a distinction is made between actual trade flows and trade barriers, with the addition of some control variables, the existence of negative correlation between trade openness and informal employment can indeed be confirmed for a large, across-regional, sample of developing countries.

3 Overview and Treatment of Informality

3.1 Definition and Measurement

The informal economy, also known as "shadow," "hidden," "underground," "unregistered," etc. economy, has been notoriously difficult to define. One of the most common and widely accepted definitions is that it encompasses the economic undertakings that, while formally recorded and incorporated in the gross national product (GNP), are absent from officially publicized measures such as the gross domestic product (GDP). The above description, used by Schneider (2003) and Schneider and Enste (2000, 2002), considered some of the most widely accepted studies on the "shadow" economy and relates the underground activities to a well-defined macroeconomic indicator. The definition, however, is rather general and inclusive regarding what constitutes an underground activity. Under the circumstances, it may be helpful to apply the catalogue of underground activities developed by Lippert and Walker (1997) that maps together legal and illegal activities. The former are plagued by undocumented revenue and profits, outstanding social security obligations, and violation of basic employment standards such as minimum wage and health and safety condition rules. Noncompliance with set administrative and governmental practices designed to collect statistical information is pervasive. While most alternative classifications of the informal economy agree on the treatment of legal activities, they differ on the consideration and inclusion of (a) household services and production and (b) illegal economic activities: manufacturing and sales of prohibited goods and services, stolen goods, gambling, and fraud, among others. See, for example, Bhattacharyya (1999), Smith (1994), and Feige (1990).

One of the most predominantly used measurements of the informal economy has been put forth by the ILO. The ILO has implemented a conceptual outline for "statistical measurement and employment data collection" (ILO 1993, 2003) that reflects both "employment in the informal sector (an enterprise-based concept) and informal employment (a job-based concept)." The former encompasses "unregistered and/or small unincorporated private enterprises; such enterprises are not constituted as separate legal entities (and are thus not officially registered) and do not maintain a complete set of accounts," while the latter is a reference to "jobs that generally lack basic social or legal protections or employment benefits and may be found in the formal sector, informal sector or households." According to the ILO, jobs that represent informal occupations are, for example, "own-account" employees working in informal sector companies or the owners of such companies, "own-

account" employees involved in non-remunerated housework, domestic employees in both sector companies, affiliates of informal company cooperatives, and workers with informal employment in both sector companies or in households. Formal jobs in informal sector enterprises are left out of the informal employment sector. The ILO surveys belong to the group of direct methods. The most recent ILO data became available in June 2012 (ILO 2012). It includes information on both statistics presented above from a total 47 medium- and low-income countries.

A second group, called indirect methods for measuring the informal economy, uses macroeconomic indicators that can shed light on how the informal sector develops and expands over time (Thomas 1992; Schneider and Enste 2000; Schneider 2005). The five indicators used are inconsistencies between national expenditure and income statistics (Thomas 1992), inconsistencies between the official and actual labor force (Thomas 1992), inconsistencies between the nominal (transaction) and official GNP (Feige 1996), currency demand (Tanzi 1983), and inconsistencies between the electricity consumption for the economy overall as a proxy measure of the GPD and the estimates of the official GDP (Kaufmann and Kaliberda 1996; Lacko 2000). The most recognized in the group of indirect methods is the so-called model method that considers multiple indicators, reflecting the existence of multiple causes for the existence and multiple effects of the informal economy (Schneider 2005; Schneider and Enste 2000). The DYMIMIC (dynamic multiple-indicators multiple-causes) model, as it's known, uses factor analysis to measure the informal sector as an unobserved variable overtime. Among the most precise and largely employed estimations of the extent of the informal sectors that use indirect methods are those presented in Schneider and Enste (2000) and Schneider (2005). They use the DYMIMIC and currency demand methods and report their estimates for 110 OECD countries for several periods of time (1989/1990, 1990/1991, 1994/1995, and 1999/2000). Kaufmann and Kaliberda (1996) estimates are also among those used in the literature (Pham 2017).

The topic of outlining informality in the economy and finding its magnitude is rife with controversy (Thomas 1992; Dixon 1999; Schneider and Enste 2000, 2002; Schneider 2003, 2005; Evans et al. 2006; Williams and Windebank 2006).

3.2   Informal Entrepreneurs

Informal entrepreneurs represent a special group of the informal economy that is often overlooked and less well observed. Williams (2006, 2007) and Williams and Nadin (2010) provide the following definition of informal entrepreneurs: "…somebody actively engaged in starting a business or is the owner/manager of a business that is less than 42 months old who participates in the paid production and sale of goods and services that are legitimate in all respects besides the fact that they are unregistered by, or hidden from the state for tax and/or benefit purposes." People in the line of production and sale of prohibited goods and services are omitted.

Self-employment, often used as a proxy of entrepreneurship, is reportedly the main factor in informal employment, as reported by the ILO (2002) and Williams and Nadin (2010). This stylized fact has prompted a trend toward revisiting the role of the informal economy—from what used to be considered in the past as workers exploitation to a phenomenon that is recognized as a form of an underground culture as reported by Williams (2006), Williams and Windebank (2006), and Williams and Nadin (2010). Such a change has occurred not only in developing and economies in transition but also in developed economies as well. Williams and Nadin (2010) present an expansive overview on entrepreneurship and the informal economy addressing all three country groups.

Research on the incidence of informal entrepreneurship, both at the national level and cross-country comparison, have been limited. Most studies are based on small-scale surveys and anecdotal evidence. For example, Williams (2008) collects data on enterprises in Ukraine, Russia, and England. His findings show that those surveyed in Russia and 90% of the Ukrainian sample operate, to some extent, in the informal economy.

3.3 Theoretical Background

There is an extensive branch of economics literature devoted to exploring the causes of informal economies. Studies explore the role of legal and financial institutions, labor market policies and regulations, tax systems, etc. As a starting point, matching and search models of the economy examine how outcomes are affected by different labor market interventions. The basic matching model is expanded into segmented or dual market models by incorporating an additional sector that mirrors the underground economy (Mortensen and Pissarides 2003). One strand of the literature considers employment in the informal sector a disadvantage. Further, violation of labor market laws is endemic in the informal sector. Hence, scholars in this group emphasize the development and enactment of policies designed to prevent such activities. Fugazza and Jacques (2004) find that policies that institute higher benefits and encourage participation in the formal sector are more efficient than taxation and labor market regulations. Kolm and Larsen (2004) consider stricter penalty and audit rates, Bosch and Esteban-Pretel (2012) study the cost of hiring and firing workers, as well as payroll withholdings, while Boeri and Garibaldi (2007) focus on deregulating markets.

A second strand of the literature (Dolado et al. 2007; Dabla-Norris et al. 2008; Albrecht et al. 2009; Ulyssea 2010; Charlot et al. 2011) treats underground activities as essential to the economy. Introducing empirical evidence from several LA countries, which experience an informal sector of 30–70% of the urban labor market, Maloney (2004) dismisses the suggestion that the informal sector is secondary to its formal counterpart and that those employed in the formal sector enjoy certain advantages. Similar results are reported by Gong and van Soest (2002) for the Mexican economy, by Pratap and Quintin (2006) for the Argentinian economy,

and Mondragon and Pena (2010) for the Colombian economy. Here workers voluntarily select the sector they enter. Their selection depends largely on how productive they are (Amaral and Quintin 2006), the existing possibilities for matching with an employer (Ulyssea 2010; Zenou 2008), or labor market limitations (Antunes and Cavalcanti 2007) in the official economy. Among the policies analyzed in this group are payroll taxes (Ulyssea 2010), separation pay (Albrecht et al. 2009; Dolado et al. 2007), employment procedures (Charlot et al. 2011), unemployment reduction policies (Ulyssea 2010) and cost of entrance (Ulyssea 2010), and implementation of financial contracts (Antunes and Cavalcanti 2007).

Both strands, however, agree on the fact that there is a compromise concerning underground employment on one hand and jobless rates on the other (Ulyssea 2010). The effect of the tradeoff is diminished when governments choose to institute the type of policies and procedures that help the formal sector function more efficiently, and not rules and regulations that negatively affect the cost of operating a business in the informal sector (Boeri and Garibaldi 2007 and Charlot et al. 2011). Further, both regulation costs and the level of enforcement affect the size of the informal sector in developing countries (Antunes and Cavalcanti 2007), but only the former seems to be of significance for developed countries. In relation to that, Dabla-Norris et al. (2008) point out that how the legal system functions is directly related to the size of the informal sector. For countries with a sub-par legal system, policies related to labor market regulations, taxation, and financial markets improvement play a prominent role in controlling the size of the informal economy. This is consistent with the evidence from LA countries that are characterized with a relatively high prevalence of the informal sector, as reported earlier in the section, and very strict labor market regulations at the same time (Maloney 2004).

4 Globalization, Economic Growth, and the Informal Economy

4.1 Definition and Measurement of Globalization

There is a wide range of views on what globalization really embodies. According to Held et al. (2002), there are three categories of thoughts: skeptical, hyper-globalist, and transformationalist. Each category brings to prominence distinct characteristics of globalization. Those skeptical toward the globalization process posit that globalization began centuries ago and that any new developments, economic, political, cultural, etc., may affect the scope and scale of globalization, but will have no effect on the very process of globalization. The hyper-globalist category supports the view that contemporary globalization has worked in a direction of undermining the role of the state. The last category believes that "globalization *is* the process that underlines current economic, political and social changes," while the state involvement is not so much in diminished, but somewhat transformed, capacity. The transformationalist

view essentially combines the ideas of the skeptics and hyper-globalists. Similarly, Dreher et al. (2008) advise that globalization is a complex process that is better served by a multidimensional approach. The most common determinants of globalization recognized in the literature are capitalism (Dierckxsens 2000; Giddens 2000; Hardt and Negri 2003), technology (Langhorne 2001; MacKenzie and Wajcman 1999), politics (Bergesen 1980; Dreher et al. 2008), the environment (Martens and Rotmans 2011; Martens et al. 2003), and social and cultural life (Bourdieu 2004; Castells 2010; Kellner 1995). Dreher et al. (2008) suggest shifting from the traditional historical view of globalization and emphasizing instead current socioeconomic and cultural developments. He offers a contemporary definition of globalization as "the intensification of cross-national interactions that promote the establishment of trans-national structures and the global integration of cultural, economic, environmental, political, technological and social processes on global, supra-national, national, regional and local levels" (Dreher et al. 2008, p. 15).

One of the most widely accepted measures of globalization is the KOF index[2] (Dreher 2006). The index was published for the first time in 2002, reporting on 123 countries and 23 variables. Additional updates become available later (Dreher et al. 2008). There are three main dimensions, or subindices, of the KOF index: economic, political, and social globalization. "Economic globalization is characterized by the long-distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges; political globalization is characterized by the diffusion of government policies; and social globalization is expressed as the spread of ideas, information, images and people." The economic subindex is allotted 37% of the total KOF index and consists of actual flows, such as trade and FDI, and restrictions, such as import barriers, tariffs, etc. The social subindex, also 37% of the total KOF index, consists of data on personal contacts, information flows, and cultural proximity. The political subindex has 26% representation. A detailed definition of the KOF index and its components is given in Appendix 3.[3]

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[2] http://www.kof.ch/globalization

[3] Some alternative, less well-recognized, measures of globalization are the Maastricht Globalization Index (Martens and Zywietz 2006), the World Market Research Centre G-Index ("WMRC" 2001), the A.T. Kearney/Foreign Policy Magazine Globalization Index ("ATK/FP" 2001; "ATK/FP" 2004; "ATK/FP" 2005), the Global Civil Society Index (Salamon and Sokolowski 2004), globalization matrix (Al-Rodhan et al. 2006), the Cultural Globalization Index (Kluver and Fu 2004), measures of political integration (Miles and Posner 2008; Nitsch 2007), Growth Environment Score (O'Neill et al. 2005), as well as measures replicating those mentioned above (Andersen and Herbertsson 2005; "CSGR index" 2006; Heshmati 2006; Li et al. 2007) or cover only few countries (Bamrud 2005; Gersbach 2002). OECD (2005) constructs separate globalization indicators.

4.2   Theoretical Development

Most of the studies that explore the relationship between the informal sector and globalization have narrowed their focus to studying how trade globalization affects the informal sector. Two branches have developed. One branch of studies has achieved this within the framework of rural-urban migration models (Todaro 1969; Harris and Todaro 1970) that explain the high rates of urban unemployment in developing countries with the difference in economic prospects between rural and urban areas and the existence of rural-urban income differentials. Grinols (1991), Chandra and Khan (1993), and Marjit et al. (2007) explicitly incorporate the urban informal sector into the rural-urban migration setup with the purpose of studying the "desirability of foreign investment" (1993, p. 80). Grinols (1991) started the conversation by arguing that the Brecher-Diaz Alejandro proposition, that foreign capital inflows with full repatriation of earnings must be immiserizing[4] (Brecher and Diaz Alejandro 1977), may not hold in the presence of an urban informal sector. Motivated by Grinols (1991), Chandra and Khan (1993) review several "conceptions" of the informal sector based on criteria such as whether the informal output is traded, either domestically or internationally, or a non-traded, intermediate, good used in the formal sector; the degree of complementarity and substitutability between the formal and informal sector; capital versus labor intensity; etc. Chandra and Khan's main finding is that in the presence of tariffs and repatriation of profits, capital inflows are immiserizing if and only if the imports are capital-intensive. While looking into the effect of capital flows and tariffs on the informal sector was not their main concern, they have also found that when the informal output is traded, lack of tariffs will help raise the wage and employment in the informal sector, though not necessarily at the same time. Marjit et al. (2007), who explicitly study how trade reform affects informal wages, reach a similar conclusion. Along the same lines, Beladi and Yabuuchi (2001) use the rural-urban migration framework to study the effect of tariff-induced capital inflows on the informal sector when the informal output is an input in the formal sector. They found that tariff-induced inflow of foreign capital may not be immiserizing, that rural wage subsidy has positive welfare effects, and that trade liberalization decreases informal employment. Their findings are consistent with empirical evidence that developing countries employ foreign investments as developing strategy (OECD 2002).

The second branch employs the traditional neoclassical general equilibrium growth models for an open economy with dual labor markets to study the effect of "deregulatory policies on informal wages and employment" (Kar and Marjit 2001; Marjit 2003; Marjit and Beladi 2002; Marjit et al. 2004; Marjit and Maiti 2005;

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[4]The term was coined by Bhagwati (1958) as a reference to economic growth that makes the country worse off. Immiserizing growth that is due mainly to expanding exports worsens the terms of trade sufficiently and causes real income to fall.

Wuyts 2001).[5] The formal sector produces import-competing manufacturing goods, while the informal sector produces three categories of goods—manufacturing goods for export, non-traded goods, and agricultural goods. Workers who cannot find employment in the formal sector transition to the informal sector. This approach to what is known in economics as "full employment"[6] is consistent with the dual labor market analysis for developing countries (Carruth and Oswald 1981; Maloney 1998; Pratap and Quintin 2006). Liberalization in trade policy, such as tariff reduction, will increase competition and result in the decrease of formal employment. The informal sector employment will increase after those who lost their jobs join the informal economy and so will the wage in the informal sector. Marjit and Maiti (2005) point out that the above outcome is possible in the presence of capital mobility. If capital does not move freely between the formal and informal sectors, the increase in informal employment will cause a downward pressure on the wages in the informal sector (Kar and Marjit 2001; Marjit and Beladi 2002; Marjit et al. 2004). When the informal sector produces goods and services that are used as intermediaries in a capital-intensive formal sector, trade liberalization will cause informal employment and wages to increase in the presence of capital mobility (Marjit 2003).

4.3   Empirical Work

The implications and hypotheses of the theoretical studies presented in the previous section are tested empirically for several LA countries. Each study, however, reflects only country-specific evidence. There is no cross-country analysis available. As a result, there is no firm conclusion on the effect of trade openness and trade reforms on the employment and wages in the informal sector that is uniformly valid across all developing countries or even across region. The evidence presented is strictly related to the local government policy, rules, regulations, and other country-specific characteristics. Marjit et al. (2004) and Marjit and Maiti (2005) present evidence of an increase in real informal wages and fixed assets and decline in capital formation in organized manufacturing as a result of trade liberalization in India. Further, they show that while the overall unemployment in the country has not been positively affected, the employment in the informal sector has increased.

In a similar manner, Goldberg and Pavcnik (2003) study the relationship between trade liberalization and the informal sector in two LA countries. They focus on Brazil

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[5]Goldberg and Pavcnik (2003) also present a theoretical model to study the effect of trade liberalization on informality in the framework of the efficiency wage theory. They, however, ignore general equilibrium effects.

[6]Full employment, also known as natural rate of unemployment, is a concept used in economics to describe situations where workers who are willing to work at the current wage rates in the economy are able to find jobs. If unemployment exists, it's voluntary (due to workers changing job or seasonality) and considered normal, reduced to a certain established level (Ehrenberg and Smith 2000, p. 590; Todaro and Smith 2015, p. 824).

and Colombia, two countries that underwent some significant trade liberalization shocks in the 1980s and 1990s. As it's typical for many LA countries, Brazil and Colombia are known to have large informal sectors. Both countries also experienced significant increases in informal employment during that period, a trend that was associated in the literature with the increased post-trade liberalization competition. Brazil and Colombia's trade liberalization policies were slightly different in comparison to other developing countries. They not only decreased tariffs but also altered the tariffs' structure, such that sectors with traditionally high protection experienced larger reductions than sectors with low protection where tariff cuts were much smaller. Further, both countries employed tariffs as a main tool prior to liberalization, although GATT stipulations allowed less developed countries to keep high protection levels. Goldberg and Pavcnik found no evidence of the informal sector being affected by trade liberalization in Brazil. They found some weak evidence in Colombia that was present only before the country enacted the labor reform, and only in the sectors affected the most by tariff cuts. No evidence of a connection between trade and informality was observed afterwards. Brazil and Colombia's evidence implies that labor market policies play a primary role, particularly in the presences of rigid labor market institutions, as is the case of Colombia.

Two additional empirical studies that did not explicitly explore the link between trade and the informal economy, but still derive some implications in that regard, are Maloney (1998) for Mexico and Currie and Harrison (1997) for Morocco. Maloney showed evidence that the size of and employment in the informal sector, as well as the mobility between the formal and informal sector, move with the business cycle. His findings indicate that activities in the informal sector increase slightly over time. Maloney, however, concludes that workers may or may not be worse off consequently. Currie and Harrison reported that there was almost no impact on aggregate employment and wages in the country after Morocco instituted a wide-ranging trade reform. Those affected, however, were publicly owned and export-oriented companies, who responded by employing low-paid, temporary, workers.

4.4 Comprehensive Treatment of Globalization

The theoretical and empirical studies discussed in the previous two sections make an outstanding contribution to the field by advancing our knowledge on the linkage between trade and informality in developing countries. They, however, do not take into consideration other forms of globalization—political, cultural, social, etc. (see Sect. 4.1). A group of recent studies, Bacchetta et al. (2009), Fugazza and Fiess (2010), and more recently Pham (2017), remedy this omission by incorporating other facets of globalization.

Bacchetta et al. (2009) use data on informal employment and the informal sector from the ILO to study the effect of globalization on informality in developing countries. The study includes 14 countries from LA, 6 countries from Asia, and 31 countries from Africa observed from the early 1990s to the early 2000s, with the

longest period being 16 years, forming a highly unbalanced panel. The empirical analysis uses a panel data approach, with simultaneous variation of informality rates between and within countries. Since there are differences in the underlying definitions of informality across countries, the authors make the simplifying assumption that the variation of the rates of informality observed across country and over time is not affected by the corresponding definition used by each country. Bacchetta et al. (2009) expand the scope and depth of their empirical study, in comparison to similar studies before, by including a wide variety of economic and social indicators. Among the trade indicators they use are trade diversification and trade concentration,[7] trade restrictions,[8] trade reforms,[9] and most-favored nation average duties,[10] together with the popular and previously used trade openness,[11] trade-weighted tariffs, and FDI liabilities.[12] In addition, Bacchetta et al. (2009) use indices for personal contacts and information flows, the two components of the social globalization portion of the KOF Globalization Index (see Appendix 3). They also used the whole KOF Globalization Index[13] itself as an independent indicator and a set of macroeconomic indicators. The results of the empirical work show that while openness, in general, is associated with lower rates of informality, trade reforms, such as tariff reduction, and FDI inflows are associated with higher rates of informality. Bacchetta et al. suggest that the effect of trade and investment reforms may contribute to a positive outlook in the long run, but, nevertheless, have undesirable effects in the short run. Further, they show that labor market regulations and policies have a mitigating effect on the relationship between trade reforms and informality. Finally, Bacchetta et al. report that there may be a reverse effect between informality and trade, where lower levels of informality positively affect trade diversification and globalization in general.

Following Bacchetta et al. (2009), Fugazza and Fiess (2010) use three different data sets (ILO 2003; Kaufmann and Kaliberda 1996; Schneider 2005) to study the link between trade liberalization and informality, considering a narrower set of trade liberalization indicators. They, too, report mixed results that are also heavily dependent on the econometric approach they use. For example, Fugazza and Fiess show that in a cross-section analysis setup, trade openness is associated with lower levels of informality; in a time-series analysis setup, trade openness is associated with higher informality, in terms of both employment and output; and in a panel data

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[7]United Nations Conference on Trade and Development (UNCTAD) indices of exports and imports of countries and country groups.

[8]See Appendix 3.

[9]Annual percentage change of the trade restriction indicator.

[10]Taken from the Common Analytical Market Access Database (CAMAD).

[11]Sum of exports and imports as a share of GDP.

[12]Inflows of FDI as a share of GDP.

[13]The political globalization component of the KOF index is excluded.

analysis setup, informal employment decreases, while informal output increases with trade liberalization.

Both Bacchetta et al. (2009) and Fugazza and Fiess (2010) build empirical studies with regression models that rely on data sets containing a large number of covariates, including composite indices, gathered across several different data sources. The one common caveat is the lack of determination in regard to what factors should be included and what factors excluded from the study. The individual effects of the factors of interest are highly sensitive to the inclusion or exclusion of a single covariate or, sometimes, a small group of covariates. The outcome is ambiguity and lack of consistency between the results on how globalization affects informality reported in the two studies.

To remedy the empirical problem mentioned above, Pham (2017) utilizes a different methodology, called Bayesian model averaging (BMA), that allows the use of endogenous covariates and fixed effects in a panel regression analysis setup. The BMA deals with the model sensitivity to covariates and exogeneity restrictions and helps identify the globalization indicators with a high probability of affecting the informal sector in developing countries. The BMA has been applied to verify the robustness of empirical results to different model specifications.[14] Pham (2017) employs the same indicators chosen by Bacchetta et al. (2009) and uses two sources of data—the ILO and Schneider (2005). Pham's results based on the ILO data on informality are similar to Bacchetta et al. (2009), while the results based on Schneider's (2005) data set are comparable to those of Fugazza and Fiess (2010). Pham's study found that the globalization indicators that significantly affect informality are trade openness, diversification and concentration, financial openness, and personal contacts. Factors reported to be significant in previous studies, such as trade taxes, social and political globalization components, other than personal contacts, and some macroeconomic variables, do not seem to affect informality. Finally, the nature of the relationship between globalization and informality is closely related to the specific measure employed in the study.

5   Conclusion

The evidence presented in this chapter demonstrates the existence of a strong connection between globalization and informality in developing countries. Yet, it's surprising that the topic has not been explored more fully in the literature. Most of the extant empirical evidence is largely country-specific and predominantly dictated by the availability of relevant and reliable macro data. This explains why studies for Brazil, Colombia, and Mexico that have traditionally been known for the collection of rich macro-level data dominate the field. Only a few works exist that attempt to

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[14]This is done by calculating probabilities and posterior distributions over coefficients and models. The BMA has a history of applications in the economic growth literature.

document the relationship between globalization and the informal sector in a cross-country comparison analysis framework. Even those studies, plagued by some estimation and modeling issues, cannot reach a consensus on the nature of the said relationship. This invites a deeper investigation into the effects of the various facets of globalization on the informal economy, and how they interact with the labor market regulations and policies in developing countries. Furthermore, the less well documented, but nevertheless significant reverse effect of how changes in the size and structure of the informal sector and informal employment affect the globalization process in developing countries has been left almost untouched. There are lessons to be learned on how manipulating the informal sector in a developing economy may cause a potential spur in economic growth.

Appendix 1

1.1 Countries Used in Fig. 1

1. *Africa*[15]—*Northern Africa* (Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, Western Sahara); *sub-Saharan Africa* (*Central Africa*, Angola, Cameroon, Central African Republic, Chad, Congo, Congo, Democratic Republic of the Equatorial Guinea, Gabon, Sao Tome and Principe; *Eastern Africa*, Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Somalia, Tanzania, United Republic of Uganda, Zambia, Zimbabwe; *Southern Africa*, Botswana, Lesotho, Namibia, South Africa, Swaziland; *Western Africa*, Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo).
2. *LA and the Caribbean*[16]—*The Caribbean* (Bahamas, Barbados, Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, US Virgin Islands); *Central America* (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama); *South America* (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela).
3. *Asia and the Pacific*[17]—*Eastern Asia* (China, Hong Kong, Japan, S. Korea, Macau, Mongolia, Taiwan); *Southeastern Asia and the Pacific* (*Pacific Islands*, Australia, Fiji, French Polynesia, Guam, New Caledonia, New Zealand, Papua

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[15]Source: ILO: Women and Men in the Informal Economy: A Statistical Picture (2018, pp. 28, 32, 26).

[16]Source: ILO: Women and Men in the Informal Economy: A Statistical Picture (2018, pp. 28, 32, 26).

[17]Source: ILO: Women and Men in the Informal Economy: A Statistical Picture (2018, pp. 28, 32, 26).

New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu; *Southeastern Asia*, Brunei, Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Vietnam); S*outhern Asia* (Afghanistan, Bangladesh, Bhutan, India, Iran, Islamic Republic of Maldives, Nepal, Pakistan, Sri Lanka).

1.2 Countries Used in Fig. 2[18]

(1) Northern Africa—Algeria, Egypt, Morocco, and Tunisia; (2) Sub-Saharan Africa—Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Chana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Mali, Mauritania, Mozambique, Namibia, Niger, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe; (3) Latin America—Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela; (4) Southern and Southeastern Asia—Bangladesh, India, Indonesia, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Timor-Leste, Vietnam

1.3 Developing Countries Used in Fig. 3[19]

Algeria, Argentina, Bangladesh, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Cameroon, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Dominican Republic, Ecuador, Egypt Arab Repub., Ethiopia, Ghana, Guatemala, Honduras, Hong Kong China, India, Indonesia, Iran, Islamic Repub., Israel, Jamaica, Jordan, Kenya, Korea, Lebanon, Madagascar, Malawi, Malaysia, Mali, Mexico, Moldova, Mongolia, Morocco, Mozambique, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Panama, Peru, Philippines, Saudi Arabia, Senegal, Singapore, South Africa, Sri Lanka, Syrian Arab Republic, Tanzania, Thailand, Tunisia, Turkey, Uganda, United Arab Emirates, Uruguay, Venezuela, Vietnam, Yemen Rep., Zambia, Zimbabwe

[18]Charmes (2012, pp. 110–113).

[19]https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS and Schneider (2005, pp. 627–629).

Appendix 2

2.1 FDI Net Inflows (% of GDP, 2000)

Country code	Country	FDI net inflows
DZA	Algeria	0.51
ARG	Argentina	3.67
BGD	Bangladesh	0.53
BEN	Benin	−0.50
BOL	Bolivia	8.77
BWA	Botswana	0.99
BRA	Brazil	5.03
BFA	Burkina Faso	0.88
CMR	Cameroon	1.58
CHL	Chile	6.24
CHN	China	3.48
COL	Colombia	2.44
CRI	Costa Rica	4.84
CIV	Cote d'Ivoire	2.19
DOM	Dominican Republic	4.12
ECU	Ecuador	−0.13
EGY	Egypt	1.24
ETA	Ethiopia	1.64
GHA	Ghana	3.24
GTM	Guatemala	−4.09
HND	Honduras	4.93
HKG	Hong Kong	41.07
IND	India	0.78
IDN	Indonesia	−2.59
IRN	Iran	0.18
ISR	Israel	6.08
JAM	Jamaica	4.7
JOR	Jordan	10.79
KEN	Kenya	0.87
KOR	Korea	2.05
LBN	Lebanon	5.76
MDG	Madagascar	2.14
MWI	Malawi	1.49
MYS	Malaysia	4.04
MLI	Mali	2.04
MEX	Mexico	2.67
MNG	Mongolia	4.72
MAR	Morocco	0.57
MOZ	Mozambique	2.77
NPL	Nepal	−0.01

(continued)

Country code	Country	FDI net inflows
NIC	Nicaragua	5.22
NER	Niger	0.87
NGA	Nigeria	2.46
PAK	Pakistan	0.42
PAN	Panama	6.73
PER	Peru	1.56
PHL	Philippines	1.84
SAU	Saudi Arabia	−0.99
SEN	Senegal	1.74
SGP	Singapore	16.19
ZAF	South Africa	0.71
LKA	Sri Lanka	1.06
SYR	Syrian	1.4
TZA	Tanzania	4.55
THA	Thailand	2.66
TUN	Tunisia	3.5
TUR	Turkey	0.36
UGA	Uganda	2.59
ARE	United Arab Emirates	−0.49
URY	Uruguay	1.15
VEN	Venezuela	4.01
VNM	Vietnam	4.16
YEM	Yemen	0.07
ZMB	Zambia	3.38
ZWE	Zimbabwe	3.35

Source: https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS

Appendix 3

3.1 KOF Globalization Index Components

3.1.1 Economic Globalization[20]

(A) Economic flow (% of GDP) components: (1) Trade—sum of exports and imports of goods and services measured as a share of GDP; (2) FDI (stocks)—sum of inward and outward FDI stock as a percentage of GDP; (3) Portfolio investment—sum of portfolio investment assets stocks and portfolio investment liabilities stocks; (4) Income payments to foreign nationals—employee compensation paid to nonresident workers and investment income

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[20]http://www.kof.ch/globalization

(payments on direct investment, portfolio investment, other investments). Income derived from the use of intangible assets is excluded.

(B) Trade restriction components: (1) Hidden import barriers ("In your country, tariff and non-tariff barriers significantly reduce the ability of imported goods to compete in the domestic market."); (2) Mean tariff rate (as the mean tariff rate increases, countries are assigned lower ratings); (3) Taxes on international trade as a % of current revenue (import duties, export duties, profits of export or import monopolies, exchange profits, and exchange taxes); (4)Capital account restrictions (two subcomponents: (i) "Foreign ownership of companies in your country is rare, limited to minority stakes, and often prohibited in key sectors or prevalent and encouraged" and (ii) IMF's Annual Report on Exchange Arrangements and Restrictions, including 13 different types of capital controls)

3.1.2 Social Globalization[21]

(A) Personal contact components: (1) telephone traffic (international incoming and outgoing telephone traffic in minutes per person); (2) transfers as a % of GDP (sum of gross inflows and gross outflows of goods, services, income, or financial items without a quid pro quo); (3) international tourism (sum of arrivals and departures of international tourists as a share of population); (4) foreign population as a % of total population (number of foreign or foreign-born residents in a country; (5) international letters (number of international letters sent and received per capita).

(B) Information flow components: (1) Internet users—people with access to the worldwide Internet network; (2) Television—share of households with a television set; (3) Trade in newspapers—sum of exports and imports in newspapers and periodicals in percent of GDP. Data are provided by the United Nations Statistics Division and correspond to those published in the UN.

(C) Cultural proximity components: (1) number of McDonald's restaurants per capita; (2) number of IKEA stores per capita; (3) trade in books (sum of exports and imports in books and pamphlets in percent of GDP)

3.1.3 Political Globalization Components[22]

(1) Embassies in country; (2) membership in international organizations (absolute number of international intergovernmental organizations); (3) participation in UN Security Council missions (personnel contributed to UN Security Council missions per capita); (4) international treaties (any document signed between two and more states and ratified by the highest legislative body of each country since 1945)

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[21]http://www.kof.ch/globalization

[22]http://www.kof.ch/globalization

References

A.T. Kearney/Foreign Policy Globalization Index (2001) A.T. Kearney/foreign policy magazine. http://www.foreignpolicy.com

A.T. Kearney/Foreign Policy Globalization Index (2004) A.T. Kearney/Foreign policy magazine. http://www.foreignpolicy.com

A.T. Kearney/Foreign Policy Globalization Index (2005) A.T. Kearney/foreign policy magazine. http://www.foreignpolicy.com

Albrecht J, Navarro L, Vroman S (2009) The effects of labor market policies in an economy with an informal sector. Econ J 119(539):1105–1129. https://doi.org/10.1111/j.1468-0297.2009.02268.x

Al-Rodhan N, Stoudmann A, Herd G (2006) Proposal for a globalization matrix: quantifying impacts & responses. GCSP Geneva Centre for Security Policy. http://s3.amazonaws.com/academia.edu.documents/30929656/Proposal_for_a_Globalization_Matrix_-_Quantifying_Impacts___Responses.pdf?AWSAccessKeyId=AKIAJ56TQJRTWSMTNPEA&Expires=1459180147&Signature=sWVqiUyNscqV741KOG17hQo2RlI%3D&response-content-disposition=inline%3B%20filename%3DProposal_for_a_Globalization_Matrix_Quan.pdf

Amaral P, Quintin E (2006) A competitive model of the informal sector. J Monet Econ 53 (7):1541–1553. https://doi.org/10.1016/j.jmoneco.2005.07.016

Andersen T, Herbertsson T (2005) Quantifying globalization. Appl Econ 37(10):1089–1098. https://doi.org/10.1080/00036840500118200

Antunes A, Cavalcanti TV (2007) Startup costs, limited enforcement, and the hidden economy. Eur Econ Rev 51(1):203–224. https://doi.org/10.1016/j.euroecorev.2005.11.008

Bacchetta M, Ernst E, Bustamante JP (2009) Globalization and informal jobs in developing countries. ILO, Geneva

Bamrud J (2005) Panama best, Argentina worst: Latin America globalization index. Latin Business Chronicle

Beladi H, Yabuuchi S (2001) Tariff-induced capital inflow and welfare in the presence of unemployment and informal sector. Jpn World Econ 13(1):51–60. https://doi.org/10.1016/S0922-1425(00)00062-1

Bergesen A (ed) (1980) Studies of the modern world-system. Academic Press, New York

Bhagwati J (1958) Immiserizing growth: a geometrical note. Rev Econ Stud 25(3):201. https://doi.org/10.2307/2295990

Bhattacharyya DK (1999) On the economic rationale of estimating the hidden economy. Econ J 109 (456):348–359. https://doi.org/10.1111/1468-0297.00438

Boeri T, Garibaldi P (2007) Shadow sorting. In: Frankel J, Pissarides C (eds) NBER international seminar on macroeconomics 2005. MIT, Cambridge, MA, pp 125–163

Bosch M, Esteban-Pretel J (2012) Job creation and job destruction in the presence of informal markets. J Dev Econ 98(2):270–286. https://doi.org/10.1016/j.jdeveco.2011.08.004

Bourdieu P (2004) Acts of resistance: against the new myths of our time, 1st edn. Polity Press, Cambridge

Brecher R, Diaz Alejandro C (1977) Tariffs, foreign capital and immiserizing growth. J Int Econ 7 (4):317–322. https://doi.org/10.1016/0022-1996(77)90048-4

Carruth AA, Oswald AJ (1981) The determination of union and non-union wage rates. Eur Econ Rev 16(2):285–302. https://doi.org/10.1016/0014-2921(81)90005-2

Castells M (2010) The rise of the network society, 2nd edn with a new pref. Wiley-Blackwell, Chichester

Chandra V, Khan MA (1993) Foreign investment in the presence of an informal sector. Economica 60(237):79. https://doi.org/10.2307/2554732

Charlot O, Malherbet F, Terra C (2011) Product market regulation, firm size, unemployment and informality in developing economies (Discussion paper No. 5519). IZA, Bonn, Germany

Charmes J (2000) The contribution of informal sector to GDP in developing countries: assessment, estimates, methods, orientations for the future. Institute for Research and Development,

Marceille, France. https://www.researchgate.net/publication/237743723_The_Contribution_of_Informal_Sector_to_GDP_in_Developing_Countries_Assessment_Estimates_Methods_Orientations_for_the_Future?enrichId=rgreq-af5604391326b8f8440932d04e526616-XXX&enrichSource=Y292ZXJQYWdlOzIzNzc0MzcyMztBUzoyMjA1OTc0OTg5NzgzMDRAMTQyOTYYwNTk1MDY3MQ%3D%3D&el=1_x_2&_esc=publicationCoverPdf

Charmes J (2012) The informal economy worldwide: trends and characteristics. Margin J Appl Econ Res 6(2):103–132. https://doi.org/10.1177/097380101200600202

CSGR index (2006) CSGR, University of Warwick. http://www2.warwick.ac.uk/fac/soc/csgr/index

Currie J, Harrison A (1997) Sharing the costs: the impact of trade reform on capital and labor in Morocco. J Labor Econ 15(S3):S44–S71. https://doi.org/10.1086/209876

Dabla-Norris E, Gradstein M, Inchauste G (2008) What causes firms to hide output? The determinants of informality. J Dev Econ 85(1–2):1–27. https://doi.org/10.1016/j.jdeveco.2006.05.007

Dierckxsens W (2000) The limits of capitalism: an approach to globalization without neoliberalism. Zed Books; Distributed in the USA exclusively by St. Martin's Press, London; New York

Dixon H (1999) Controversy: on the use of the "hidden economy" estimates. Econ J 109 (456):335–337. https://doi.org/10.1111/1468-0297.00436

Dolado J, Jansen M, Jimeno J (2007) A positive analysis of targeted employment protection legislation. BE J Macroecon (Topics) 7(1):Article 14

Dreher A (2006) Does globalization affect growth? Evidence from a new index of globalization. Appl Econ 38(10):1091–1110. https://doi.org/10.1080/00036840500392078

Dreher A, Gaston N, Martens WJM (2008) Measuring globalization: gauging its consequences, 1st edn. Springer, New York

Ehrenberg RG, Smith RS (2000) Modern labor economics: theory and public policy, 7th edn. Addison Wesley, Reading, MA

Evans M, Syrett S, Clift S, Williams C (2006) The informal economy and deprived neighborhoods: a systematic review. Department of Local Government and Regions, London

Feige E (1990) Defining and estimating underground and informal economies: the new institutional economics approach. World Dev 18(7):989–1002. https://doi.org/10.1016/0305-750X(90)90081-8

Feige E (1996) Overseas holdings of U.S. currency and the underground economy. In: Pozo S (ed) Exploring the underground economy: studies of illegal and unreported activity. W.E. Upjohn Institute, Kalamazoo, MI, pp 5–62. https://doi.org/10.17848/9780880994279.ch2

Fugazza M, Fiess NM (2010) Trade liberalization and informality: new stylized facts. SSRN Electron J. https://doi.org/10.2139/ssrn.1596030

Fugazza M, Jacques J-F (2004) Labor market institutions, taxation and the underground economy. J Public Econ 88(1–2):395–418. https://doi.org/10.1016/S0047-2727(02)00079-8

Gersbach H (2002) Does and how does globalization matter at the industry level? World Econ 25 (2):209–229. https://doi.org/10.1111/1467-9701.00427

Giddens A (2000) Runaway world: how globalization is reshaping our lives. Routledge, New York

Goldberg PK, Pavcnik N (2003) The response of the informal sector to trade liberalization. J Dev Econ 72(2):463–496. https://doi.org/10.1016/S0304-3878(03)00116-0

Gong X, van Soest A (2002) Wage differentials and mobility in the urban labour market: a panel data analysis for Mexico. Labor Econ 9(4):513–529. https://doi.org/10.1016/S0927-5371(02)00045-3

Grinols E (1991) Unemployment and foreign capital: the relative opportunity costs of domestic labour and welfare. Economica 58(229):107. https://doi.org/10.2307/2554978

Hardt M, Negri A (2003) Empire (13. printing). Harvard University Press, Cambridge, MA

Harris J, Todaro M (1970) Migration, unemployment and development: a two-sector analysis. Am Econ Rev 60(1):126–142

Held D, McGrew A, Goldblatt D, Perraton J (eds) (2002) Global transformations: politics, economics and culture. Stanford University Press, Stanford, CA

Heshmati A (2006) Measurement of a multidimensional index of globalization. Glob Econ J 6(2). https://doi.org/10.2202/1524-5861.1117

ILO (1993) Resolution concerning statistics of employment in the informal sector, adopted by the fifteenth international conference of labor statisticians. ILO, Geneva. http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_087484/lang%2D%2Den/index.htm

ILO (2002) Women and men in the informal economy: a statistical picture, 1st edn. ILO, Geneva. http://www.wiego.org/sites/default/files/publications/files/ILO-Women-Men-Informal-2002.pdf

ILO (2003) Guidelines concerning a statistical definition of informal employment. ILO, Geneva. http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS_087622/lang%2D%2Den/index.htm

ILO (2012) Statistical update on employment in the informal economy, 2nd edn. ILO, Geneva. http://laborsta.ilo.org/applv8/data/INFORMAL_ECONOMY/2012-06-Statistical%20update%20-%20v2.pdf

ILO (2018) Women and men in the informal economy: a statistical picture, 3rd edn. ILO, Geneva. http://www.ilo.org/wcmsp5/groups/public/%2D%2D-dgreports/%2D%2D-dcomm/documents/publication/wcms_626831.pdf

Kar S, Marjit S (2001) Informal sector in general equilibrium: welfare effects of trade policy reforms. Int Rev Econ Financ 10(3):289–300. https://doi.org/10.1016/S1059-0560(01)00088-0

Kaufmann D, Kaliberda A (1996) Integrating the unofficial economy into the dynamics of post socialist economies: a framework of analysis and evidence. In: Kaminski B (ed) Economic transition in Russia and the new states of Eurasia. M.E. Sharpe, London, pp 81–120

Kellner D (1995) Media culture: cultural studies, identity, and politics between the modern and the postmodern. Routledge, London

Kluver R, Fu W (2004) The cultural globalization index. Foreign Policy, online Web Exclusive. http://foreignpolicy.com/2004/02/10/the-cultural-globalization-index/

Kolm A, Larsen B (2004) Does tax evasion affect unemployment and educational choice? (Working paper No. 2004–4). Institute for Evaluation of Labor Market and Education Policy, Uppsala, Sweden

Lacko M (2000) Hidden economy – an unknown quantity? Comparative analysis of hidden economies in transition countries, 1989-95. Econ Transit 8(1):117–149. https://doi.org/10.1111/1468-0351.00038

Langhorne R (2001) The coming of globalization: its evolution and contemporary consequences. Palgrave, Houndmills

Li K, Pang I, Ng M (2007) Can performance of indigenous factors influence growth and globalization? CSGR Working Paper No. 215/07. University of Warwick. http://www2.warwick.ac.uk/fac/soc/pais/research/researchcentres/csgr/papers/workingpapers/2007/wp21507.pdf

Lippert O, Walker M (eds) (1997) The underground economy: global evidence of its size and impact. Vancouver, BC, The Fraser Institute

MacKenzie D, Wajcman J (eds) (1999) The social shaping of technology, 2nd edn. Open University Press, Buckingham

Maloney W (1998) The structure of labor markets in developing countries: time series evidence on competing views. The World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-1940

Maloney W (2004) Informality revisited. World Dev 32(7):1159–1178. https://doi.org/10.1016/j.worlddev.2004.01.008

Marjit S (2003) Economic reform and informal wage—a general equilibrium analysis. J Dev Econ 72(1):371–378. https://doi.org/10.1016/S0304-3878(03)00082-8

Marjit S, Beladi H (2002) The Stolper-Samuelson Theorem in a wage differential framework. Jpn Econ Rev 53(2):177–181. https://doi.org/10.1111/1468-5876.00019

Marjit S, Maiti D (2005) Globalization, reform and the informal sector. Working paper. UNU-WIDER, United Nations University, No. 2005/12

Marjit S, Kar S, Sarkar P (2004) Capital mobility and informal wage in a small economy—two examples. South Asia Econ J 5(2):261–266. https://doi.org/10.1177/139156140400500204

Marjit S, Kar S, Beladi H (2007) Trade reform and informal wages. Rev Dev Econ 11(2):313–320. https://doi.org/10.1111/j.1467-9361.2007.00409.x

Martens P, Rotmans J (eds) (2011) Climate change: an integrated perspective. Springer, Dordrecht

Martens P, Zywietz D (2006) Rethinking globalization: a modified globalization index. J Int Dev 18 (3):331–350. https://doi.org/10.1002/jid.1223

Martens P, Rotmans J, Groot D d (2003) Biodiversity: luxury or necessity? Glob Environ Chang 13 (2):75–81. https://doi.org/10.1016/S0959-3780(02)00089-4

Miles T, Posner E (2008) Which states enter into treaties, and why? Olin Working Paper (420). University of Chicago Law & Economics

Mondragon V, Pena P (2010) Business ownership and self-employment in developing economies: the Colombian case. In: Lerner J, Schoar A (eds) International differences in entrepreneurship. University of Chicago Press, Chicago, pp 89–127

Mortensen D, Pissarides C (2003) Taxes, subsidies and equilibrium labor market outcomes. In: Phelps E (ed) Designing inclusion: tools to raise low-end pay and employment in private enterprise. Cambridge University Press, Cambridge, UK, pp 44–73

Nitsch V (2007) State visits and international trade. World Econ 30(12):1797–1816. https://doi.org/10.1111/j.1467-9701.2007.01062.x

O'Neill J, Wilson R, Purushothaman R, Stupnytska A (2005) How solid are the BRICs? (Global Economics Paper No. 134). Goldman Sachs. http://www.goldmansachs.com/our-thinking/archive/archive-pdfs/how-solid.pdf

OECD (2002) Foreign direct investment for development.OECD, Paris. https://www.oecd.org/investment/investmentfordevelopment/1959815.pdf

OECD (2005) OECD economic globalization indicators 2005. OECD, Paris

Pham THH (2017) Impacts of globalization on the informal sector: empirical evidence from developing countries. Econ Model 62:207–218. https://doi.org/10.1016/j.econmod.2017.01.001

Pratap S, Quintin E (2006) Are labor markets segmented in developing countries? A semiparametric approach. Eur Econ Rev 50(7):1817–1841. https://doi.org/10.1016/j.euroecorev.2005.06.004

Salamon L, Sokolowski S (eds) (2004) Global civil society: dimensions of the nonprofit sector, vol 2, 1st edn. Kumarian Press, Bloomfield, CT

Schneider F (2003) The shadow economy. In: Rowley CK, Schneider F (eds) Encyclopedia of public choice, vol II. Kluwer Academic, Dordrecht, pp 286–296

Schneider F (2005) Shadow economies around the world: what do we really know? Eur J Polit Econ 21(3):598–642. https://doi.org/10.1016/j.ejpoleco.2004.10.002

Schneider F, Enste D (2000) Shadow economies: size, causes, and consequences. J Econ Lit 38 (1):77–144

Schneider F, Enste D (2002) The shadow economy: theoretical approaches, empirical studies, and political implication. Cambridge University Press, Cambridge, UK

Smith P (1994) Assessing the size of the underground economy: the Canadian statistical perspectives. Canadian Economic Observer, Catalogue No.: 11-010, 3.16-33 (18 March 1994, cited in Schneider and Enste (2000, p. 5))

Tanzi V (1983) The underground economy in the United States: annual estimates, 1930-80. In: Staff Papers – International Monetary Fund, 30(2), 283. doi:https://doi.org/10.2307/3867001

Thomas J (1992) Informal economic activity. Harvester Wheatsheaf, New York

Todaro M (1969) A model for labor migration and urban unemployment in less developed countries. Am Econ Rev 59(1):138–148

Todaro M, Smith S (2015) Economic development, 12th edn. Pearson, London

Ulyssea G (2010) Regulation of entry, labor market institutions and the informal sector. J Dev Econ 91(1):87–99. https://doi.org/10.1016/j.jdeveco.2009.07.001

Williams C (2006) The hidden enterprise culture: entrepreneurship in the underground economy. Edward Elgar, Cheltenham

Williams C (2007) Entrepreneurs operating in the informal economy: necessity or opportunity driven? J Small Bus Entrep 20(3):309–319. https://doi.org/10.1080/08276331.2007.10593402

Williams C (2008) Beyond necessity-driven versus opportunity-driven entrepreneurship: a study of informal entrepreneurs in England, Russia and Ukraine. Int J Entrep Innov 9(3):157–166

Williams C, Nadin S (2010) Entrepreneurship and the informal economy: an overview. J Dev Entrep 15(04):361–378. https://doi.org/10.1142/S1084946710001683

Williams C, Windebank J (2006) Harnessing the hidden enterprise culture of advanced economies. Int J Manpow 27(6):535–551. https://doi.org/10.1108/01437720610690473

World Markets Research Center (2001). http://www.globalinsight.com

Wuyts M (2001) Informal economy, wage goods and accumulation under structural adjustment theoretical reflections based on the Tanzanian experience. Camb J Econ 25(3):417–438. https://doi.org/10.1093/cje/25.3.417

Zenou Y (2008) Job search and mobility in developing countries. Theory and policy implications. J Dev Econ 86(2):336–355. https://doi.org/10.1016/j.jdeveco.2007.06.009

Developing Economies and Newly Globalized Trade: New Rules to Fleece the South

Kunibert Raffer

Abstract Neoliberal ideology forms the political backbone and background of present changes in economic and social systems. Trade policies in particular are often used to preach the advantages of globalization. This chapter shows that the new trade regime is heavily biased, tilting trade relations further against small countries and the South. Rather than being a rule-based system upholding the rule of law, and protecting the contractual rights of Southern or smaller countries in general, it is a pseudo-legal club to beat weaker countries with, even though bigger Southern Countries, such as India or China, are not always defenceless. Larger countries can choose whether to comply with dispute settlement findings or not. This chapter gives many examples. Recent attempts to change the dispute solution mechanism even more away from equal treatment before the law bode ill for weaker members. The much touted "Development Round" turned out not to have had much development effects, serving Northern interests instead. Furthermore, the WTO offers itself publicly as a means to outsmart parliaments and democracy. While the WTO has served to establish basic commitments, the North meanwhile prefer bilateral investment treaties in order to press WTO-plus obligations on the South, obligations that could not get through multilateral WTO negotiations. Present unilateral actions by the USA illustrate once again the weakness and limited usefulness of the WTO framework.

1 Introduction

Neoliberal ideology forms the political backbone and background of present changes in economic and social systems. Trade policies in particular are often used to preach the advantages of globalization. Trade is one of its very backbones. Allowing market forces to operate more freely, globalization and deregulation are claimed to benefit everyone ultimately. In any case, there seems to be no alternative. Renato Ruggiero, Director General of the World Trade Organization (WTO), for instance, expresses

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this view: "Only a free global market and a free global trading system can cope with the global challenges of our time" (WTO 1996b, p. 11). As the present trade system clearly shows, important global players do not want a level playing field, a real market or real liberalization, but trade agreements have been used to tilt trade rules further against the South, as well as to fight democracy.

Virtually always globalization has been referred to apparently exogenous factors, forces beyond democratic control forcing governments to adopt "sound" policies, comparable to the law of gravity forcing the high jumper back to the ground. However, like the cane in Victorian pedagogical theory, these forces work for the best interest of those who feel it, even if those feeling it might wrongly not think so. It was "forgotten" to mention that governments negotiated and signed agreements bringing about this situation.

The WTO (1998, p. 4) itself expresses its role quite clearly and much more honestly:

> Finally—and perhaps most importantly—the WTO can help provide the response to the central government challenge of our new global age: the fact that governments answer mainly to national constituencies, while increasingly the economic system must answer to global needs. The experience of the WTO, and the way it works via binding commitments reached by consensus, gives some guidance as to how these systemic gaps might be bridged.

In plain English, the WTO offers itself as a means to outsmart parliaments and democracy by signing "appropriate" international treaties that bind future governments. If these treaties were indeed in the best interest of all concerned, such trickery would not be needed. People would embrace them in their very own interest. The WTO is by far not the only example. The EU is another anti-democratic project. New bilateral investment agreements (BITs) rigorously aim at destroying democratic self-determination. Globalization is anti-democratic and interest-led political actions against the interest of the majority in the North and the South.

Regarding the WTO framework, one cannot but agree with the expert analysis of Pascal Lamy (2007), then the WTO's Director General, in a speech at ECOSOC:

> But today a number of the current substantive rules of the WTO do perpetuate some bias against developing countries. This is true for example with rules on subsidies in agriculture that allow for trade-distorting subsidies which tends to favour developed countries. This is also true when we look at the high tariffs that many developed counties apply on imports of agricultural and industrial products, in particular from developing countries. I often say that while the political decolonization took place more than 50 years ago, we have not yet completed economic decolonization.

In other words, the North was mostly able to shape the WTO system according to their interests. Therefore, Lamy continues, putting his hopes on something called a Development Round: "A fundamental aspect of the Doha Development Agenda is therefore to redress the remaining imbalances in the multilateral trading system and to provide developing countries with improved market opportunities". Vain hope—as the outcome of this "Development Round", a Blairite expression, proves.

This chapter is questioning interest-led official assertions, analysing the effects of trade on countries. It first discusses theoretical issues, showing that neoliberal globalization has no theoretical foundation in economics. This is necessary as

globalizers usually refer to this theoretic framework. Logic or veracity is of course of no concern to globalizers—economic theory is but a particularly often used subterfuge to veil very clearly discernible private interests.

After recurring to neoclassical theory to show that the usual argument that liberalizing more leads to improvements for all has no theoretical foundation, this chapter analyses real trade policy. Doing so one clearly sees that it is not even attempted to approach theory's perfect market. Quite on the contrary, powerful countries tilt trade rules further against the South under the cloak of unrealistic theories. What is officially propagated as freeing trade is actually harnessing trade in favour of Northern special interests—political truths all over.

2 Textbook Theory and Neoliberal Trade Policy

Neoliberal ideology claims to derive from neoclassical textbook theory and its optimization mechanisms making everyone better off. It can easily be shown that this is at severest odds with the truth.

One quick look at a microeconomics textbook shows that the results of the perfectly competitive market cannot be approximated by eliminating some but not all market imperfections. Reducing only the number of imperfections, liberalizing trade partially, might as well make things worse. Unless a global, perfectly competitive market can be established, good introductory textbooks warn (e.g. Nicholson 1992, p. 521), selective changes, such as liberalization, may deteriorate a country's economic position. Unsurprisingly, liberalization crashes prove economic theory and mathematics right. Furthermore, while trade models work quite well under two countries/two products/two factors assumptions, they cannot be generalized in a meaningful way.

The IBRD economist H.B. Chenery (1961, p. 23) concluded that the static concept of comparative advantages creates conflicts between trade theory and growth theory so that two important bodies of orthodoxy cannot be reconciled: "There are a number of contradictions between the implications of trade theory and growth theory. To make these theories consistent, it is necessary to discard" some assumptions, such as the crucial condition of constant returns. This means that there exists no logically consistent theory guaranteeing the outcome that anyone is better off, as claimed by neoliberals. While the theorem of comparative advantages, the main argument of those advising unconditional liberalization, is irrefutably correct *within* its assumptions, constant returns are necessary to guarantee an unequivocally positive outcome. If, ceteris paribus, this absolutely unrealistic restriction is dropped, trade may be to the disadvantage of a country specializing according to the theorem (Graham 1923). After attempts to disprove this so-called Graham's paradox had failed, textbooks simply stopped telling students about it—a prime example of academic honesty.

Raffer (1994) showed that Graham's case provides a theoretical corroboration of the Prebisch-Singer thesis of secularly falling terms of trade. Combined with the

non-Marxist theory of unequal exchange (Raffer 1987), which uses neoclassical tools, a logically consistent explanation of disadvantaging trade emerges. The Prebisch-Singer thesis also shows that really existing markets differ from textbook models: under textbook assumptions the terms of trade of raw material exporters would have had to improve rather than deteriorate (cf. Raffer 1994).

Caveats, critical statements, or theoretical findings at odds with the liberalization dogma have usually been brushed aside to be eagerly "forgotten", even though the very founders of present trade theory themselves warned of its applicability to real life. Bertil Ohlin (1967, pp. 308f) stated outspokenly:

> The obstinate conservatism with which the classical comparative cost thinking has been retained in theory as something more than a pedagogical introduction—or a model for the treatment of a few special problems—is evidence that, even today, there is in many quarters an insufficient understanding of this fundamental fact.
>
> It follows that not only the comparative cost model but also the factor proportions model can only be applied in special cases and used as a general introduction to illuminate the character of trade in some essential aspects . . . It is characteristic of *the developing countries* that a good many factors do not exist at all and that the quality of others differs from factors in the industrialized countries. This means that a simple method of analysis—such as the factor proportions model—which does not take this into account is to some extent unrealistic.

Eli Heckscher (1950, p. 275; stress added) explicitly found his theory "*in full accordance with List's point of view, since his criticism of the 'school' was directed only at the dynamic factors*"—a view fully shared by List (1920, pp. 234f). Nevertheless the "Heckscher-Ohlin theory" is used to advocate unrestricted liberalization and to "disprove" List's infant industry protection argument. Either neoliberals are so much more knowledgeable about Heckscher-Ohlin theory than its founders, or neoliberals are simply lying in order to support other goals.

To back up its arguments for liberalization, the WTO often compares growth rates of GDPs or GNPs (now GNIs) with growth rates of exports, arguing, e.g. that "Trade growth has consistently outpaced overall economic growth for at least 250 years, except for a comparatively brief period from 1913 to 1950" (WTO 1998, p. 33). The comparison of growth rates looks very impressive at first sight. Not unexpectedly, the WTO fails to mention that two different concepts of measurement are compared. While GDP/GNP is measured on a net base (accumulated values added), exports are measured gross, which means import contents are not deducted. By just shipping one product around the globe from one country to another (exporting it several times), export growth is boosted. Export growth must thus be expected to exceed GDP growth normally. This point is particularly valid as processing trade has gained importance and often played a crucial part in overall trade performance.

But there is another grave problem not "seen" officially. There is a neoclassical agenda of controlling capital flows (Raffer 2015). Neoclassical trade theory can only work as posited if countervailing effects of capital flows are eliminated. Incentives have to be corrected. Upholding neoclassical trade theory and its benevolent effects on everyone demands state intervention to safeguard textbook trade mechanisms. Capital controls are thus a necessary element of neoclassical, textbook policies, as

recognized by the IMF statute, but illegally ignored by the IMF. Only if trade mechanisms are brought back into operation, can these models work, even on their highly abstract level. Whether that allows honest conclusions on really existing trade is anyone's guess.

Briefly put, textbook theory does not justify so-called free traders (that are really rent seekers) but makes a clear logical case for judicious intervention. Unwilling to accept unwelcome logic, the creed that the comparative advantages theorem and the Heckscher-Ohlin theory can be applied to reality, even that actual trade mirrors these models, ranks high among the sacred cows of orthodoxy (even though this assumption is not propagated in purely theoretic works). Doing so, one follows money. Few economists are prepared to commit crimethink, putting their career at risk merely for rectitude and science.

3   The Uruguay Round

Promises that the WTO would contribute to a rule-based, predictable, non-discriminatory multilateral trading system, upholding the rights and interests of weaker trading partners—as promised by the North—made the South accept these treaties. Immediately after signing the Final Act at Marrakesh, UNCTAD advocated the quick implementation of the new GATT framework and in particular of the WTO as in the interest of Southern Countries (SCs). Similarly, SCs also saw the new framework in a positive light. Logically, strengthening the rule of law in international trade is always in the interest of less powerful participants. Multilateral decision-making, mirrored in the stronger role of the WTO, is often seen as a bonus for SCs and small countries in general, but theory turned out very different from practice. Installing the one country-one vote principle, the WTO, like the UN General Assembly, gives the group of SCs representing the majority of countries and of people also the majority of votes. Establishing majority decisions and consensus, this is said to form the legal base for full participation of SCs in decision-making. Once this exceptional voting mechanism has served its purpose to lure SCs into signing and ratifying, changes are demanded to allow the WTO "to operate efficiently" (Schott 2018). Like at the Bretton Woods twins "an executive board . . . with permanent participation by the major industrial countries, weighted voting" is needed according to Schott, who works at a US think-tank.

It was often argued that the WTO's legal framework would put an end to bilateral, GATT-violating measures such as the US Super 301. But apparently the devil you don't know turned out to be worse than the devil you knew. Commenting briefly on the main component parts of the treaties:

The OECD (2000, p. 31) quotes a study according to which "rich countries' average tariffs on manufactured imports from poor countries are four times higher than those on imports from other developed countries". Tariff escalation hinders Southern exports: "OECD tariffs on finished industrial products are about eight times higher than on raw materials . . . These barriers delay entry into the export-

oriented industries, which are most accessible to developing countries—namely commodity processing, light manufactures, and textiles and clothing" (*ibid*., pp. 31f). The OECD also mentions the pivotal role of agriculture in development and the damaging effects of Northern agrarian policies that "impair the role of agriculture as an engine for … overall growth". Non-tariff measures, certain "behind-the-border" regulations and practices, greatly impede trade.

While estimates of incredibly large gains by the Uruguay Round had been presented when signing had been advocated, criticizing model assumptions disconnected from reality, Matto and Subramanian (2005, p. 21) concluded soberly a few years later: "the benefits of the Round were exaggerated and its costs were underplayed".

Meaningful proposals to reform the WTO have been made, but—not in the interest of the powerful members—have not been taken up (cf., e.g. Raffer and Singer 2001, pp. 250–254; or Raffer 2002).

Preferential and Special Treatment Preferential treatment for SCs (Part IV of GATT 1947), an exception from the basic understanding of equal treatment, was gained by strong political pressure in 1965 and enabled developing GATT members to achieve preference systems from Northern Countries (NCs). In spite of the sobering results of preference systems, the principle of preferential treatment as such is valuable, because it justifies demands to take the special developmental needs of SCs into account. The WTO has largely, though not completely, done away with that, although some formal preferences such as "longer" implementation periods are stipulated. Compared with the time the North needed to adapt one sector, textiles and apparel, these additional years are a joke.

Trade Tariff escalation was not abolished. Reductions in protectionism, in particular substantial cuts in export subsidies, are unfulfilled promises made to SCs, while their signatures were coveted. Results fell far behind promises.

Voluntary export restrictions (VERs) became legal. NCs safeguarded their subsidy schemes. Art. 3 of the Agreement on Subsidies and Countervailing Measures exempts agrarian subsidies, expressly prohibiting subsidies in the interest of SCs, such as those contingent on using domestic inputs or export performance. Annex 1 specifically allows official subsidies for exports in line with the OECD's *Guidelines for Officially Supported Export Credits*. Although the WTO declares to want to liberalize global markets, they are not considered prohibited export subsidies. These Guidelines also form a suppliers' cartel anointed with legal respectability. Agriculture, whose inclusion into the system was presented as a chocolate on the tray, remains highly protected by the North. After years of protecting textiles and clothing, the North insisted on further 10 years of protection in order to avoid market disruptions. One should note that SCs are requested by the North and multilaterals controlled by it to liberalize their whole economies immediately—market disruption is not seen as dangerous for economies much less developed than theirs by the protectionist North. Initially, the USA and the EU wanted to legalize rather than phase out the decades-old trade restrictions of textiles and apparel in the new framework. In comparison one may thus call the phasing out after 10 more years a

"success" of the South. It goes without saying that liberalization was backloaded; little liberalization took place during these 10 years. The first stage of "liberalization" under the WTO "liberalized"—with one exception—products that had not been subject to any restrictions. As the Textiles Monitoring Body observed, only one product imported by Canada—girls' singlets, liberalizing women's singlets would have overburdened Canada—was really liberalized (WTO 1996a, p. 96). Such rabid liberalization made the USA invoke Article 6 (transitional safeguards) on 24 occasions in the first half of 1995 alone (*ibid.*). Comparing NC behaviour with what they demand SCs to do one cannot help thinking of sanctimonious masquerading.

On the other hand, reimports of products exported by domestic enterprises to have them further processed in other countries are explicitly allowed more favourable treatment (Art. 6.6(d)) when "transitional safeguards" are applied. Apparently, competitors exporting final products are to be kept at bay without restricting possibilities to cut cost. Or, investment and employment are only endangered by competition, not by relocation of labour-intensive processes.

Agriculture: The Survival of Northern Planned Economies at Their Worst Reductions in protectionism, in particular substantial cuts in Northern export subsidies distorting global "markets" substantially, are unfulfilled promises made to SCs while their signatures were coveted. Results fell far behind promises. Meaningful export subsidy cuts did not occur. Heavy subsidies to agrarian production were made perfectly legal: "the aggregate level of European farm protection has barely moved since the late 1980s (reflecting the limited effective farm liberalization under the Uruguay Round)" (Messerlin 2005, p. 25). The "justification" that subsidies must have "no, or at most minimal, trade distorting effects or effects on production" is at odds with logic. Any production existing only because of subsidies produces what would not be produced otherwise, thus having effects on production. This produce is marketed, crowding out imports or destroying SC export markets, thus distorting trade. But logic is unwelcome if it goes against NC interests.

Cotton and sugar are prime examples to illustrate double standards: in 2002 Brazil started WTO proceedings against US cotton subsides. This was followed by protests against agrarian subsidies by many SCs. Burkina Faso, e.g. is one of the world's most efficient cotton producers. US exports at prices 65% below production costs dumped comparative advantage away. Twenty-five thousand US cotton farmers got perceptibly more subsidies than the value of the GNI of either Mali or Burkina Faso (11 million people each). Producing rice in the USA cost 2.5 times as much as in Vietnam. Due to subsidies, both exported the same volume. The EU exported sugar and beef at less than half their production costs. WTO cotton and sugar panels legally established that NCs had even failed to abide by the loose rules on subsidies they crafted during the Uruguay Round, as SCs had claimed (Oxfam 2005, p. 4). The collapse of cotton prices is estimated to have cost eight West African countries nearly US$200 million in lost annual export revenue (FAO 2004, p. 25). As explained further down, in spite of losing the dispute and the Appellate Body's finding, the USA has continued to subsidize cotton farmers.

At the same time, the EU subsidized sugar beet farmers with over US$2.2 billion per year, changing from an importer to the world's largest sugar exporter. Prices 75% below its production costs (*ibid*, p. 24) are technically dumping. But unlike with manufactures where NCs want to keep cheaper SC suppliers out of their markets, it is perfectly legal. "Comparative access to subsidies, not comparative advantage" (Oxfam 2005, p. 9) shapes "world markets". A free market is not what NCs want. Institutions interlink: in the name of economic efficiency, the IBRD pressured Mali to pay local cotton producers this (subsidized) "world market price" in 2004. The government ultimately refused to bankrupt domestic peasants.

As meaningful cuts in subsidies—as promised before SCs had signed—would have increased food prices, NCs apparently perceived a need to assure net-importing SCs of compensatory measures. The Decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least-Developed and Net Food-Importing Developing Countries recognized substantial negative effects. Promised relief did not materialize in spite of Article 16 of the Agreement on Agriculture. After ratification SCs were referred to existing BWI facilities financing commercial imports, which are subject to conditionality. The WTO tried to help SCs, but remained unsuccessful. After the promise of additional help had served its purpose, it was broken and turned into another means of control.

TRIMs The new TRIM rules restrict SCs policies, enforcing the obligation of national treatment of foreign investment in the field of goods. They deprive SCs of important policy options, such as the possibility of using national laws as a bargaining chip when negotiating with Transnational Enterprises (TNE) or the possibility of fostering its own infant industry by demanding the use of domestic inputs in production. No clear definition of a TRIM was provided, but the Agreement's annex explicitly prohibits any requirements of using local inputs, restricting TNEs' access to foreign exchange in percentages of inflows attributable to it, or export restrictions. This may often make it impossible to develop domestic industries. Historical evidence from successful countries, such as South Korea or Taiwan, does strongly suggest that liberalization of foreign investment is not necessarily conducive to developing domestic productive capacities. Both countries, as well as Japan, have restricted foreign investments heavily and have not eased their restrictions until recently. Historically, Europe and the USA, too, have protected their new industries from foreign competition. As infant industries are by definition less accomplished than mature and experienced firms, TRIMs are likely to restrict development options seriously.

Europe and the USA, however, still restrict foreign investment. The Committee on Foreign Investment in the USA (CFIUS) reviews transactions that could result in control of a US business by a foreigner. Germany, e.g. has similar laws that are to be tightened. At the moment the government can only act against investors having more than 25% of an enterprise. A Chinese investor acquiring 9.7% of Daimler makes Germans reconsider that limit, as the *Spiegel* (3 March 2018) reports. Briefly, those countries still restricting foreign investments demand from and are preaching to SCs

allowing foreign investment without any restrictions as this would benefit their—apparently in contrast to Northern—economies. NCs know better than that.

Taking the bargaining chip of domestic law away from SCs may be seen as one-sided disarmament. As long as no enforceable code of conduct for TNEs exists (or international anti-cartel norms), the country has lost its countervailing capacities against restrictive business practices by TNEs. The old demand of the South that TNE power should be checked by international norms was not written into the Agreement. Not even a general reference to restrictive business practices (as in Art. IX of the Agreement on Trade in Services, where the word restrictive is avoided, though) can be found in the TRIMs Agreement. Briefly put, it is a clear victory of NCs.

TRIPS   As local indigenous knowledge remains totally unprotected—it would have been easy to do so—the TRIPS Agreement does strictly speaking not protect intellectual property. It only protects specific intellectual property defined according to Northern criteria, wishes, and needs. The whole host of tribal knowledge in many SCs is put at the disposal of the North. Many people from the South complain that their knowledge is just being robbed under the WTO cloak—there are some very prominent cases. Expressions such as "kleptocracy", biopiracy, and other very badly sounding words are often used to describe this new situation.

Unfortunately the TRIPS Agreement did away with demanding an inventive step. The word inventive step is still in the treaty. Art. 27 speaks of the involvement of an "inventive step" as a condition. But the pertaining footnote 5 redefines it as "non-obvious", which makes an important difference. If someone uses tribal or traditional knowledge obtained in the South, applying it to a problem in the North, this might not involve any inventive step. But it may be considered non-obvious. The WTO confers a licence to take other people's intellectual property to Northern interests. In parentheses it might be said that the WTO itself stole the acronym of the World Tourism Organization (WTO), which is a clear breach of Article 15 of its own TRIPS Agreement. Article 15 explicitly protects letters and combinations of letters. This attitude of a powerful institution vis-à-vis the rights of a less powerful one bodes ill for the weaker members. It is a troubling sign how their rights are going to be protected.

The disadvantage of Southern producers is compounded by Article 34 of the TRIPS Agreement, which shifts the burden of proof in the case of process patents onto the defendant. This inversion of the burden of proof is a highly unusual and dangerous legal practice.

Not less disturbing is the fact that the membership rights of SCs have continuously been infringed. The TRIPS Agreement contains a wide range of safeguards to protect public health, a flexibility, which according to the World Health Organization is not used by SCs. The *Financial Times* (20 June 2001) explains why. Over the years the USA threatened trade sanctions against countries revising their legislation to incorporate TRIPS safeguards. Pressure by AIDS activists made the administration announce it would no longer oppose TRIPS-consistent measures. Health groups, however, said the USA was still exerting pressure on countries to forgo or

weaken TRIPS safeguards, e.g. in negotiations on the Free Trade Agreement of the Americas. Over 100 NGOs urged the WTO to adopt a seven-point strategy including a moratorium on dispute settlement action and an agreement not to pressure SCs to forgo TRIPS rights (Raffer 2003).

The Republic of South Africa was sued by pharmaceutical companies alleging it to violate international patent regulations by facilitating access to low-cost medicines. Public pressure made them withdraw the lawsuit. In 2001 all conceded South Africa's law allowing the government to purchase brand-name drugs at the lowest rates available anywhere in the world complied with international trade agreements—after accusing the country of wanting to destroy international treaties before—and paid the government's legal costs (Swarns 2001). Instead of respecting the TRIPS treaty, the US government had put pressure on South Africa. It is also highly interesting to ask how such a lawsuit could be started in a WTO member country bound to respect WTO treaties. Providing the "cocktail" of needed drugs free of charge, Brazil reduced AIDS mortality from 10,592 deaths (1995) to 1700 (2000). The USA filed a complaint against Brazil.

The USA itself forced Bayer to sell its Cipro tablets at roughly 20% of its market price, threatening to override Bayer's patent. Canada had placed large orders with a local company for a Cipro copy before, reopening the debate about patent protection for essential medicines. The *Financial Times* reported on 25 October 2001 both about the US-enforced price cut and fierce opposition by a US-led group including Canada against SCs led by Brazil and India, insisting on a declaration by ministers at Doha that "nothing in the Trips agreement shall prevent governments from taking measures to protect public health", which basically states that one has the right to do what one is entitled to by the Treaty. At Doha the right of WTO members to use, to the full, the provisions in the TRIPS Agreement was "reaffirmed"—unnecessary if their rights had been respected before and a sobering example of equal treatment within the WTO. In plain English this means that membership rights are now to be respected even if and when exercised by SCs, at least according to official wording.

Preshipment Inspection This might be called a victory of the South. SC buyers are now allowed to check whether what they paid for is actually delivered. NCs had strongly opposed that, calling this basic requirement of any market economy a non-tariff trade barrier.

4 Dispute Settlement

The new procedure of dispute settlement was—like the one country-one vote principle—presented as another chocolate on the tray for SCs and small countries in general. The rule of law would govern international trade relations. Unlike under the old GATT, disputes would be solved quickly and efficiently. Reality did once again turn out quite differently.

The Understanding on Rules and Procedures Covering the Settlement of Disputes states that its "last resort" provided to "Members invoking the dispute settlement procedures is the possibility of suspending the application of concessions and other obligations ... vis-á-vis the other Member, subject to authorisation by the DSB [Dispute Settlement Body] of such measures" (Art. 3.7). One may speculate whether the authorized suspension of concessions by Antigua vis-à-vis the USA will be equally effective as a suspension the other way round. Suspending concessions and obligations is subject to strict rules and not always possible (Art. 22.5). Compensation for damage inflicted by breach of contract is voluntary (Art. 22.1). Like in the case of voluntary export restraints, where SCs volunteer more often than certain NCs, one may assume that compensation will not be forthcoming with equal eagerness from all countries either. Art. 3(7) contains a subtle warning to SCs and small countries in general: "Before bringing a case, a Member shall exercise its judgement as to whether action under these procedures would be fruitful. The aim of the dispute settlement mechanism is to secure a positive solution to the dispute".

Not protecting contractual rights or the law but fruitfulness is demanded. If, e.g. the USA or EU is likely simply not to implement a decision of the DSB or the Appellate Body, lodging a complaint would be unfruitful, thus violating dispute settlement rules. While the WTO's dispute settlement mechanism is a convenient legal veil to allow disciplining smaller countries and most SCs, it is toothless, when it comes to bigger members. In a way, it is the law of the jungle hypocritically hidden under a "pseudo-legal" cloak.

Theoretically, one could have opted for authorizing or even encouraging all members to suspend concessions and obligations vis-à-vis any country breaking the rules. Reducing asymmetries of power, this solution would protect the interests of smaller players, strengthening the rule of law and the enforceability of the norms, which were agreed on by all members. One could have stipulated the obligation to compensate damages caused by breaching WTO obligations. Apparently, interest in doing so does not exist.

Historical record shows that powerful countries can just disregard rulings they do not like.

1. The EU's complaint against the US Helms-Burton Act (officially called "Cuban Liberty and Democratic Solidarity Act"): The USA threatened that "the WTO panel process would not lead to a resolution of the dispute, instead it would pose serious risks for the new organization" (WTO 1996d, p. 2). Following US "advice" to "explore other avenues" (*ibid.*), the EC requested the panel to suspend its work in April 1997 after agreeing bilaterally not to apply Helms-Burton to EU corporations. While Helms-Burton is a clear violation of US obligations under the WTO, one could as well call the EU's move illegal due to its evident unfruitfulness. The USA insists on choosing whether to comply with decisions or not. One may assume that the EC and, for instance, Japan, unlike many other countries, are equally able to assert themselves.

2. Section 301: This section, allowing unilateral action by the USA, is clearly at odds with multilateral dispute settlement as stipulated. Apparently, the aim of replacing (Super) 301, a unilateral measure implemented in breach of international treaties,

by WTO dispute settlement was unsuccessful. Conducting its review on the USA in November 1996, the WTO's Trade Policy Review Body expressed "a general dissatisfaction with the continued unilateralism inherent in 'Section 301' legislation" (WTO 1996c, p. 16), questioning in particular the WTO consistency of the Helms-Burton Act and the Iran-Libya Trade Sanctions Act. The USA "saw Section 301 as a means for communication of exporters' concerns" (*ibid*.), continuing to resort to it (cf. WTO 1998, p. 79). Deciding on a complaint by the EU, the DSB ruled in 2000 that though "a *prima facie* violation" of WTO obligations, this legislation is "not inconsistent with US obligations under the WTO" (WTO 2000, p. 68). Briefly put, the USA had declared not to apply the law as it stands. The panel had stated that carrying a big stick without using it would already influence markets, but this "actual threat"—to use WTO language—was finally considered all right. According to the WTO, these sections now "provide an important avenue for the United States to enforce its rights under WTO agreements" (*ibid*., p. 67; for more details *v*. Raffer and Singer 2001, p. 213). Apparently, the promise of replacing (Super) 301 by WTO dispute settlement (another chocolate on the tray) was not kept. The WTO's (1998, p. 22) statement that "bilateral approaches to trade have been brought under multilateral control" is contradicted by the very same WTO source some pages later.

3. Canada, a country subsidizing its own small aircraft industry, complained about subsidies granted by Brazil to her aircraft producers. Brazil in turn complained against Canadian subsidies. Canada simply refused to provide the information requested by the panel, in particular about the debt financing activities of its Export Development Corporation (EDC). Declining Brazil's demand to infer that the information withheld was prejudicial to Canada's position, the panel stated that Brazil's evidence was insufficient. The Appellate Body found that Canada had violated its obligation to respond promptly and fully pursuant to Article 13.1 of the Understanding on Rules and Procedures Covering the Settlement of Disputes. It remarked that "a party's refusal to collaborate has the potential to undermine the functioning of the dispute settlement system" (WTO 2000, p. 59). The Appellate Body "might well have concluded that the facts on the record did warrant the inference that the information Canada withheld . . . included information prejudicial to Canada's denial that the EDC had conferred 'benefit' and granted a prohibited export subsidy". Nevertheless the panel's finding was upheld, as Brazil had not done enough to compel it to make the inferences requested. Adding insult to injury, the Body did "not intend to suggest that Brazil was precluded from pursuing another complaint against Canada . . . concerning the consistency of certain of the EDC's financing measures" with contractual obligations (*ibid*.). It remains unclear, however, why Canada should then provide prejudicial information it withheld successfully and illegally before. There remains one encouraging thought: if the accused had been Benin or Jamaica, the full rigour of the law would have hit the offender—all animals are equal.

4. Cotton: The case of cotton was already mentioned above. Brazil finally reached a mutually agreed solution with the USA in 2014: Brazil received $300 million for her cotton industry, plus some changes of the export guarantees programme (GSM-102) fitting Brazil's needs. At present the US lawmakers demanded again to increase cotton subsidies. At least, the agreement with Brazil is acknowledged to put some restrictions on these plans (Bjerga 2017).

   African "Cotton-4" countries still struggle for a just solution. Cotton was brought up by SCs again during the Doha Round. Finally, at Bali it was decided that "dedicated discussions" should be undertaken. On 24 July 2017 an "overwhelming majority of WTO members have reiterated their support for a meaningful and specific outcome on cotton domestic support . . . during the latest discussions on cotton" (WTO 2017).

5. In 2003 Antigua and Barbuda complained about measures discriminating cross-border suppliers of gambling and betting services. The result is earth shaking: in 2013 Antigua was officially authorized to suspend the application to the USA of concessions or other obligations consistent with the decision by the arbitrator (WTO 2013). As the complainant stated, the USA had settled with other more powerful countries (third parties).

6. Hormone meat: The EU lost this dispute with the USA, but did not allow hormone meat in on health grounds. Of particular interest is the Appellate Body's finding that there is a necessity "for the maintenance of the delicate and carefully negotiated balance . . . between the shared, but sometimes competing, interests of promoting international trade and of protecting the life and health of human beings" (Appellate Body 1998, para 177). In other words, a small increase in trade might well outweigh a few dozen lives.

7. Two complaints by Korea against US anti-dumping actions were not followed. The Dispute Settlement Body "deferred consideration as the United States indicated it was not in a position to agree to both requests" (WTO 1997, p. 4)—no doubt an easy way to deal with complaints not open to all members.

In spite of the unfair special treatment of countries like the USA, dispute settlement is in crisis:

> For the past few years, US officials have blocked appointments of Appellate Body members to force WTO members to negotiate new rules that address US concerns and limit the scope for judicial overreach. (Payosova et al. 2018, p. 1)

The EU too blocked a replacement. What is meant by "overreach" is that the Appellate Body does its duty, as any court should. In cases where there are no norms clarifying a situation, it decides. Thus, decisions will eventually become impossible due to lack of members unless new dispute settlement procedures take the interests of more powerful members even more into account.

5   Practical Trade Policy: Institutionalizing Discrimination and Abolishing Democracy

Bad enough that textbook theory is abused to camouflage clearly visible special interests. But it is even worse that the countries harmed by Northern con tricks do not defend themselves more outspokenly. The history of the WTO and so-called bilateral investment agreements (BITs) proves this most clearly. The WTO (1998, p. 4) itself expressed its raison d'être unashamedly, as quoted above. Investor-state dispute settlement arrangements going beyond the WTO by allowing TNEs themselves to sue governments reduce policy space of lawmakers further.

Binding commitments not just within the WTO but also and especially within BITs or the EU are meant to disempower the sovereign, the people. Nevertheless, the real scope of such treaties is rarely presented so clearly. Normally politicians are not that dumb to declare the goals of reducing or abolishing democracy. However, the newly elected Austrian government—after one coalition party demanded binding referenda—decided that EU matters must not be decided by referenda. The Austrian constitution (Art 1) stipulates that all (which means all, including EU matters) rights emanate from the people. But politicians do not bother about ridiculous things such as constitutions when it comes to serving vested and financially powerful interests. They have used international agreements—quite in the way the WTO advises—to roll back democracy. The sovereign, the people, are denied their sovereign rights.

Internationally, fair trade is to be destroyed quite in the way democracy is to be rolled back within presently still somehow democratic countries by treaties serving the interest of powerful actors.

6   The Doha "Development" Round and the Bali Ministerial Conference

This Round was initially heralded as the "Development Round", leading one to believe that development problems including poverty would finally be tackled. It was purported that, as development concerns had been sidelined so far, this Round would address them. Launching the Doha Round, "ministers placed development at its centre. 'We seek to place developing countries' needs and interests at the heart of the Work Programme adopted in this Declaration... We shall continue to make positive efforts designed to ensure that developing countries, and especially the least-developed among them, secure a share in the growth of world trade commensurate with the needs of their economic development" (WTO 2018a).

As a quick look at all issues officially on the table, such as large tariff cuts by Southern Countries (SCs), shows, this drew more on Blair's famous book *1984* than on reality, mere "spin". The so-called Swiss formula produces deeper cuts on higher tariffs or on SCs that often depend on tariff income as they are unable to raise more sophisticated levies. This would have destroyed much of the remaining policy space

of SCs. Poor countries depending largely on tariff revenues would have had budgetary problems.

The North continued to press for further changes mainly, if not exclusively, in its own interest. The Round was stalled by Southern resistance to avoid tilting trade rules further against the South.

Nevertheless, while the "WTO would seem to be the best vehicle for advancing the current interests of the industrial countries' private sectors", WTO process is a "victim" of the success of the World Bank and IMF" as Matto and Subramanian (2005, p. 20) conclude: during "structural adjustment" SC economies had been so largely liberalized that little remained to be offered by the South. Northern interests had been able to secure their main goals, especially as regards TRIPS, which "increased the monopoly power of the patent holder" (*ibid*.) against generic competition. Thus, the Doha Round "has always been plagued by a private sector interest deficit" as Matto and Subramanian (2005, p. 19) conclude.

At Bali, finally, some form of official agreement was made in order not to have to recognize the failure of the "Development Round". Naturally, its focus is not on development but on NC concerns. Trade facilitation, an urgent concern of NCs to open markets in SCs, was agreed and followed up. The Trade Facilitation Agreement (TFA) entered into force on 22 February 2017.

What might be called an SC victory is that subsidies to save poor people from starving are now "temporarily" accepted. A permanent agreement was and still is to be negotiated. Thus, SCs can do what NCs have been doing all along. Under the term "Special Agricultural Safeguards" (SSGs), NCs had assured continuing protectionism. Under this mechanism it is not necessary to demonstrate that serious injury is being caused to the domestic industry. A similar mechanism for SCs, the Special Safeguard Mechanism (SSM), has been averted by NCs so far.

Regarding the long boiling conflict on cotton, "dedicated discussions" on subsidies and export practices were agreed on. Practical consequences remain to be seen. While saving face for the WTO, Bali rendered no developmental benefits for SCs, a Development Round without real development benefits.

While the Doha Round was touted as a single undertaking, dispute settlement was not part of the negotiations.

7   Conclusion

Evaluating the WTO as a "rule-based" system that "underscores the rule of law" (WTO 2018b), protecting the contractual rights of South or smaller countries in general, shows a gloomy picture. Rather than a fair, legal system, it is a pseudo-legal club to beat SCs with, even though bigger SCs, such as India, are not always defenceless. Larger countries can choose whether to comply with DSB findings or not. Recent attempts to change the dispute solution mechanism even more away from equal treatment before the law bode ill for weaker members.

Especially for the EU, WTO commitments have been useful to free it of obligations under the old Lomé (later Cotonou) Treaties, initially granted, to remove those remnants of the 1970s Lomé framework that had been adopted in favour of and due to pressure by SC signatories. Very generous arrangements had been granted by the EU out of fear of SCs pushing for a New International Economic Order and due to the oil crisis, out of "European anxiety" as the European Commission (1996, p. 9) formulated. Thanks to the WTO all this is now history.

Generally, the Uruguay Round liberalized where it was in the interest of NCs, while sectors important to SCs remain selectively more protected. The Agreement on Textiles and Clothing was the prime example for this asymmetry, showing how easily NCs are willing to infringe on the very idea of liberalization when this is in their interest.

While the WTO has served to establish basic commitments, NCs meanwhile prefer Bilateral Investment Treaties in order to press WTO-plus obligations on SCs. Demands they could not get through WTO negotiations are now pressed upon SCs bilaterally or—as in the case of the EU—with so-called economic partnership agreements (partnership like Ministry of Love) that may include more than one SCs. These negotiations drag on against SC defence.

Present unilateral actions by the USA illustrate once again the weakness of the WTO framework: punitive tariffs are introduced without bothering about WTO dispute settlement. The USA used Section 301 instead of WTO procedures. One may wonder whether the WTO would have survived a full-blown trade war between the USA and the EU. The recent shift to preferring BITs also weakens the WTO.

References

Appellate Body, of WTO (1998) EC-measures concerning meat and meat products (Hormones) – AB-1997-4 – Report of the Appellate Body. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S006.aspx?Query=(@Symbol=%20wt/ds26/ab/r*%20not%20rw*)&Language=ENGLISH&Context=FomerScriptedSearch&languageUIChanged=true#

Bjerga A (2017) Trump asked to extend cotton aid by lawmakers citing China. https://www.bloomberg.com/news/articles/2017-07-18/u-s-lawmakers-ask-trump-to-extend-cotton-payments-citing-china

Chenery HB (1961) Comparative advantage and development policy. Am Econ Rev 51:18ff

European Commission (1996) Green Paper on relations between the European Union and the ACP countries on the eve of the 21st century, (Draft) Brussels, 14 Nov 1996

FAO (2004) The state of agricultural commodity markets 2004. FAO, Rome

Graham FD (1923) Some aspects of protection further considered. Quart J Econ 37:193ff

Heckscher E (1950) The effect of foreign trade on the distribution of income. In: Ellis H, Metzler L (eds) Readings in the theory of international trade. Allen & Unwin, London, p 272ff. (Slightly abbreviated version of the original published in *Ekonomisk Tidskrift* XXI, 1919, pp. 497ff)

Lamy P (2007) Lamy says relatively small concessions needed for reaching Doha agreement. WTO News: Speeches – DG Pascal Lamy. http://www.wto.org/english/news_e/sppl_e/sppl64_e.htm

List F (1920) Das nationale System der politischen Ökonomie. G. Fischer, Jena. (originally published in 1841)

Mattoo A, Subramanian A (2005) Why prospects for trade talks are not bright. Finance Dev 42 (1):19ff. http://www.imf.org/external/pubs/ft/fandd/2005/03/pdf/mattoo.pdf

Messerlin PA (2005) Success requires a 'grand vision'. Finance Dev 42(1):24ff

Nicholson W (1992) Microeconomic theory, basic principles and extensions, 5th edn. Dryden, Fort Worth

OECD (2000) Development co-operation, efforts and policies of the Members of the Development Assistance Committee, 1999 Report. OECD, Paris

Ohlin B (1967) Interregional and international trade. Harvard UP, Cambridge, MA. (orig. published in 1933)

Oxfam (2005) A round for free, how rich countries are getting a free ride on agricultural subsidies at the WTO. Briefing Paper no. 76

Payosova T, Hufbauer GC, Schott JJ (2018) The dispute settlement crisis in the World Trade Organization: causes and cures. PIIE Policy Brief 18-5

Raffer K (1987) Unequal exchange and the evolution of the world system, reconsidering the impact of trade on north-south relations. Macmillan, London

Raffer K (1994) Disadvantaging comparative advantages: the problem of decreasing returns. In: Prendergast R, Stewart F (eds) Market forces and world development. Macmillan/St. Martin's Press, London/New York, p 75ff

Raffer K (2002) Ways and suggestions of reform of the multilateral trade negotiations. In: Arab Thought Forum & Bruno Kreisky Forum (eds) WTO trading system – review and reform. Amman, pp 122ff

Raffer K (2003) Some proposals to adapt international institutions to developmental needs. In: Chen J-r (ed) The role of international institutions in globalisation – the challenges for reform. Elgar, Cheltenham, p 81ff

Raffer K (2015) Neoliberalism and global capital mobility: a necessary reconsideration of textbook trade theory. Braz J Polit Econ 35(2), April–June/2015 (139):267–284. http://www.rep.org.br/PDF/139-4.PDF

Raffer K, Singer HW (2001) The economic north-south divide: six decades of unequal development. Edward Elgar, Cheltenham (Paperpack: 2002; 2004)

Schott JJ (2018) Alternative view. https://www.wto.org/english/thewto_e/whatis_e/tif_e/org1_e.htm

Swarns RL (2001) Drug makers drop South Africa suit over AIDS medicine. New York Times, 20 Apr 2001. https://www.nytimes.com/2001/04/20/world/drug-makers-drop-south-africa-suit-over-aids-medicine.html

WTO (1996a) Annual report 1996, vol 1. WTO, Geneva

WTO (1996b) WTO-focus no. 11, June–July

WTO (1996c) WTO focus no. 13, October–November

WTO (1996d) WTO focus no. 14, December

WTO (1997) WTO focus no. 25, December

WTO (1998) Annual report 1998, vol 1. WTO, Geneva

WTO (2000) Annual report 2000. WTO, Geneva

WTO (2013) Communication from Antigua and Barbuda. https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds285_e.htm

WTO (2017) Cotton producers call for progress in curbing domestic subsidies. https://www.wto.org/english/news_e/news17_e/cdac_24jul17_e.htm

WTO (2018a) The Doha Round. https://www.wto.org/english/tratop_e/dda_e/dda_e.htm#development

WTO (2018b) Understanding the WTO: settling disputes, a unique contribution. https://www.wto.org/english/thewto_e/whatis_e/tif_e/disp1_e.htm

Zeitgeist Analysis of Globalization Spirit: A Philosophical Approach

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Abstract The goal of this chapter is to discuss globalization ontology through the zeitgeists of historical eras. Zeitgeist or spirit of the age study of each influential age contributes dramatically to cogent comprehension of economic, social, political, cultural, and historical backgrounds and atmospheres, which have collectively molded globalization into a stupendous phenomenon. Moreover, the paper has scrutinized the concept of globalization to see whether it is an ancient concept in a new disguise or a modern all-inclusive phenomenon. Hence, the study is mostly analytical and rests upon secondary data through library study. The originality of the study lies not only in the philosophical application of zeitgeist concept for the analysis of globalization's nature but also in the introduction of subject matter's initial *Dismantling* (to its reductionistic integral characteristics) and its subsequent *Mantling* (to envisage them in their holistic crystallization) as a useful complementary approach to benefit both from *Reductionism* and *Holism* perspectives for the ontological discussions of immediately sophisticated and broad-ranging phenomena. Additionally, the potential implication of the study would be its contribution in theorizing globalization as a dialectical context-related phenomenon, which will undergo future metamorphic evolution by the changes in the requisites of *Times* (*Zeit's*) and their Spirits (*Geist's*).

1   Introduction

Any unbiased endeavor in the true perception of the spirit of globalization in each historical era can potentially contribute to setting a sound ontology for the concept. Ontology as one of the branches of philosophy, which deals with the concepts of *being* and *existence*, is the philosophical realm chosen for the explanation of globalization spirit in the study. Although globalization is a modern term, it does not mean that it was not present in human life before; as the new discoveries of celestial bodies by the scientists do not mean they had not been before. Historically, scholars believe in archaic and proto-globalization periods, which extend the realm

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of globalization to the time of great human civilizations like that of Egypt, China, Greece, Rome, and Persia. Nevertheless, globalization from the antiquity to the modern time has had some events, discoveries, incidents, inventions, declarations, historical figures, and phenomena that acted as route changers or turning points of globalization. The story of globalization could be started from the time human invented wheel and continued and catalyzed through history by carts, books, ships, trade roads (e.g., *Silk Road*), steam boats, industrialization, mass production, intercountry trade agreements, printing press, revolutions, telephones, airplanes, Internet, etc. Each influential phenomenon induced domino effects (e.g., the impact of *Printing Revolution* begun by *Johannes Gutenberg* on *Reformation*, *Renaissance*, and *Age of Enlightenment*), which led to new paradigms and spirits in the timeline of globalization. According to existentialism which suggests that human defines and gives meaning to his own world and life; and stresses "...on concrete individual existence and, consequently, on subjectivity, individual freedom, and choice" Dreyfus 2009); the existentialist perception of a human in industrialization period (circa 1760–1840) in Manchester was dramatically different from our owns' in the age of over-computerization, which subjectively originates from our own perception of modern zeitgeist. Globalization is a driving force behind human world which could not be confronted or resisted (e.g., through *Protectionism*[1] in trade or *Particularism*[2] in ethics) but to be understood and perfectly well adapted with; otherwise we face economic, political, social, and cultural events or effects which we could not comprehend and consequently will be empty-handed in proposing effective solutions. It is a force, which could be applied for economic, social, and political efficiency and effectiveness by the world leaders or resisted and misunderstood and changed into a crushing force for the society, economy, and politics. Hence, philosophical perception of globalization ontology not only help in selecting either clash of civilizations or dialogue between civilizations but also shed light on our ideology to see civilizations as separate islands in rivalry and emulation or as supplementary entities in harmony and communication with each other which are jigsaws of the same puzzle that potentially can take advantage of each other's strong points and compensate the weak ones through better understanding and tolerance. Thus, the bedrock in understanding the phenomenon is to comprehend its real being (i.e., spirit) or ontology, what the present study pursues through the historical zeitgeists.

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[1]"Government economic protection for domestic producers through restrictions on foreign competitors" (Merriam-Webster's Collegiate Dictionary 2002: 938).

[2]"Particularism can be defined as a kind of global ethics that rejects either a universalizing rationalizing of its ethics or the global reach of a single set of ethical principles. It suggests that ethical claims are framed by the particularity of the communities; they decide upon what is right and good" (James 2014: ix).

2   Literature Review

2.1   Ontology

Ontology "is a branch of metaphysics concerned with the nature and relations of being" and also "a particular theory about the nature of being or the kinds of existents" (Merriam-Webster's Collegiate Dictionary 2002: 813) which also discusses categories of being and their relations. In applying ontology for philosophical investigation and pondering over the concept of the existence, nature, and spirit of globalization, we should set aside *pure philosophical ontology* and take *applied scientific ontology* in the discussions. These two distinctions which are made by Jacquette (2002: xi) could be explained as the former "...deals with such questions as what is meant by the concept of being, why there exists something rather than nothing, and why there exists exactly one logically contingent actual world" and the latter "...advances a preferred existence domain consisting of three categories of existent entities, including existent (we can also say actual) objects, existent states of affairs, and the actual world." The justification of selecting applied scientific ontology is its relevancy with the topic under investigation (zeitgeist analysis of globalization spirit). On the other hand, pure philosophical ontology is a very sophisticated, abstract, and purely metaphysical issue which deep down ponders on the meaning of being and perception of existing which are not the study's research goals and have absorbed very great minds in the history of philosophy, but the result according to Jacquette (2002: xi) was "obscurity and even incoherence."

But first, before any applied ontological research, the author should clarify his perspective and view on the being of the entity he is investigating, i.e., the author ought to clarify how is he looking at the being and existence of its research object and its domains (hence, globalization). As Heidegger (1996: 9) asserts, "All ontology, no matter how rich and tightly knit a system of categories it has at its disposal, remains fundamentally blind and perverts its innermost intent if it has not previously clarified the meaning of being sufficiently and grasped this clarification as its fundamental task."

2.1.1   Clarification of the Applied Concept of Being for Globalization

The study tries to clarify the ontological existence and being of globalization mostly through its tangible and concrete manifestations in society, economy, and politics. In other words such an approach toward globalization presumes the a priori that the genuine spirit of globalization as an abstract entity could be traced back, followed, chased, and analyzed by its influential inventions, incidents, discoveries, historical figures, etc., i.e., understanding the spiritual entity of globalization by understanding its materialistic features. Metaphorically, such an approach entails two entities for globalization as a being: a spirit, which is the drive and inherently intangible force

behind the phenomenon, and a body, which is the tangible outward manifestation of the phenomenon. However, choosing such an approach implies globalization's "Being" could not be a unique and fixed entity but a developmental and transformative one, a chameleon that takes the color of the spirit of its own age. Therefore, it finds an organic *Being*, the same as a plant, which has always been in the process of growth. Hence, globalization finds its own identity and being in its nonstop transformation and development; as Hegel (1807) believed the true interpretation of "Being"[3] entails such an ideology:

> The bud disappears when the blossom breaks through, and we might say that the former is refuted by the latter; in the same way when the fruit comes, the blossom may be explained to be false form of the plant's existence, for the fruit appears as its true nature in place of the blossom. These stages are not merely differentiated; they supplant one another as being incompatible with one another. But the ceaseless activity of their own inherent nature makes them at the same time moments of an organic unity, where they not merely do not contradict one another, but where one is as necessary as the other; and this equal necessary of all moments constitutes from the outset the life of the whole. (pp. 2–3)

2.1.2 Clarification of the Concept of Spirit in This Study

The concept of *Spirit* in this study is equivalent to the concept of *Geist* frequently used by German philosophers such as *George Wilhelm Friedrich Hegel* in his *Phänomenologie des Geistes* (*The Phenomenology of Spirit*). "Hegel's books, describes how the human mind has risen from mere consciousness, through self-consciousness, reason, spirit, and religion, to absolute knowledge," and "...The stage of *Geist*, however, reveals the consciousness no longer as isolated, critical, and antagonistic but as the indwelling spirit of a community" (Knox 2017: on-line Encyclopedia Britannica). Zeitgeist is a compound term, which carries the concept of spirit for a specific time. Usually the German term *Geist* translated to mind or intellect (Marvin Pate 2011); and in this connotation, it is not equivalent to English ghost, since in German the term simultaneously includes the concept of spirit and mind. Furthermore, the term is a masculine noun in German that its definition in a German phrase "Geist und Körper" corresponds with "mind and body" (Collins on-line Dictionary 2018). King (2012: 104) believes in Hegel, "*Geist* referred broadly to the consciousness of a people of itself and the world in which they lived. It referred to a people's self-understanding. It denotes the practices which a people regard as appropriate, the kind of social intercourse in which that people engaged and, finally, the kind of world there was for that people." Such an interpretation of Hegelian *Geist* is very near to the study application of *Spirit*. Untranslatability of German philosophical terms is a general difficulty in English language; Smith (1991) believes:

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[3]Hegel (1807: 2–3) posed his metaphor while elaborating on the ontology of "the diversity of philosophical systems" which should be assumed as "the progressive evolution of truth" rather than contradiction. Such a view makes "an organic unity" among the constituting entities of truth.

> . . . it is clear to every philosopher moving backwards and forwards between the two languages that the translation of an Anglo-Saxophone philosophical text into German is in general a much easier task than is the translation of a German philosophical text into English. The hypothesis suggests itself immediately that this is so because English philosophical writings are in the main clear and intelligible, and therefore easy to translate. The texts of German philosophy, on the other hand, both classical and contemporary, seem in many cases to be marked by stylistic obscurities or idiosyncrasies of a sort which make them not translatable in the strict sense at all. (p. 155)

Moreover, "problems may arise in translating German texts into English also because the repertoire of possibilities for building up complex words is much more limited in English than it is in German" (Smith 1991: 157). Additionally, Harden (2012) believes the translation of the word *Geist* into English is very hard and problematic. After reviewing three translations of Hegel's *Phänomenologie des Geistes*, Charlston (2012: 27) elaborates on ". . .how the three translators deal with the translation of two notoriously ambiguous words *Geist* [mind/spirit] and *aufheben* [sublate/abolish/preserve] in context." Therefore, the present paper's author has applied the meaning *Spirit* for the *Geist* based on the Baillie's justification in the footnote of his 1910 translation of Hegel's *Phänomenologie des Geistes* once the translator suddenly shifts to another equivalent for the Hegelian term and points out, "The term 'Spirit' seems better to render the word '*Geist*' used here, than the word 'mind' would do. Up to this stage of experience the word 'mind' is sufficient to convey the meaning. But spirit is mind at a much higher level of existence" (p. 250). However, Baillie translated Hegel's work to *The Phenomenology of Mind*, as Charlston (2012: 30) believes we see the first tentative translation of *Geist* simultaneously to *Mind* and *Spirit* in his work. He mentions that "Baillie moves to *spirit* from page 250 onwards but introduces *Spirit* with a capital *S* in the final section or chapter on Absolute Knowledge." He continues, "Geist is a dynamic concept, the fluidity, indeterminacy or ambiguity of which plays a central role in Hegel's argument" (*Ibid.*). The choice of the author for the discussion of globalization ontology through Hegelian *Geist* comes precisely from the dynamism of "fluidity, indeterminacy [and] ambiguity" to induce such attributions to the reader once dealing with globalization as a fluid borderless and abstractly ambiguous entity which is indeterminate since it is dynamic and in the process of evolution and *sublation*. Therefore, whenever the English word *Spirit* is applied in this study, the German concept of *Spirit/Mind* is intended. To clarify the intended meaning more, for example, the spirit $\approx$ mind of globalization in the 1960s, 1970s, and 1980s in political aspect of the phenomenon and due to *Cold War* is oriented toward bilateralism in a sense that mostly because of the overdominance and hegemony of *Communism* under the USSR and *Capitalism* under the USA, the leaders and policy- and decision-makers of the countries intentionally or inevitably made decisions to follow one of the aforementioned blocs. Therefore, such an interpretation of the spirit entails and considers a mind for it.

2.1.3 Clarification of the Concept of Time in This Study

Globalization's *Being* could be seen as a continuous synthetic process which gives birth to unprecedented zeitgeist through "Aufhebung" phenomenon. "Aufhebung" is the deforming force behind the globalization spirit. According to Verene (1997: 11–12), "Central to the dialectic of Hegel is *Aufhebung*. As is well known, this word is not translatable into English. We do not have this perception in the mentality of the English language." Its verb (*aufheben*) "has four senses in English: (1) to lift or raise something up. . .; (2) to take something up. . .; (3) to keep or preserve something, to retain it; and (4) to abolish. . . Hegel uses the verb *aufheben* and its noun *Aufhebung* in all four senses at once: the sense of actively raising and picking something up so that it preserved and held on to, yet in this act something of it is lost and annulled" (*Ibid*). The dialectical triad pushes the being upward through the evolutionary journey of globalization phenomenon and adds up to its complexity. Hence, each new zeitgeist after some time encounters and conflicts with its antithesis[4] which undergo "sublation" (which technically means "to negate or eliminate (as an element in a dialectic process) but preserve as a partial element in a synthesis)" (Merriam-Webster's Dictionary 2018) near to German "Aufhebung." These upward hierarchies of formation-deformation constitute and shape globalization's Being, and the nonstop "Aufhebung" processes in each pre-stage-new stage inevitably beget the exclusive concept of *Time* relevant to globalization. It is noteworthy that the dialectical triad and Aufhebung are borrowed from *Friedrich Hegel's magnum opus Phänomenologie des Geistes* (*The Phenomenology of Spirit*) and the concepts of *Time* and *Being* are borrowed from *Martin Heidegger's Sein und Zeit* (*Being and Time*) (Fig. 1).

For Hegel "Being" is the essence of "Time"; for Heidegger it is vice versa (Heidegger 1988; Haas 2007). For Hegel "time is the becoming of being" (*Aufhebung*) or "an appearance of being" (Haas 2007), i.e., giving priority first to *Being* entity and then to time.

By relying on the complex and sophisticated philosophizing of two great minds, Hegel and Heidegger, it could be inferred that *Being* and *Time* are fundamentally and philosophically correlated entities, which are always juxtaposed (Fig. 2). Therefore, zeitgeist analysis of globalization through history as an evolutionary *Being* embedded in *Time* is justifiable.

2.2 Zeitgeist

Zeitgeist or spirit of the age/times is a compound German noun, which embodies the dominant force that forms the holistic identity of an epoch. It is translated as the spirit of the age, the spirit of the time, time mind, and finally time spirit. The concept was

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[4]The coinage of thesis, antithesis, and synthesis terms for the Hegelian triad is attributed to Johann Gottlieb Fichte (1762–1814).
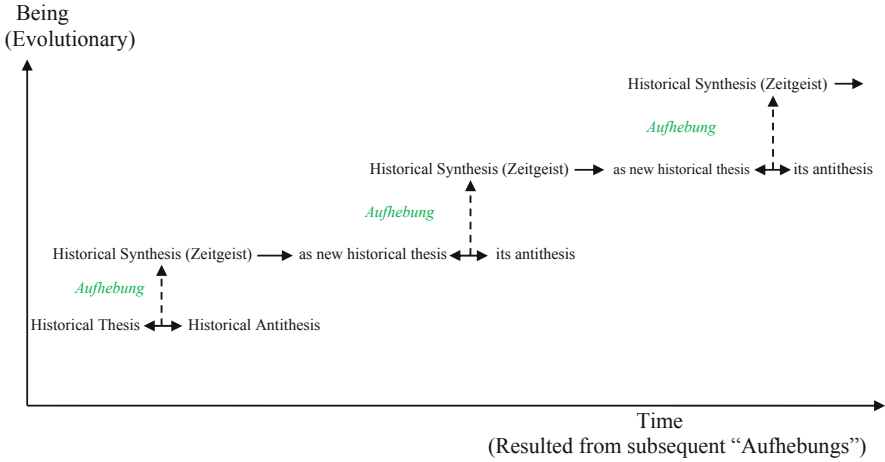
Fig. 1 Building globalization's evolutionary "Being" by the Hegelian-Heideggerian concepts. Source: Author's own work
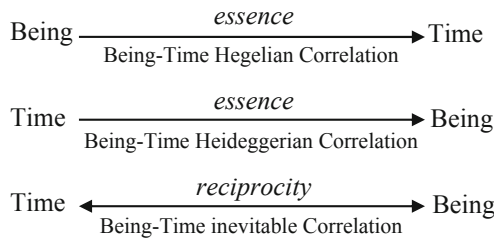
Fig. 2 The relationship between ontological concepts of *Being* and *Time*. Source: Author's own work

born in *Friedrich Hegel's Lectures on the Philosophy of History* in the phrase "der Geist Seiner Zeit" (the spirit of his time). It is fundamentally unfolded in Hegel's own quotation that "no man can surpass his own time, for the spirit of his time is also his own spirit" (Magee 2010: 262). Therefore, in each historical era, there should be a prevailing paradigm which shapes the spirit of the time, hence globalization. It is the mind behind every change and metamorphosis. The spirit of the time has always been busy even in the process of its own transformation. Elaborating on the concept of zeitgeist, in the preface to the *Phenomenology of Spirit* (*Mind*), Hegel (1807) believed even their time was "a birth-time and a period of transition" too:

> The spirit of the age has broken with the world as it has hitherto existed [1], and with the old ways of thinking [2], and is in the mind to let them all sink into the depth of the past [3] and to set about its own transformation [4]. It is indeed never at rest [5], but carried along the stream of progress ever onward [6 & 7].But it is here as in the case of the birth of a child [8]; after a long period of nutrition in silence [9], the continuity of gradual growth in size [10], of quantitative change, is suddenly cut short by the first breath drawn [11]—there is a break in the process [12]—and the child is born. In like manner the spirit of the time, growing slowly

and quietly ripe for the new form it is to assume, loosens one fragment after another of the structures of its previous world. (p. 10)

By reliance on Hegel's abovementioned quotation, the zeitgeist, which is applied to the globalization analysis in the paper, has the following characteristics:

1. Detached with the previous existed world
2. New paradigm in thought
3. Originated from the past
4. Self-transformer
5. Dynamic
6. Processional
7. Nonstop
8. Phenomenal
9. Possessed a long preparatory stage
10. Developmental and evolutionary
11. Occurred spontaneously and abruptly
12. Qualitative change of the previous epoch (tangible transformation and the birth of a new world)

2.3 Globalization

The first known use of the term globalization comes back to the year 1930 (Merriam-Webster's on-line Dictionary 2018a); and ever since there is not any consensus over the exact meaning of globalization among the academia, and usually when we are speaking about this phenomenon, we are referring to the attributions of it. Kukoč (2009: 3) describes the situation as "The recent popularity of this new concept has resulted in innumerable contradictory definitions of the same. While, normatively speaking, some associate globalization with progress, prosperity and peace, some others consider it retrogression, disaster and decay. As far as the definition of globalization is concerned, no one is indifferent and countless are confused. The common and indisputable trait of all its definitions is the view that globalization is a process of economic, social, cultural and political activity, which transcends nation-state borders, and that it pertains to the world as a whole." Moreover, "It is a concept that has been defined variously over the years, with some connotations referring to progress, development and stability, integration and cooperation, and others referring to regression, colonialism, and destabilization" (Al-Rodhan and Stoudmann 2006: 3). Therefore the attributions and connotations of globalization term are worthy of attention, e.g., it is the representation of "the triumph of a capitalist world economy tied together by a global division of labor" (Wallerstein 1974; cited in Holton 1998: 11); "…the compression of time and space" (Harvey 1989; cited in Holton 1998: 8); "… intensification of worldwide social relations which link distant localities" (Giddens 1990: 64); " … the degree of interdependence and integration between national economies" (Dicken 1992: 87); " …the onset of

borderless world" (Ohmae 1990: 169); and "In simple terms, globalization is the process by which people and goods move easily across borders. Principally, it's an economic concept—the integration of markets, trade and investments with few barriers to slow the flow of products and services between nations" (Gray 2017: World Economic Forum's website).

On the other hand, we should not mistake the phenomenon with internationalism, cosmopolitism, cosmopolitanism, universalism, and globalism. *Internationalism* is "a policy of cooperation among nations" (Merriam-Webster's Collegiate Dictionary 2002: 611); *Cosmopolitism*, "...places emphasis on the cultural identity of the pre-national 'citizen of the world'" (Kukoč 2009: 4); *Cosmopolitanism* "can be defined as a global politics that, firstly, projects a sociality of common political engagement among all human beings across the globe, and, secondly, suggests that this sociality should be either ethically or organizationally privileged over other forms of sociality" (James 2014: x); *Universalism* is "a theological doctrine that all human beings will eventually be saved" (Merriam-Webster's Collegiate Dictionary 2002: 1293); and *Globalism* is "a national policy of treating the whole world as a proper sphere for political influence" (Merriam-Webster's Collegiate Dictionary 2002: 496). Globalization would potentially embrace each one of these -isms, but it is none of them. Thus, globalization as an extended concept consists of economic, political, social, cultural, and ecological issues. Furthermore, some historians such as *A.G. Hopkins* and *C. Bayly* have worked on the taxonomy of globalization. Roughly, the globalization phenomenon could be categorized into three main stages: *archaic globalization*, *proto-globalization*, and *modern globalization*.

2.3.1 Archaic Globalization

The period from the time of early civilizations to roughly 1600. In this period the impact of ideas and social norms in making relationship among the communities and states is significant (Martell 2010). Such relationship contributed to the spread of political and religious ideas beside trade. Communication through trade was especially facilitated by sea-lanes, rivers, and major overland routes (Abu-Lughod 1991). The period has three major characteristics: (1) Eastern origin, (2) close proximity and distance, and (3) lower interdependence in comparison with the modern globalization (Martell 2010). One of the prominent examples influential on globalization of the period was the *Silk Road*.

2.3.2 Proto-globalization

The term is coined by two sociologists (*Robin Cohen* and *Paul T. Kennedy*) in *Global Sociology* in 2000, and it is defined as "early aspirations to universalism that failed to embrace all of humanity or to attain global reach" (Cohen and Kennedy 2000: 67). The concept was elaborated by *A.G. Hopkins* and *C. Bayly* and approximately includes the years between the time span 1600–1800. However, the category

is criticized because of its Eurocentrism (Anheier and Juergensmeyer 2012). The outstanding issues in this period are briefly slave trade, establishment of *East India Company*, hegemony of Western Europe, the *Thirty Years' War* in Central Europe (1618–1648), plantation economy that was due to slavery, the trading of tobacco, *English Civil War* (1642–1651), *Anglo-Dutch War* (second half of the seventeenth century mostly over trade and overseas colonies), *French and Indian War* (1754–1763), *American Revolutionary War* (1775–1783), and *Triangular Trade System*, which inherently had a great effect on the globalization of period. Through this system, three parts (ports) in the world were connecting to each other by trade.

2.3.3 Modern Globalization

The era begins from the nineteenth century with the incidents such as industrialization and imperialism at its core up to the present. Multinational trade agreements (e.g., GATT[5] and NAFTA[6]), free trade, unions (e.g., EU and AU[7]), and global organizations (e.g., the UN and its subsidies and WTO[8]) are only a few examples of identity-constituting realities of the era. Instant communication, the Internet, bullet trains, ocean liners, airplanes, high tech, etc. emerged an unprecedented condition in human history, which has accelerated its flash expansion and dominance never seen in the history of globalization before. The paper mainly discusses the ontology of globalization within this category.

3   Methodology

Any endeavor in defining and clarifying the genuine being of globalization shapes up the spirit of globalization, and we need to take advantage of zeitgeist to be able to segment the monstrous and gigantic spirit of globalization to be able to scrutinize it separately in each epoch and age (*dismantling process*) and, finally, in the conclusion incorporate the globalization traits and paradigms in a whole body and looking at the spirit of this body holistically (*mantling process*).[9] Furthermore, the methodological features of the applied approach in the study are first subjectivist since it applies the subject's (author) comprehension for the explanation and elaboration of

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[5]*General Agreement on Tariffs and Trade*

[6]*North American Free Trade Agreement*

[7]*African Union*

[8]*World Trade Organization*

[9]*Dismantling* and *Mantling* processes are coined phrases to identify the authors' ontological approach of segmenting and binding to be able to, on one hand, discuss the globalization in details based on the decades, and on the other hand, draw a holistic conclusion out of these segmented decades.

Table 1 Ontological extremes

←	→
A	B
Subjectivism	Objectivism
Antipositivism (interpretivism)	Positivism
Qualitative data	Quantitative data

Source: Author's own work
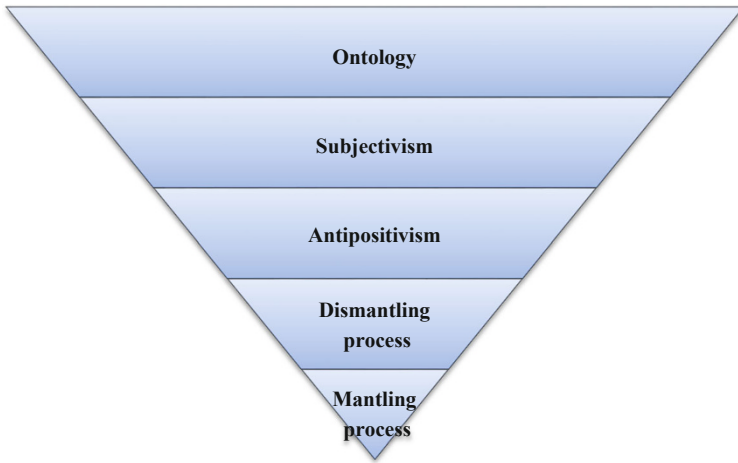
Fig. 3 Schematic presentation of how ontology is applied in this study. Source: Author's own work

each decade's zeitgeist and second antipositivist as the explanations do not rely on any empirical data, which inherently specifies the third feature or the application of qualitative data acquired out of library study (Table 1).

Figure 3 has schematically clarified the methodology of the study. The study is an ontological one, and since it intends to study the *Nature* and *Being* (i.e., spirit) of globalization phenomenon through the zeitgeist concept, it is an applied ontological study, which is distinguishable from pure philosophical ontology which concerns the very meaning of Being and also tries to define the meaning of *Existence* (i.e., what do we mean when we say an entity exists?). Furthermore, the cognition of the author plays a major role in the induction process, i.e., subjectivism. Reliance on subjectivism makes the ontological study an antipositivistic one, which calls for qualitative data. The data of the study embrace the zeitgeist of 11 decades (from the 1900s to the 2010s).

On the other hand, the methodological approach is based on *methodological holism* with the underlying philosophy, "...to which: (a) totality, as such, can be considered more than simply its parts, or even, more than the sum of its parts (i.e. the whole surpasses the sum of the parts); and (b) totality is historically, logically,

cognitively and normatively more important (i.e. hierarchically superior) than the individuals it contains" (Missio et al. 2015: 249).

Finally, the influential entities, which constitute the spirits of the times for each decade, were discussed inductively through the dismantling and mantling processes as a proposed approach in applied inductive ontological studies by the author. In other words, when we face sophisticated and multidimensional phenomena such as globalization, first we should dismantle the phenomenon to its constituting segments, which is different from reductionism, and discuss the ontology of the constituting segments and then in the step add up the segmented ontology in a holistic body of conclusion through a process which could be called a mantling process. These two processes make an induction. In this study the Results and Discussion section includes the dismantling process, and the Conclusion section is the embodiment of the mantling one.

This study responds to the following question:

What is the ontological spirit of globalization based on the zeitgeist concept?

4   Results and Discussion

To take the "mind" connotation of the German term *Geist*, the following influential schools of thought and their evolutions and modifications through their confrontations or compromises shed light on the mind behind the globalization spirit.

4.1   Influential Theories on the Western Spirit of Globalization

Capitalism
Initially, an economic system in which private ownership is accentuated, especially about means of production and its underpinning philosophy, profit maximization. The fundamental characteristics of this economic system are capital accumulation, wage labor, competitive markets, private property, and its own price system (Heilbroner 2008; Hyman and Baptist 2017). *Capitalism* was the dominant economic, social, and political system in the nineteenth century and up to the early years of the twentieth before the *World War I* (1914–1918), when its new rival system, Communism, emerged in the international arena. Although Capitalism could be traced back in Adam Smith's influential work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, it was the rival system theorist and economic philosopher, Karl Marx, who coined the term *Capitalism*. *Laissez-faire* as "a doctrine opposing governmental interference in economic affairs beyond the minimum necessary for the maintenance of peace and property rights" (Merriam-Webster's on-line Dictionary 2018b) is the general not ubiquitous nature of economic

globalization. Letting alone what ethically the effects are, an unbiased author could not reject the impact of Capitalism on the spirit of modern globalization. Presently, it is the ruling *Geist* (mind≈spirit) in the international relations and the implicit policy of the major econo-political organizations such as the *World Bank*, the *International Monetary Fund* (IMF), and the *World Trade Organization* (WTO). Even a communist state such as China changed its economic policy after the death of Mao Zedong in 1976 and started market liberalization. Numerous prosperous enterprises such as *Apple*, *Microsoft*, *Intel*, *Coca Cola*, etc. and the concept of entrepreneurship, which fundamentally affected globalization through their competitions, rivalries, bankruptcies, creativities and innovations, job generations, and so forth, could not be deep down understood without understanding Capitalism with its own positive and negative effects as any other global phenomena. Presently, global *Capitalism* has entered in to what *David D. Hale* has referred to as "the Second Great Age of Global Capitalism" (Mansbach and Rhodes 2009: 294). He believes that the economic and political system of the world has changed and dramatically transformed from the seventeenth and eighteenth centuries' perceptions. The outward implications of such profound change are the end of the Cold War, reunification of Germany, the collapse of the USSR, and rise of China. "Changes originating in earlier decades have also become more prominent; these developments include the technological revolution associated with the computer and the information economy and the redistribution of economic power from the industrialized West to the rapidly industrializing and crisis-riven economies of Pacific Asia. The worldwide shift to greater reliance on the market in the management of economic affairs, and what many call the "retreat of the state," are integrating national economies everywhere into a global economy of expanding trade and financial flows" (*Ibid*). Borrowing the evolutionary concept of *Darwinism* from the biological realm and its concept of "the survival of the fittest," capitalism is still one of the survived and prevailing theories, which has shaped and transformed globalism, at least in the contemporary age. It is the prevalent spirit and mind (*Geist*) of globalization. On the other hand, the applicability and tangibility of capitalism in the interpretation of the present status quo of globalization give it a solid superiority to other schools of thought in contemporary history.

Liberalism

As a political school of thought promoted Western globalization by its ideological philosophy of social, political, and economic freedoms. Embracing globalization instead of preventing it adds more velocity and acceleration to its expansion. Liberalism which is deeply rooted in the eighteenth century *Age of Enlightenment*, although it was started long before in the seventeenth century, fundamentally promoted political globalization in Europe. The *American Revolution* of 1776 and the *French Revolution* of 1789 and their political mottos, letting alone how much positively or negatively implemented, helped the future globalized thoughts in political history. Concerning the *French Revolution*, Desan et al. (2013) believe:

> The French Revolution had an undeniable global impact. As the early nineteenth-century German philosopher G. W. F. Hegel wrote, it was "World-Historical," meaning that it changed the history of the entire world. The French Revolution galvanized and divided

populations across Europe and the Americas, transformed the map of Europe through the creation of "sister republics," and led to slave revolution in Saint-Domingue (Haiti) and the first abolition of slavery in 1793–94. Its continuing wars upset the status quo in Egypt and other parts of Africa, India, and ultimately even places as distant as Java. (p. 1)

4.2   The Most Influential Theory on the Leftist Spirit of Globalization

Marxism
A school of thought which had increasing influence from its proposition by *Karl Marx* and *Friedrich Engels* in the middle of the nineteenth century up to the collapse of the former Soviet Union, although still politically exists. The term is a pluralistic one and has had effective influences on the zeitgeists of most twentieth-century decades. It consists of three ideas: "a philosophical anthropology, a theory of history, and an economic and political program" (Chambre and McLellan 2018: on-line Encyclopedia Britannica). Through different historical decades, the spirit of *Marxism* is understood and practiced differently. Therefore, we have (1) before 1914 socialist movements' *Marxism*, (2) *Soviet Marxism* by *Lenin* and *Stalin* (Marxism-Leninism), (3) *Mao Zedong's* version of *Chinese Marxism*, and (4) nondogmatic *Marxism* which modified this school of thought from post-WWII period by applying *Edmund Husserl* and *Martin Heidegger's* philosophical ideas (*Ibid.*). Marx (2010) in *A Contribution to the Critique of Political Economy* in 1859 mentions, "At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or—this merely expresses the same thing in legal terms—with the property relations within the framework of which they have operated hitherto. From forms of development of the productive forces these relations turn into their fetters. Then begins an era of social revolution." The core ideas of *Marxism*, which also affected globalization leftist spirit, are class struggles, social change, and proletarian revolution.

On the other hand, in the analysis of globalization spirit in different zeitgeists, we should take *Structuralism* view into consideration. *Structuralism*, according to Coole (2017: on-line Encyclopedia Britannica), "Advocates of structuralist approaches to politics and society argue that history is not made by individuals (or by classes exhibiting agency) but is a consequence of structural requirements." In other words, the individuals in each age inevitably make some sociopolitical structures which they do not choose intentionally although, "Thinkers critical of structuralism have argued that the relation between agents and structures is not one-sided but reciprocal, with each constituting and circumscribing the other, even if their separation might be necessary for analytical purposes" (*Ibid.*). Analyzing globalization by structuralist glasses calls for better understanding and perceptions of the structures that beget and influence globalization in its formations, turning points, and

transformations. *Economic Structuralism* was proposed by Raúl Prebisch and Celso Furtado. The theory originated from the institutional context, since Raúl Prebisch (1901–1986), who was the executive director of the Economic Commission for Latin America (ECLA or CEPAL) in 1950, had an executive job and also wrote his work *The Economic Development of Latin America and its Principal Problems* in the same year. "In any event, structuralism's influence during the third quarter of the last century is admitted by friend and foe alike" (Love 2005: 100). *Economic Structuralism* in its economic analyses also focuses on structural features; moreover, "...economic development depends on a series of distinct structures which, mainly for developing countries, impose constraints to growth. In effect, development occurs with changes in the productive structure of the economy and is favored when such changes take place towards the 'modern' sectors (industrialized and technology-intensive)" (Missio et al. 2015: 248). Each decade's zeitgeist has its own idiosyncratic social, political, and economic structures, which are dynamically transformed or shaped the future structures.

4.3 Dismantling Process: Zeitgeist Analyses of Globalization Spirit

1900s' Zeitgeist

The decade signals the first signs of *New Imperialism* (an era of colonial expansion by the USA, Japan, and European powers in the late nineteenth and early twentieth centuries. The adjective "new" distinguishes this period from the "first wave of European colonization" from the fifteenth to early nineteenth centuries). The spirit of the decade is politically characterized by rivalries among the USA, European powers, and Japan in making new overseas colonies. This *New Imperialism* is the bare and direct antithesis to the fifteenth to nineteenth one with its new influential players. Moreover, the global spirit of the decade is replete with expansionism which led to the outbreak of WWI in the subsequent decade. Imperialist expansionism prepared the ground for the global conflicts of interests among the superpowers. In addition, the zeitgeist of the 1900s has given birth to some of the first inventions such as the first flight by zeppelin, the first electric typewriter, the first radio receiver, the first mass-produced affordable car (*Henry Ford's Model T*), and the *Wright* brothers' flights, which evolved tremendously through the twentieth century. These inventions were the acorns of future great oaks. The accumulative and simultaneously evolutionary spirit of globalization which passes through the corridor of "Aufhebung" (sublation), at the end of the century, changed these prototype inventions to super jumbo jets, hybrid cars, global satellite broadcasting corporations, etc. Although the intensions of the primary scientific endeavors in the decade such as discovery of radium and polonium by *Marie* and *Pierre Curie* and suggestion of new hypotheses such as *Max Planck's quantum hypothesis* and *Einstein theory* of *special relativity* were initially benevolent, the seed of the future global catastrophes, e.g., atomic

Constitutionalism
(as a new political *Geist*)

↑
┊Synthesis
┊
Ancien régime ←——————→ Revolutions
(Thesis)   (Antithesis)
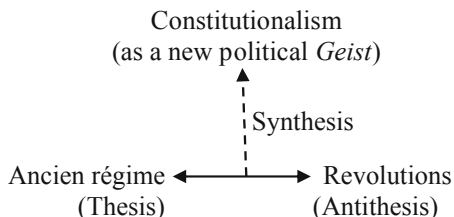
Fig. 4 1910s' zeitgeist of *Constitutionalism* by the *Iranian Constitutional Revolution*, 1905–1911, the *Russian Revolution* of 1917, the *Chinese Xinhai Revolution* of 1911, and the *Mexican Revolution*, 1910–1920. Source: Author's own work

bombings of *Hiroshima* and *Nagasaki* in the 1940s, was shaped by the imperialist rivalries which transformed the initial pure scientific intensions to devastating hegemonic ones in service of global powers. This reveals how an entity (thesis) has the potential to change into an opposite nature (antithesis for itself or other phenomena) under the dominant spirit of each age. Hence, the spirit evolution can change neutral pure theories into destructive and eradicating practices.

The 1900s' zeitgeist of globalization could be summarized as (1) imperialistic, (2) antagonistic, (3) hegemonic, and (4) expansionist.

1910s' Zeitgeist

The spirit of the 1910s is generally revolutionary (e.g., *the Iranian Constitutional Revolution*, 1905–1911, *Russian Revolution* of 1917, *Chinese Xinhai Revolution* of 1911, and *Mexican Revolution*, 1910–1920) which led to written constitutions in all the new revolutionary-established policies of the age (*Constitutionalism*) (Fig. 4) and aggressive (the outbreak of WWI by the assassination of *Archduke Franz Ferdinand* (heir to Austro-Hungarian throne) in 1914). The decade is the decade of European militarism. Thus, the 1920s globe is the theater scene of thesis-antithesis confrontations through revolutionary and fundamental changes and fierce mortal clashes in prevailing atmosphere of worldwide war. Some of the syntheses (fruits) of the "Aufhebung" process were establishment of the *Republic of China* in 1912 and the invention of mortal weapons such as army tanks. The 1910s' globalization was advanced in the art of war, intolerance, and fundamental change. At the end of the war, five modern empires collapsed (China, Germany, Ottoman, Austria-Hungary, and Russia), and numerous monarchs abdicated the throne. Additionally, the consequence of global obsession to war and consumption of human and nonhuman resources to its promotion was the *pandemic flu* of 1918–1920 with its obliterating crushing force of death for millions of people. The nonstop evolutionary spirit of globalization potentially takes its dynamics from the previous constituting natures of theses and antitheses; that is, if the prototype constituting theses and antitheses (inputs) were themselves grounded on intolerance, aggression, and misanthropy, the evolutionary syntheses (outputs) could not be a tolerant philanthropic one. The globalization's evolutionary spirit in the 1910s passed such an input-output route.

Therefore, the 1910s' zeitgeist of globalization could be summarized as (1) revolutionary, (2) militaristic, (3) ancient regimes' toppling, (4) aggressive, (5) disintegration and dissolution of empires, and (6) *Constitutionalism*.

1920s' Zeitgeist

The early postwar years of the decade had economic affluence in the Western world; therefore the decade, for example, in Germany, is called as "The Golden Twenties" (Goldene Zwanziger) (Schreiber 2012). The syntheses of the global confronting forces and entities after the First World War revealed themselves in the 1920s emergence of Fascism and Communism (beside, the 1930s *Third Reich* regime in Germany). The global driving forces which mostly contributed to political propaganda of the regimes in Italy, Germany, Russia, and Britain (e.g., the start of BBC radio broadcasting) were the radio stations with their role of promulgating globalization's aggressive and monopolistic norms at least in the political arena. The era witnesses the unprecedented establishment of new regimes in Europe such as establishment of the first fascist country in the world by *Benito Mussolini* when the former leader of the *National Fascist Party* became Italy's prime minister and creation of *Soviet Socialist Republics* in 1922 as well. The trend of history in the future showed how the two generated political schools of thoughts of the decade, *Fascism* and *Communism*, played the roles of thesis-antithesis abreast of the conflicting and crushing forces of *Nazi Germany* and lamed liberalism on the side of the USA, which led to "Black Tuesday" (the October 29, 1929, crashes of the stock market in the USA, start of Great Depression, and end of the economic boom period). The 1929 crash of the *Wall Street* ended the positive economic spirit of the decade and started hyperinflation nearly in most parts of the world. However, the ideas and works of notable scientists of the decade such as *Sigmund Freud*, *Albert Einstein*, and *Alexander Fleming* found global interest and inspired the scientific spirit of the decade positively. In the East, *Ottoman Empire* was recently collapsed, and the spirit of the age had prepared the ground for the offspring of new countries. Another incident in the neighboring country of Turkey was the establishment of *Pahlavi dynasty* by *Reza Shah Pahlavi* and end of long-ruling *Qajar dynasty* in Iran (at that time globally known as Persia) that was not detached from the global spirit of the decade. In sum, the 1920s' zeitgeist of globalization could be as follows: (1) politically radical; (2) economically affluent in the first half and destructive in the second; (3) emergence of *Fascism* and *Communism*; (4) radio broadcasting as governmental propaganda dissemination; (5) economic depression; (6) decolonization and formation of new states; and (7) global fanatical nationalism and chauvinism.

1930s' Zeitgeist

The 1930s zeitgeist, in the beginning of the decade, is tied with economic turmoil of the *Great Depression* inside and outside the USA and the *World War II* outbreak on September 1, 1939, at the end. The last brick for the completion of fuss in the international arena was the establishment of the *Third Reich* regime in Germany. It is one of the darkest ages of ethnic cleansings and persecutions (e.g., *anti-Semitism* sentiments). The spirit of the age is overwhelmed with ethnic and racial intolerance,

especially in Europe. On the other hand, the economic depression and turmoil made the governments implement economic interventionist policies (e.g., the Soviet Union industrialization and agricultural collectivization programs) which led to one of the most excessive decades concerned with the interventions of the government in the public affairs. Poverty, unemployment, and economic interventionist policies by most world governments were some effects of the Great Depression, which shaped the outstanding macroeconomic spirit of the age. Additionally, dominance of radio among mass media in industrial nations and more facilitation of communication through airmail service across the Atlantic Ocean, beside first commercial flights between the continents, catalyzed the globalization phenomenon in culture, migration, and communication. The century is fundamentally overruled by the political, economic, and social impacts of the depression and Nazi Germany. The 1930s' zeitgeist could be summarized as (1) economically chaotic and inflammatory; (2) politically intolerant; (3) socially with racial and ethnic sensitivities; and (4) governmentally interventionist policies.

1940s' Zeitgeist

Although there is a dominant and major bipolarity through the decade (amid WWII between supporter of Allied and *Axis* forces and in postwar phase between *Capitalism* and *Communism*), it has a minor triad spirit through fragmentation of the world spirit to East and West powers and a few neutral ones. The zeitgeist of the 1940s could be analyzed in two phases: (1) amid WWII (1940–1945) and (2) postwar phase (1945–1950). The first phase because of WWII (1939–1945) as one of the core and major incidents of the 1940s has given harsh and aggressive qualities to the 1940s' zeitgeist. The puzzle of global warfare completed once the USA entered WWII after Pearl Harbor attack. The archenemies (*Capitalism* and *Communism*) were fighting against the same *Nazi-Fascism* aggression, plus Japan imperialism. Thus, they tried to control their old adversaries and controversies as much as possible. Hence, the thesis-antithesis is between *Capitalism-Communism* in one side and *Nazism-Fascism* on the other side. The zeitgeist of the first half of the decade especially in Europe experienced one of the bloodiest ethnic cleansing of history under the *Holocaust*. The postwar zeitgeist (1945–1950) is under the heavy effect of the *Cold War*. When the necessity of compulsory cooperation for the destruction of Nazi-Fascism aggression faded away, the historical thesis-antithesis relation of Capitalism-Communism was brought out once more and heated up. The postwar zeitgeist of the 1940s is known for the start of the so-called Cold War, which lasted to the final years of the Soviet Union. WWII's rivalries potentially contributed to the invention of American *Atanasoff-Berry* Computer, the first electronic and digital device capable of computing; invention of German *Z3*, the first programmable computing machine; invention of transistor; jet aircraft development; development of nuclear physics; and the first test of atomic weapons technology (*Trinity test*). Although the most fierce military confrontations was in Europe and partly in Japan at the first half of the decade, by the start of the postwar phase (1945–1950), it shifted mostly to the Middle East (start of the Arab-Israeli conflict). However, even in the scorching fury of the WWII, a country such as Iran, with its unique geopolitical

location in the Middle East, which later played the crucial and critical role of transferring supplies and equipment from *the Persian Gulf* to the USSR through *the Persian Corridor* and contributed drastically to the resistibility of the USSR and the Allies under the horrific attack of Germany and its pivotal function in the eradication of global *Nazism*, *Fascism*, and the *Axis* powers, was globally known to the Western powers.

The establishment of the United Nations Charter, NATO, Israel, and modern People's Republic of China affected the postwar zeitgeist. The postwar phase witnessed the emergence of new states due to decolonization of the postwar period. Moreover, the establishment of the *United Nations Charter* in the second half of the 1940s introduced a possibility for international cooperation for the first time in modern history. It inaugurated the first steps toward political globalization based on cooperation and tolerance among the member states. However, the postwar militarism continued in unceasing competition of the world superpowers for weapons of mass destruction throughout the Cold War.

To summarize, the zeitgeist of the 1940s revealed how a human being potentially can change its global scientific and technological advancements to a human-eradicating force. The events of the decade made an extreme turning point in the world order, emergence of the USA as super power, the first signs of the *Cold War*, establishment of new states in the Middle East, etc. as well as great technological advancements such as the invention of transistor a great incident in the advancement of electronic technology and the *atomic bomb*.

Once again, the history cauldron mixed the conflicting ingredients through "Aufhebung" process and prepared the chapter for the next evolution of globalization spirit and its function for shaping collective human destiny but now without global *Nazism* and *Fascism* and the menace of the *Axis* powers. Thus, the 1940s' zeitgeist has the following features: (1) militarism, (2) political bipolarization (east under *Communism* monopoly, West under *Capitalism* hegemony), (3) *Nazi-Fascism* aggression, (4) decolonization, (5) sparks of Middle East wars and turmoil, and (6) blockbuster scientific improvements.

1950s' Zeitgeist

In the 1950s, the furnace of the *Cold War* is very hot. The 1950s' spirit was shaped by the field clashes between *Capitalism* and *Communism* even inside single countries [e.g., *Algerian War* (1954–1962), *Korean War* (1950–1953), *Vietnam War* (begun in 1955)]. The ideological bipolarity was so intense which was rupturing and partitioning off some countries to the capitalism fanatics or the communism ones. Everywhere the dual spirit of the decade was making quarrel or its paralyzing fear for the state administrators. *Cuban Revolution* (1953–1959) was another synthesis of such duality in spirit of the age. It was the victory of approaching communism geopolitically nearest to the global symbol and promoter of capitalism and liberalism, the USA. It helped to more expansion of the *Cold War*. The turmoil in the Middle East was getting tougher by *Suez Crisis* (1956): the invasion of the UK, France, and Israel by *Gamal Abdel Nasser* of Egypt after the nationalization of the *Suez Canal*. On the other hand, maturity of TV viewing in mostly industrialized

countries and *Treaty of Rome* (1957) (the formation of *European Common Market*) inherently helped globalization spirit to prepare more common grounds for sharing ideas. Thus the 1950s zeitgeist has the following features: (1) field clashes between *Capitalism* and *Communism*, (2) *Cold War* expansion, (3) maturity of visual culture (e.g., TV viewing), and (4) expansion of the Middle East crisis.

1960s' Zeitgeist

The spirit of the age because of the expansion of middle-class population in countries with developed economies and affordability of buying television and radio in nearly most countries prepared flourishing of social and civil movements (e.g., *Martin Luther King Jr.*'s speech "I have a Dream" against racial discrimination in August 28, 1963, in Washington, DC). The 1960s is the decade of extreme deviations from the social norms, since the previous social norms could not respond to the new emerged needs (Booker 1969). Also the globalized awareness, which promoted more than ever by TV viewing (beside the increase in the availability of paper published materials such as newspapers and books), disseminated anti-imperialism sentiments in the public nearly throughout the world. Additionally, the 1960s witnessed continuation of the *Cold War* and *Vietnam War*. *Cuban Missile Crisis* was a global threat to wipe out human existence on earth. The general spirit of the age was inspiring the states to pursue and find their global security in accession to atomic bombs. It was the decade of nuclear race. China announced its first atomic bomb in the 1960s in 1964. In the Middle East, the change of the geopolitics occurred after the *Six Days War* between Israel and some Arab neighboring countries (June 1967). The zeitgeist of the 1960s indicates one of the governmentally backed ethnic conflicts in the Middle East.

Although in the 1960s once more technological advancement of the human being was going to push life on the planet to the complete verge of destruction after WWII (*Cuban Missile Crisis*, October 16–28, 1962), it was also the age of global improvement in the activities of the UN. Kennedy proposed a "UN Development Decade" (UNA-UK website 2018), and the following economic growth programs and organizations were launched and established in the decade, which promoted and inspired further globalization:

1. The World Food Program in 1961
2. Research Institution for the Social Development in 1963
3. The Conference on Trade and Development in 1964
4. Industrial Development Organization in 1966

Thus, the 1960s' zeitgeist has the following features: (1) middle-class population explosion, (2) affordability of buying television and radio, (3) flourishing social and civil movements, (4) anti-imperialism sentiments, (5) nuclear race, (6) *Cold War*, (7) governmentally backed ethnic conflicts, and (8) *UN Development Decade*.

1970s' Zeitgeist

The 1970s' spirit is one of the most influential ones on the future progress of global issues. It is a decade of historical turning points. The 1973 *Oil Crisis*, due to oil embargoes by the *Organization of Arab Petroleum Exporting Countries* and the

subsequent high inflation in world economy due to oil shocks of 1973 and 1979, demonstrated how fragile and dependent the industrial and economic spirit of the world was to the Middle East oil. Economic recession in the industrialized countries, except Japan, overshadowed the age spirit. The *Arab-Israeli War* was the ripe fruit of the ever-growing clashes in the Middle East, which resulted in the 1973 Oil Crisis. The 1970s is one of the most Middle East-centric zeitgeists in modern history. Energy crisis emphasized how significant and focal the region is. The *Cold War* was still in continuation. The dual spirit of the age between capitalism and communism schools of thought induces rivalry and competition between the East and West Blocs. Competition and rivalry are another characteristics of the age which, for example, in technological realm, ended to new scientific development from military usage to the IT and space. In 1979 the *Iranian Revolution* occurred. In the same year, the symbol of world communism invaded Afghanistan. Moreover, the zeitgeist witnessed accumulation of the largest nuclear weapons stockpiles in the world in the USSR in the Leonid Brezhnev period. Moreover, progress of the developing world's economies continued. Japan economy experienced a large boom (the second largest economy in the decade). Economy and economic policies and strategies overrode the spirit of the age (e.g., 1973 oil embargo and 1979 elections in the UK and victory of Margaret Thatcher: pursue of trade liberalization, neoliberal economic policy, lessening the trade unions' power, governmental spending reduction). Also, in 1976, the country witnessed the death of Mao Zedong and the start of market liberalization by his successors, which could be interpreted as the first movements of China toward modern globalization and acceptance of capitalism at least in its foreign trade.

The scientific endeavors of the age, which potentially affected the speed and spread of globalization spirit, were the invention of fiber optics (an influential invention in communications industry), the world's first general microprocessor (*Intel 4004*), first personal computers (*Datapoint 2200*), the first optical storage disk (*DiscoVision*), development of integrated circuit and laser, and the advent of (*Motorola*) cell phones. These scientific improvements fundamentally entered globalization to its pivotal age of communication. Scientific prerequisites for future global communication were formed and speeded up the communicative spirit of the phenomenon. Moreover, the transportation industry was also experiencing the first examples of higher speed (e.g., high-speed trains inaugurated by *British Rail* and the establishment of *Amtrak* in the USA for intercity passenger operation). These two phenomena added to the future speed of globalization in communication and transportation. Additionally, the first personal computer with mass production (*Apple II*) facilitated the public accession to computers. Start of e-commerce by Michael Aldrich and its globally growing impact on the global commerce in the future could not be fruitful without such publicity of personal computers. Also, more affordability for cable television in the USA took place; an example which in the later decades found global dissemination and added up its speed.

The zeitgeist of the 1970s age in brief was formed around (1) *Capitalism-Communism* dualism; (2) *Cold War* and rivalry; (3) facilitation of global communication through IT inventions, discoveries, and mobile telecommunications;

(4) facilitation of electronic commerce; (5) increase in globalization velocity; (6) Middle East-centric events; and (7) public awareness of oil's significance.

1980s' Zeitgeist

The 1980s is the determination of the final scene of thesis-antithesis quarrel between global *Capitalism* and *Communism*. The 1980s' economic spirit could be known with economic deregulation and deconstruction in the Western World. In the beginning of the decade, there was an unprecedented and excessive recession in much of the developed world. Continuation of neoliberal economic policies in the developed world speeded up (e.g., reduction of government intervention in economics, deregulation of stock markets, and lowering taxes). On the other hand, the USSR experienced a severe economic stagnation in the decade that could not escape its crushing force up to its last days. In addition, multiple debt crises among the developing countries and application of financial assistance from international organizations such as the *World Bank* and *International Monetary Fund* (IMF) added to the monopoly of global economic organizations. Additionally, the UK and the USA implemented supply-side economic policies which needed global markets to sell their products. It inherently signified the increasing importance of investment on the global markets. Opening of China's economy to the West and giving permission to Western enterprises to be active in a *Market Socialist System* speeded up globalization of markets which was completed by the 1989 *Canada-United States Free Trade Agreement.*

On the other hand, political spirit of the 1980s in the first half of the decade experienced escalated situation between the two superpowers because of *Reagan's* détente policy and a new aggressive strategy toward the USSR, but at the second half of the decade, the global spirit diverted toward easing of the tensions between the USA and the USSR and collapse of the USSR pursued. The fall of the *Berlin Wall* in 1989 was the harbinger of global *Communism* eradication as an influential political power, although it remained long after in some of its allies. The zeitgeist of the age was getting a new formation. The bipolarity of the political spirit and the Cold War nearly ended in this decade. It was also the decade of the UK decolonization (official independence of Canada from the UK, *Canada Act* 1982; independence of Australia from the UK, *Australia Act* 1986; and the exclusion of New Zealand from the influence of the UK's parliament, *Constitution Act* 1986).

Through the 1980s, the escalations in the Middle East was intensified by an 8-year-long war between Iran and Iraq, two oil-rich and oil-exporting countries, which had its effect on the global market of oil.

In the decade, the phenomenon of *global warming* was discovered by the scientists. It was one of the first indications of global and collective activities of human beings on the global ecology of our planet. Globalization found a fourth ecologic dimension abreast of its political, economic, and sociocultural aspects. Additionally, AIDS epidemic as a global disease calling for global scientific cooperation became known to scientists. Due to the global sharing and improvement of healthcare, disease treatment, and sanitation, the 1980s witnessed one of the sharpest increases in global population growth in human history.

The 1980s technological zeitgeist affected considerably from tremendous growth of personal computers (*IBM PC*, *MSX*, *Apple II*, and *Macintosh*). Furthermore, global Internet formation, first through *Usenet*, *FidoNet*, and *bulletin board system* at the end of the decade, especially among rich countries, was a global network that accelerated and empowered the globalization force dramatically. The zeitgeist bestowed to globalization and equipped it with one of its most influential and affective tools. It was another turning point in globalization's "Aufhebung." The sublation process ("Aufhebung") shortened considerably. Therefore, the formation-deformation process ("Aufhebung") in the Hegelian synthesis shortened, i.e., logically, its shortening resulted in more velocity of globalization process since the thesis-antithesis metamorphic process, which constitutes synthesis process, is shortened.

Finally, expansion of TV viewing in the third world plus video sets paved the way for future sociocultural expansion of globalization in the third world countries. Thus, the 1980s' zeitgeist has the following features: (1) economic deregulation and deconstruction and (2) reduction of government intervention in the West, (3) economic stagnation in the USSR, (4) increase in the monopoly of global economic organizations, (5) speedup in the globalization of markets, (6) decline of global *Communism*, and (7) *global warming* discovery and expansion of globalization impact to ecological dimensions.

1990s' Zeitgeist

The 1990s' spirit is stripping an old order skin off. Such a skin stripping could not be without global chaos, at least in the regions, which were being governed by the communist order. In the 1990s, *German reunification* occurred. The reforms done by *Mikhail Gorbachev* ended in economic chaos and sever inflation. The collapse of world communism and the USSR fomented the *Yugoslav Wars* (1991–1995), *Bosnian War* (1992–1995), and *Kosovo War* (1998–1999). The spirit of the age witnessed independence of Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan from the USSR. Reorganization of new order in global politics after the USSR fall was on the way.

The economic spirit of the 1990s inspired globalism through the *World Trade Organization* and updating of GATT. Also, NAFTA, as an agreement, lifts trade barriers among the US, Canada, and Mexico changed into law in the US, which added to the borderless quality of globalization. The opening of the first *McDonald* restaurant in Moscow (1990) revealed the first signals of global *Capitalism* penetration and triumph in the *Communism* mainland. The 1990s' spirit added to the dominance of global economic organizations such as the IMF in the world arena, which was partly due to the collapse of the USSR, declaration of independence by its former republics, and their catastrophic economies, which demanded international supports. Even the homeland of political communism, Russia was not an exception in demanding economic backup from the IMF. Moreover, the fall of the USSR demanded a new global order; therefore, the spirit of the decade is dominantly affected by the process toward the formation of new global order under the

hegemony of neoliberal economic policies. Major privatization policies of the former state-owned industries in China (1997) started. The formation of the EU and freedom of movement policy among the member states and the adoption of Euro by the EU empowered globalism uniformity force at least in the Euro zone. Formation of major e-commerce websites (*Amazon.com*, *AOL*, *eBay*, *Yahoo*, etc.) also facilitated global commerce on the Internet.

The scientific endeavors which inherently contributed to the empowerment of globalization were the *World Wide Web* dramatic expansion, advancement of ISDN, cable modems, DSL and computer modems, introduction of the first *Pentium* microprocessor by *Intel Co.*, and popularity of email and instant messaging. Development of web browsers such as the *Internet Explorer* and better and easier access to the Internet content, as well as advancement of software industry (*Microsoft Windows, Macintosh System 7,* etc.), prepared the ground for revolutionary computerization of the age. The 1990s spirit is also famous for the rise of multiculturalism. Affordable satellite dishes and availability of the World Wide Web, Internet and software, TVs, and radios inspired such multiculturalism. Youth culture propensity toward environmentalism and entrepreneurship was the 1990s' fad. Furthermore, it was in the 1990s that the first major anti-globalism demonstration at the WTO's *Ministerial Conference* in Seattle, Washington (1999), as well as new wave of anti-Neoliberalism hostilities revealed the maturity of globalization since its antithesis was shaping up. Now globalization (thesis) was finding the first signs of anti-globalism sentiments (antithesis). Thus, the 1990s' zeitgeist has the following features: (1) chaotic symptoms in the formerly governed regions by the USSR, (2) disintegration of the communism backbone, (3) reorganization of new order in global politics, (4) political triumph of capitalism, and (5) globalism antithesis demonstration.

2000s' Zeitgeist

The 2000s' spirit is a chaotic one especially in political and economic arenas. The decade started with September 11 attacks in 2001 which led to the *War on Terror*, war in Afghanistan, and Iraq War. As the aftermath of the wars, the Middle East experienced a chaotic turmoil. The economic zeitgeist was affected considerably by the *global financial crisis* also known as 2008 *financial crisis*, which started from the USA and affected most of the markets in the industrial countries; some economists believe it is one of the worst from the *Great Depression* ever since (Havemann 2018). The subsequent ripples on the surface were international banking crisis, the *European debt crisis*, and economic downturn for the industrial world. The energy crisis for the Western and non-oil-rich countries was energy blessing for the oil-rich countries which brought them huge amount of unprecedented petrodollars. "From the mid-1980s to September 2003, the inflation-adjusted price of a barrel of crude oil on NYMEX was generally under $25/barrel. During 2003, the price rose above $30, reached $60 by August 11, 2005, and peaked at $147.30 in July 2008" (TradingCharts.com website).[10] On the other hand, the 2000s' social spirit was

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[10]https://web.archive.org/web/20140502013508/. http://tfc-charts.com/chart/QM/W.

affected by the power of social media in making global consciousness (e.g., *Friendster*, *Myspace*, *Facebook*, *Twitter*, etc.) which was accompanied by the advent of new rivals to TV broadcasts (e.g., *YouTube*, Internet TV software, etc.) and culminated by mobile Internet and wireless Internet. The Internet is the dominant phenomenon of the decade, which contributed to the overwhelming expansion of globalization (Gordon and Meunier-Aitsahalia 2004; Heizo and Ryokichi 1998; Haarstad and Fløysand 2007). Additionally, satellite radios were established in great numbers. Such communicative breakthroughs facilitated the unrestricted dissemination of information, news, and knowledge globally. Moreover, by the modern advancement of transportation technology (e.g., the launch of double-decker Airbus A380, the largest ever produced passenger airplane, and high-speed rail projects and services opened across the globe, e.g., *Acela Express*, in North America; *Qinhuangdao–Shenyang High-Speed Railway*, the first in China; *High Speed 1*, the first in the UK, *Taiwan High Speed Rail*, and *HSL-Zuid* linking Amsterdam to the European network for high-speed trains), high-speed transportation accelerated. The combination of communicative boosts and their quantum leap combined with high-speed transportation made the globe as reachable as the next-door neighbor. Immigration facilitated more than ever. Such a situation generated its own antithesis which envisaged in new immigration laws and barriers by most of the states, especially in the developed world. Thus, the 2000s' zeitgeist has the following features: (1) rise of global terrorism, (2) turmoil in the Middle East, (3) global financial crisis, and (4) empowerment of social media.

2010s' Zeitgeist

The 2010s' is the maturity of some global issues ever known to human. The UN (2018) based on scientific studies of global shortcomings has summarized the most significant global issues that its subsidiaries are busy with: Africa, aging, AIDS, atomic energy, children, big data for the SDGs (sustainable development goals), food, health, human rights, international law and justice, oceans and the law of the sea, peace and security, population, refugees, water, and women issues. Our age is the age of global phenomena which calls for unbiased global cooperation between the nations and governments. As the spirit of globalization undergone subsequent metamorphosis, its generated global issues have taken an overwhelming form which could not be solved by a single nation or government (e.g., the UN 2018). Studies show:

> The world's population is ageing: virtually every country in the world is experiencing growth in the number and proportion of older persons in their population... The volume of data in the world is increasing exponentially. New sources of data, new technologies, and new analytical approaches, if applied responsibly, can allow to better monitor progress toward achievement of the SDGs in a way that is both inclusive and fair... millions of children are denied a fair chance for no reason other than the country, gender or circumstances into which they are born...Climate change is one of the major challenges of our time. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale... About 795 million people in the world were undernourished in 2014–16. That means one in nine people do not get enough food to be healthy and lead an active life...The world is witnessing the highest levels of displacement on record. An unprecedented 59.5 million people around the world have been forced from home. Among

them are nearly 20 million refugees, over half of whom are under the age of 18... There is enough fresh water for everyone on Earth. However, due to bad economics or poor infrastructure, millions of people (most of them children) die from diseases associated with inadequate water supply, sanitation and hygiene...).

On the other hand, if the globe is facing devastating global issues which made the UN subsidiaries diligent and influential, globalization has also opened up new horizons based on global cooperation (e.g., one out of a plentiful operational examples is the global cooperation under the supervision of the WHO which is called "horizontal cooperation," for instance, in *Technical Cooperation among Countries* (TCC) strategy, "as a powerful instrument to promote solidarity and horizontal cooperation, while strengthening the institutional capacity of countries to meet their health needs" WHO 2018). As the globalization challenges are increased, the numbers of international cooperative bodies are also increased to handle them. That is a bare confrontation of theses and antitheses. Theses on the side of global challenges and their antitheses envisaged in increase global cooperation, e.g., under the UN bodies and the number of international supervisory and regulatory ones. The 2010s' zeitgeist is the age of global issues maturity, at least in tangible discourses and forms which are going to shape up our cognition due to globalization (e.g., global warming, global economy, global climate, global financial markets, global change, global trade, global community, global competition, global village, global security, global population, global capitalism, global energy, global society, global awareness, global media, global affairs, global politics, global leadership, global recession, global challenges, global governance, global terrorism, global context, global strategy, global trends, global poverty, global capital, global competitiveness, global communications, global crisis, global institutions, global investors, global marketing, global conflict, global threat, global citizenship, global partnership, global corporations, and global expansion).[11]

It is in this *globality*[12] that the most important reflections of the 2010s' spirit cast back and mirrored in the eyes of world population; i.e., once china emerged as the second world power and economy, while the Middle East encountered bloody civil wars, revolutions and turmoil within and after *the Arab Spring*, and during the age that its spirit is filled with implicit anti-globalism, especially among the developed countries. *Brexit* is a tangible example of such sentiments. On the other hand, the experience of Eurozone debt crisis endangered the future of the EU, although there are many social, cultural, political, and economic ties, threats, and opportunities which bind the European countries together. The baffling technological advancement from the *Big Data* application to digital super advancements and accessibility of data and news in a flash of light made the world the true embodiment of Global Village. Furthermore, the displacement of the population from mostly the Middle East and African countries, in economic or political turmoil and civil wars, to the

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[11]Note: The mentioned discourses are directly derived by the author based on their frequency by consulting *Corpus of Contemporary American English*; for complete list of them and their frequency, visit https://corpus.byu.edu/coca/.

[12]A term coined by *Daniel Yergin* to deal with globalization in its end state and maturity
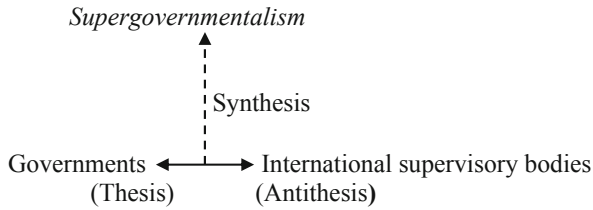
Fig. 5 *Supergovernmentalism* as the implicit or explicit exertion of power on the side of global organizations that leads to the diminishing powers of national governments. Source: Author's own work
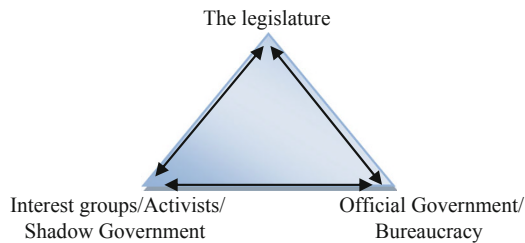
Fig. 6 *Subgovernmentalism's* iron triangle. Source: Initially, Freeman and Stevens' (1987) idea, modified by the author

European and North American countries made new refugee problems for the afore-mentioned countries. The developed countries also faced to the aging of the formerly baby boomers which potentially could take advantage of the situation. The medical advancements as a thesis found its antithesis in an unprecedented aging population in industrial countries. The spirit of the 2010s is filled with super technologies in all aspects of human life and more public consciousness around the globe. The same spirit has shaped the apparition of globally integrated enterprises, global sourcing of HR such as offshore sourcing, global labor arbitrage, etc.

One of the global phenomena of the 2010s is the diminishing administrative power of governments globally due to the supervisory, financial, or regulatory measures of international organizations (to mention a few, the *International Mone tary Fund* (IMF), *World Trade Organization* (WTO), *World Bank* (WB), *Interna tional Labour Organization* (ILO), *United Nations Human Rights Council* (UNHRC), *North Atlantic Treaty Organization* (NATO), etc.) (Fig. 5). A phenom-enon called *Subgovernmentalism*[13] acts as a secondary unofficial government, which exerts power on the official government. It is initially applied for the triangular relationship among the three entities of the Congress, bureaucracy and interest groups (Fig. 6). This mutual support, through a triangular give and take, makes a complicated and sometimes hidden concessions and comprises; government's initial

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[13]Coined by the author

Fig. 7 *Supergovernmentalism's* iron triangle. Source: Author's own work

care would not be for the public but in contrary for the interest groups or/and the legislature. Such a situation makes an "Iron Triangle" (Freeman and Stevens 1987).

Under globalization, an opposite phenomenon occurs. Global organizations potentially are not only able, but also they are aware of such capability to affect the policy-making processes of national governments. The author believes it could be called *Supergovernmentalism*, the implicit or explicit exertion of power on the side of global organizations which leads to the diminishing powers of national governments; that is, the increase in the power of international organizations, letting alone to its positive or negative results, potentially could lead to the decrease of official national governments' power in the extreme and close supervision of the so-called international organizations; the outcome of this confrontation led to the modification of the governmental powers in the 2010s (Fig. 7) not only by the voters but also by the triangular action-reaction among the global organization, interest groups consisting activists, and potential shadow government, with the officially elected government.

Thus, the 2010s' zeitgeist has the following features: (1) baffling technological advancement; (2) overwhelming global challenges tied with the destiny of all humanity on the Earth; (3) refugee problems; (4) aging population in the developed world, youth one in the developing countries; (5) global issues maturity at least in concept and discourse formation; (6) increasing globally defined cooperation of the nations under the UN subsidiaries; and (7) *supergovernmentalism*.

Figure 8 schematically summarizes the dominant philosophical-ideological spirits of the discussed ages (zeitgeists) which had globally political, social, and economic impacts on the twentieth and twenty-first decades. These ideological schools of thought are defined briefly in the following:

(a) *Liberalism*: "Political doctrine that takes protecting and enhancing the freedom of the individual to be the central problem of politics" (Dagger et al. 2018: on-line Encyclopedia Britannica).
(b) *Classical liberalism*: "It is the term used to designate the ideology advocating private property, an unhampered market economy, the rule of law, constitutional guarantees of freedom of religion and of the press, and international peace based on free trade" (Raico 2010: Mises Institute website).
(c) *Neoliberalism*: "Ideology and policy model that emphasizes the value of free market competition" (Smith 2018: on-line Encyclopedia Britannica).
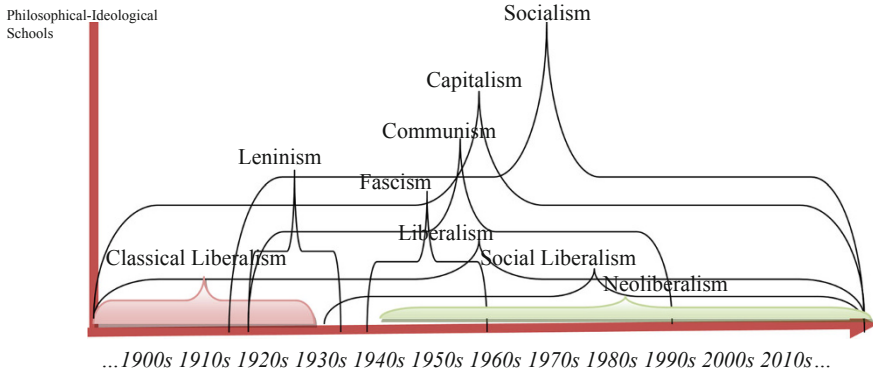
Fig. 8 1900s–2010s Zeitgeist of dominant philosophical-ideological schools of thought. Source: Author's own work

(d) *Social liberalism*: Social liberalism, famous as modern liberalism in the USA (Pease and Wiegman 2002), is a political ideology that pays attention to a market economy, beside civil and political rights expansion, as well as government's role in dealing with social affairs, e.g., education, healthcare, and poverty (Rohr 1964; Gaus et al. 2018).

(e) *Fascism*: "It is a form of extreme authoritarian nationalism (Turner 1975; Larsen et al. 1980), with dictatorial exertion of power, fierce cracking down on any oppositions and full control of commerce and industry, emerged in Europe in the early twentieth-century" (Davies and Lynch 2005).

(f) *Communism:* "Political and economic doctrine that aims to replace private property and a profit-based economy with public ownership and communal control of at least the major means of production (e.g., mines, mills, and factories) and the natural resources of a society" (Ball and Dagger 2017a: on-line Encyclopedia Britannica).

(g) *Leninism:* "Political theory developed and named after Vladimir Lenin for a revolutionary vanguard party organization and a proletariat dictatorship achievement, as political steps towards establishment of socialism" (Bullock and Trombley 1999).

(h) *Capitalism:* "Also called free market economy or free enterprise economy, economic, dominant in the Western world since the breakup of feudalism, in which most of the means of production are privately owned and production is guided and income distributed largely through the operation of markets" (Encyclopedia Britannica's group of editors 2017).

(i) *Socialism:* "Social and economic doctrine that calls for public rather than private ownership or control of property and natural resources" (Ball and Dagger 2017b: on-line Encyclopedia Britannica).

Usually the abovementioned dominant philosophical-ideological thoughts have intermingled political, social, and economic thoughts, which have had very complex and sophisticated impact on the spirit of the decades, in their time, and the subsequent ones. The globalization zeitgeists are summarized in Table 2.

Table 2 Twentieth and twenty-first zeitgeist analysis relevant to globalization

Decade	Zeitgeist's characteristics	Globalization dominant spirit (faddism)
1900s	(1) Imperialistic (2) Antagonistic (3) Hegemonic (4) Expansionist	Imperialism
1910s	(1) Revolutionary (2) Militaristic (3) Ancient regimes' toppling (4) Aggressive (5) Disintegration and dissolution of empires	Constitutionalism
1920s	(1) Politically radical (2) Economically affluent in the first half and destructive in the second (3) Emergence of Fascism and Communism (4) Radio broadcasting as governmental propaganda dissemination (5) Economic depression (6) Decolonization and formation of new states (7) Global fanatical nationalism and chauvinism	Extreme nationalism
1930s	(1) Economically chaotic and inflammatory (2) Politically intolerant (3) Socially with racial and ethnic sensitivities (4) Governmentally interventionist policies	Political radicalism
1940s	(1) Militarism (2) Political bipolarization (east under Communism monopoly, West under Capitalism hegemony) (3) Nazi-Fascism aggression (4) Decolonization; (5) Sparks of Middle East wars and turmoil (6) Blockbuster scientific improvements	Militarism
1950s	(1) Field clashes between Capitalism and Communism (2) Cold War expansion (3) Maturity of visual culture (e.g., TV viewing) (4) Expansion of the Middle East crisis	Cold War bipolarism
1960s	(1) Middle-class population explosion (2) Affordability of buying television and radio (3) Flourishing social and civil movements (4) Anti-imperialism sentiments (5) Nuclear race (6) Cold War (7) Governmentally backed ethnic conflicts (8) UN Development Decade	UN-centered developmentalism
1970s	(1) Capitalism-communism dualism (2) Cold War and rivalry (3) Facilitation of global communication through IT inventions, discoveries, and mobile telecommunications (4) Facilitation of electronic commerce (5) Increase in globalization velocity (6) Middle East-centric events (7) Public awareness of oil's significance	Capitalism-communism dualism

Table 2 (continued)

Decade	Zeitgeist's characteristics	Globalization dominant spirit (faddism)
1980s	(1) Economic deregulation and deconstruction (2) Reduction of government intervention in the West (3) Economic stagnation in the USSR (4) Increase in the monopoly of global economic organizations (5) Speedup in the globalization of markets (6) Decline of global communism (7) Global warming discovery and expansion of globalization impact to ecological dimensions	Global communism obsolescence
1990s	(1) Chaotic symptoms in the formerly governed regions by the USSR (2) Disintegration of the global communism backbone (3) Reorganization of new order in global politics (4) Political triumph of capitalism (5) Globalism antithesis formation	Triumphant capitalism
2000s	(1) Rise of global terrorism (2) Turmoil in the Middle East (3) Global financial crisis (4) Empowerment of social media	Global terrorism
2010s	(1) Baffling technological advancement (2) Overwhelming global challenges tied with the destiny of all humanity on earth (3) Refugee problems (4) Aging population in the developed world, youth one in the developing countries (5) Global issues maturity at least in concept and discourse formation (6) Increasing globally defined cooperation of the nations under the UN subsidiaries	Globalism's pluralism and maturity

Source: Author's own work

4.4 States' Reactions to the Globalization's Spirit

Moreover, each country by its own unique perception of zeitgeist, genuine or illusionary internal and external considerations, and fundamental cognition and definition of globalization's "Being" inevitably has one of the following reactions and positioning toward it (Fig. 9)[14]:

- *Misglobalization*: A situation that a country is eager to adopt globalization phenomenon but follows unilateralism policy which is based on lack of

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[14]Note: The naming is coined by the author.
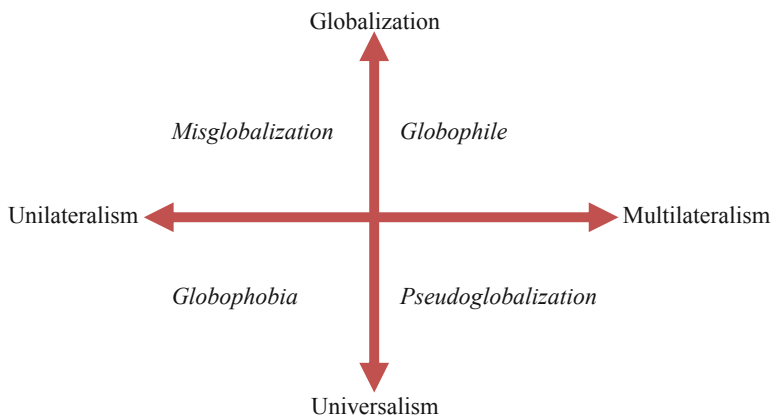
Fig. 9 States' reactions toward globalization. Source: Author's own work

international cooperation, compromise, and sympathy in action, which makes a logical paradox. Such a situation is a big misunderstanding and misconception of globalization phenomenon.

- *Pseudoglobalization*: A situation that a country has chosen multilateralism policy. The country has international cooperation and satisfactory reputation for foreign investment, but it lacks cultural, technological, and social necessities for globalization. Such a country in reality pursues universalism, i.e., superficially, the country takes global features but deep down has not enough national stamina to institutionalize globalization inside the country. Such a situation is a mirage of globalization.
- *Globophobia*: A situation that a country has the fear of losing its identity and culture by accepting globalized norms in politics, social affairs, and economic administration of the country. Such a country limits its international cooperation as much as possible by the selection of unilateralism policy, but because of its futile resistance to globalization process, the country inadvertently adapts to universalism through cultural transformation of the residents of the country.
- *Globophile*: A situation that a country has a friendly policy toward globalization. The country mutually pursues globalization and multilateralism. Furthermore, there is deep cultural understanding on the side of the civil society and the authorities that globalization is a phenomenon that could not be resisted but it should be felt holistically and knowledgeably, to be able to set sound strategic reactions to globalization to keep their national identity and culture in the one hand and take advantage of the beneficial features of the phenomenon on the other.

4.5   Globalization's Ontological Characteristics

Globalization potentially in each zeitgeist could have three stages: (1) globalization in the thesis formation, (2) globalization in the antithesis formation, and
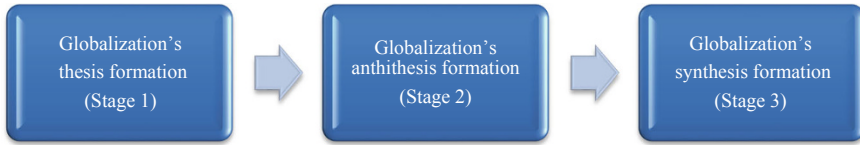
Fig. 10 The triad stages of globalization's spirit formation (*Being*) in each zeitgeist (spirit's evolution). Source: Author's own work

(3) globalization in the synthesis formation, which is a transitory and mostly hardly incomprehensible until the completion of the metamorphic stage that is its ultimate form in that age.

In the first stage, the spirit is "abstract"; in the next stage, its negation takes a shape, and the reaction of abstract with the negative (the third stage) begets a "concrete" that is the tangible and comprehensible superstructure phenomena generated by globalization (e.g., historical events, economic downturns, political turmoil or stabilities, cultural fads, etc.).[15] Moreover, the first and the second stages (thesis and antithesis) could be viewed as "immediate," tangible entities that have occurred, and the third stage is a "mediate," i.e., mediate to the ultimate formation of the "concrete," that is, globalization in a new form (Fig. 10).[16]

The equilibrium of globalization generating forces leads to the formation of the new zeitgeist global forces (thesis formation); over time by the formation of opposite forces (antithesis formation), destruction emerges in the former equilibrium. Such formation of disequilibrium among global forces triggers a third stage of formation (synthesis formation) which ends to a new but different equilibrium and hence a new global zeitgeist (Fig. 11).

Furthermore, by reviewing the 1900s–2010s' zeitgeists, the following attributions and functions could be mentioned as minor features for globalization phenomenon through its evolutionary trip:

- Makes interdependency between the countries.
- Globalization is borderless, i.e., it is not limited to any special geographical region.
- As globalization passed its archaic, proto- and modern stages, its speed is accelerated (e.g. in communication, transportation, transition of information, construction and destruction, etc.).
- Globalization through its long journey has facilitated the hegemony of global organizations (e.g., UN, WTO, WB, etc.).
- Has an evolutionary spirit.

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[15]The terms "abstract, negative, and concrete" are borrowed from Hegel's 1807's *The Phenomenology of Spirit*.

[16]The terms "immediate, mediate, and concrete" are borrowed from Hegel's 1812's *Science of Logic*.
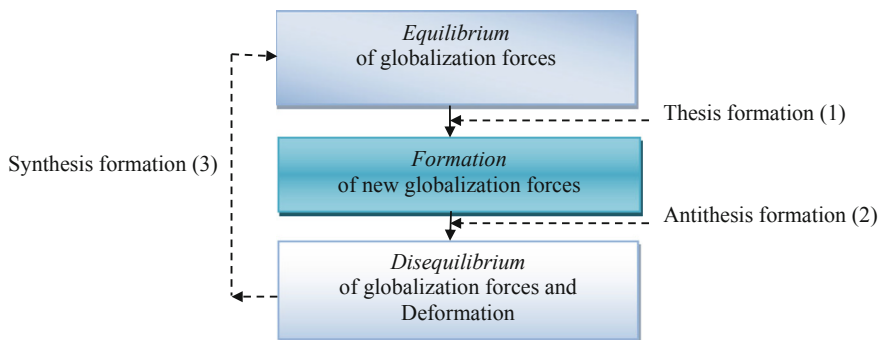
Fig. 11 The triad of globalization-generating forces. Source: Author's own work

- At first, it formed around economic interests but changed into a multidimensional force, which also needed the realm of politics and society.
- Facilitates cultural awareness and attraction of some cultures and has helped to make them dominant cultural features.
- Has made cooperation in some regions, competitiveness in some others, and in some cases confrontations (e.g., under some concepts such as *global community, global warming, global markets, imperialism*, etc.).
- Makes political hegemony of usually rich and affluent states.
- Globalization in some cases had been a major threat to ethnic customs, minor cultures, and languages with low population of speakers.
- Change is an inherent attribution of the phenomenon.
- Defines new social and cultural norms and obsoletes the previous ones.
- Has institutionalized new ideal form of governance in the international arena with respecting human rights and liberty.
- Advancement of technology facilitated the expansion of globalization.
- Has reinforced public awareness around the globe.
- It is irresistible and could not be limited by governments, laws, etc.
- Has multidimensionality.
- Has dynamics and has never stopped in human history and will not in the future.
- It is not related to any particular civilization, culture, society, and so forth; it is created by the collective civilization of humanity without any exclusion.
- Has changed local supervision and controlling measures to the global ones, i.e., the global economic, humanitarian, political, etc. organizations are gaining more influential supervisory and controlling and, in some cases, whistle-blowing functions.
- Shapes its self-ideological antithesis through anti-globalization sentiments and measures.
- In each era, it makes new economic, social, and political structures (paradigms).
- Has speeded up decolonization phenomenon and has added to the number of countries.

- It has domino effect (e.g., Arab-Israeli conflicts, oil embargo of the *Organization of Arab Petroleum Exporting Countries* and *Oil Crisis* of 1973).
- Organic unity: holism despite fragments, i.e., globalization as one phenomenon embraces innumerable other phenomena, cults, cultures, etc.
- Makes interdependency among states, cultures, societies, economies, knowledge, etc.
- Rivalry/competition and cooperation are at the two extremes of global decisions.
- Accompanied with uncertainty.
- Generates marginalization of some entities (countries, ethnic minorities, languages, etc.).
- Divides countries to the losers and winners.
- Irreversibility is within its spirit.
- Changes through process, i.e., it is not abrupt and unexpected and happens gradually.
- Dissemination (spreading knowledge, news, information, diseases, problems, welfare, etc.) is one of its forces.
- Developmental progress from one zeitgeist to the other keeps it alive.
- Evolutionary life has empowered it and made it adaptable to each zeitgeist.
- Its constituting forces are complementary; the stronger ones could compensate, i.e., the weak ones.
- Correlation/causation is mutually in cooperation with globalization (i.e., a global phenomenon which is the result of causation could have future correlative relationship with some other phenomena for the generation of the future ones).
- It is nonstop.
- Its provides historical analysis.
- Non-scalable: Although there are numerous globalization indices and reports such as *KOF Index of Globalization*,[17] *Global Food Security Index*, *Global Innovation Index*, *Global Hunger Index*, *Global Slavery Index*, *Global Peace Index*, *Global Entrepreneurship Index*, *Global Terrorism Index*, *Global Gender Gap Report*, etc., they measure particular aspect(s) of globalization and could not measure the phenomenon in all.
- It is without nationality and makes people the citizens of the world.
- It is value-free: it is not possible to discuss and attribute moral or immoral concepts to it.
- It is non-reductionist: holistic phenomenon such as globalization could not be studied by *Reductionism's* approaches in social sciences, since globalization embraces disharmonies, dichotomies, discordances and exceptions in its spirit and reductionist approach for such phenomenon will take a close-up and do not let see the big picture.
- Human-generated phenomenon: Application of social sciences for its study is justifiable and have priority.

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[17]Although the *KOF Index* consists of economic, social, and political factors, it does not take into account environmental ones.

- Makes homogenization in the world.
- *Dialecticalism* is its push forward motor.
- Makes transnationalization.
- Facilitates hegemony of those more advanced in science, economy, and politics, since it makes a foundation of scientific, economic, and political powers.
- Generates contradictions: A simple simultaneous googling of the words "contradiction" and "globalization" on *Google Scholar* presents 231,000 results which reveal how often the concept is repeated in globalization literature.
- The essence of its generating forces makes its existence inevitability.
- Makes *Supergovernmentalism*, as one of its fruits, which accentuates the role of global organizations' impact on the policy-makings of official governments in each country.
- Makes conflicts.
- Generates its own antitheses.
- It is paradigmatic: The prevailing and dominant social, political, economic, and scientific paradigms of the age have affected globalization's spirit, i.e., the subjugation of the spirit to the zeitgeist.

In brief, globalization spirit has the following major features, which make globalization's ontology:

- Has the essence of a force.
- Ethically is neutral.
- Has fluidity, i.e., it conveys and let the global effects in technology, economics, politics, society, and culture from one part of the globe flow to the other.
- Has accelerating speed, i.e., as it has passed its trip from the antiquity to the more modern periods, its speed has dramatically increased.
- Has a dualistic effect (i.e., positive or negative).
- Feeds from human's existed experiences and accumulates them in Jungian "collective unconscious," which constitutes the zeitgeists.
- Relies on the *Instrumentalist* propensity of human (i.e., the instrumentality propensity through the history has formed the globalization direction; so the useful aspects of the phenomenon are scaled up, repeated, and echoed, and the noninstrumental aspects are unintentionally or intentionally eliminated by collective choice).
- Brings about extensity, intensity, and velocity, which are the impacts.

5   Conclusion

Globalization is the confrontations of the giants (i.e., economic, sociocultural, environmental, and political forces, drives, or powers) which make eye-catching thrown off sparks that could either blaze up or sooth the social, political, environmental, and economic arenas singly or simultaneously. Its spirit is always in the process of metamorphosis; it hatches, transforms, grows, and takes new qualities and

characteristics of the ages (zeitgeists) but after a while sheds them altogether and takes new ones, which are deeply rooted in the past. Its ever-refreshing spirit is not the mere accumulation of the old characteristics, but their *sublation* (Hegelian *Aufhebung*): cancels, suspends, and abolishes the previous entities but preserves some of their identities in a new form and hence finds the meaning of progress in *Time* and the identity in *Form (Being)*. Its ontology requisites such a mutational spiritual existence; otherwise it would be dead at its embryonic stages thousand years ago. But zeitgeist has ever fed globalization's spirit. Zeitgeist is the epoch's womb, which nourishes and nurtures potentially innumerable correlated incidents that finally give birth to historic turning points in science, economy, politics, society, culture, and so forth. These turning points are the babies of Zeitgeist womb, babies of myriad actions and reactions, theses, and antitheses. The womb (zeitgeist) had been the incubator of plethora of confrontations, refutations, contradictions, and collusions in a word multiplicities through sublation which altogether have been envisaged in a final unity (hence, globalization) as an ultimate creature of synthesizing history.

5.1   Mantling Process

Concerning the "effects" of globalization, ontologically it suffers dualism, i.e., "*d*one wisely, it could lead to unparalleled peace and prosperity; done poorly, to disaster" (Wolf 2014: International Monetary Fund's website). For some nations and communities, it brings prosperity, more political power, cultural dominance, economic growth, etc. and for others weaker in the political, social, and economic aspects makes political subjugation, cultural transformation, economic exploitation, and so forth. However, these are the contradictory effects of globalization and do not originate from the spirit or ontology of globalization itself. Globalization is the drive, force, phenomenon, and emergence which to be resisted or welcomed warmly or to be well equipped and ready for using its fruits or to be absent-minded or inattentive occurs to the nations. Spirit of globalization is a multidimensional and complicated force. The same force, which pushes forward, blocks, changes, transforms, crushes, alleviates, and eradicates, makes homogeneity. That is, if its effects reflect *Dualism*, its spirit and ontology is unique and homogeneous; it reflects oneness, singleness, and *Monism* the same as any force in its very own nature. Philosophically the spirit of globalization has *Existence Monism*. Although the idea was used for concrete entities (such as the universe or the world) and defined as "Existence monism targets concrete objects and counts by individual token. It holds that exactly one concrete object token exists (the One)" (Schaffer 2016: on-line Stanford Encyclopedia of Philosophy); its concept also could be applied to the ontology of globalization which is one phenomenon with pluralistic effects and reflections. A force in its ontological sense could not be simultaneously outward and inward, inside and outside, against itself and against another entity, to push and pull, and if we metaphorically assume globalization as an abstract driving force behind society, economy, politics, and

culture, then logically it should entail first one of the main characteristics of *Monism* which is *heterogeneity*, i.e., fundamentally and its essence, it cannot be itself and against itself, and it cannot be self-refuting, and second its nature and being (not its effects) as a force is free from ethical evaluations as nobody ethically evaluates *Newton's Law of Force*. On the other hand, the spirit of globalization has an evolutionary nature. The zeitgeists obviously demonstrate such a feature. Globalization has always been in a process of metamorphosis, which is still in continuation. A force is neutral, free from ethical evaluations. When we are talking on and evaluating the impacts and effects of globalization, we are not talking about the essence, existence, and being of globalization but the manifestations. The sun in drought deserts kill and in cold winters warms. These results are not revealing the ontological nature of the sun but imply that the ethical evaluations attributed to the sun are situation-based and conditional. The same condition could be assumed for globalization. It makes affluence in one part of the world and economic destruction and asymmetrical distribution of wealth in the other. It demonstrates in which land, with economic, political, and social capabilities and norms, the saw of globalization, is cultivated. If the condition is ready, the harvest is economic affluence, political power and cooperation, and cultural attractiveness; otherwise globalization will lead to the exploitation of the states that show laggards in economy, politics, and social management and administration of their communities. Furthermore, the first and foremost constituting entity of globalization force is economy. Trade agreements, slavery, the *Silk Road*, ship voyages to the corners of the world, colonialism, advancement of technology, new enterprises with cutting edge technologies, global bank systems, entrepreneurship, telecommunication, etc. could not be well understood without considering this significant constituting entity, which promotes globalization into the cells of global community body. The other color of this spirit is political interests, which have shaped the stamina behind this phenomenon. Macroeconomy as a large-scale economic system could not be free from stakeholders who peruse their political interests through formal, (i.e., legally) and informal (i.e., lobbying, changing of the laws, new interpretations of the complicated laws, or aggressively illegal or hidden) measures. These Hegelian thesis/antithesis forces make new syntheses, which make the prediction of the future of globalization hard. Hence, the growth and genesis of new thoughts and economic, political, social, cultural, and ecological outcomes originate from such contradiction and *Dialecticalism*, which keeps globalization as an unquenchable force always in action and transformation up to the time human being somehow exists, in a planet called the Earth or somewhere else in the cosmos. The other constituting ontological attribution of globalization is speed. As globalization passed its trip from the antiquity to the more modern periods, its speed was accelerated. The spirit of this global force is thirsty of more velocity. Hence, technology has extremely helped to compensate this need and in the future will serve more. Furthermore, globalization force feeds from humans' existing experiences and genuine knowledge and accumulates them in its Jungian "collective unconscious," which constitutes the zeitgeists. The review of the zeitgeists through the paper demonstrates that as globalization proceeded demanded faster, more efficient and economical tools for communication, transportation,

homogeneity of thoughts, needs and lifestyles, etc. and added to the public literacy and consciousness towards itself. This consciousness has shown itself either with anti-globalization sentiments or with understanding and investigating the nature of this force to figure out how it works and how it could be domesticated for the improvement and benevolence of human global life. The next attribution of this force is its fluidity. It conveys the global effects in technology, economics, politics, society, and culture from one part of the globe to the other. The brand new technology of today, if to be efficient and has market, will be tomorrows' available technology anywhere. These days nearly all nations pick the fruit of medical advancements, although there are examples of deprivations. Therefore, globalism essence is to flow and spill over technologically, socially, economically, and politically. Additionally, globalization ontologically relies on the instrumentalist propensity of humans. *Instrumentalism* "comes from the American philosopher *John Dewey's* name for his own more general brand of pragmatism, according to which the value of any idea is determined by its usefulness in helping people to adapt to the world around them" (de Neufville 2017: on-line Encyclopedia Britannica). *Instrumentality* is the pragmatic logic which human evaluates the nature of the phenomenon based on whether globalization contribute to his economic, social, political, and cultural life or vice versa; and if in some aspects it could not fulfill the expectations, no matter how healthy and fruitful it could be in the long run, humans as a rational being did not choose that aspect, and such an approach when repeated and done by large human populations has eliminated or reshaped the trends in globalization. Therefore, the *Instrumentality* propensity through the history has shaped the direction that globalization moved toward and gave the phenomenon an instrumental spirit. In other words, the useful aspects of the phenomenon are scaled up, repeated, and echoed, and the noninstrumental aspects are unintentionally or intentionally eradicated. Our ancestors' collective choices and our own made the existing global phenomena. To sum up, globalization has essence, which is neutral, and effects, which could be positive and negative, ethically good or bad, and ontologically needs prior causes and correlations to be. Borrowing Held et al. (2000) four definitional elements of globalization (extensity, intensity, velocity, and impact); the review of the 1900s–2010s' zeitgeists reveals that globalization spirit ontologically has stretched (extended) itself over our human existence everywhere, but the intensity of this extension and its change-making drive—depending on the unique economic, social, cultural, and political structures and contexts—is different, i.e., the aforementioned context adds to the manifestation of globalization intensity. Therefore, globalization spirit in one part of the globe manifests its self as an economic force and in another part as a cultural one and so forth. The review of the zeitgeists also demonstrated that by the breakthroughs of technological advancement, globalization gains more velocity. The more technological a country is, the more possibility to be affected by the globalization's velocity and intensity in society, economy and politics. Finally, the spiritual entities of globalization's *Geist* bring about extensity, intensity, and velocity, which are the impacts of the phenomenon.

References

Abu-Lughod JL (1991) Before European hegemony: the world system AD 1250–1350. Oxford University Press, New York

Al-Rodhan NR, Stoudmann G (2006) Definitions of globalization: a comprehensive overview and a proposed definition. Prog Geopolit Implications Global Transnational Secur 6:1–21

Anheier HK, Juergensmeyer M (eds) (2012) Encyclopedia of global studies. Sage, Thousand Oaks, CA

Ball T, Dagger R (2017a) Communism. Encyclopedia Britannica. https://www.britannica.com/topic/communism

Ball T, Dagger R (2017b) Socialism. Encyclopedia Britannica. https://www.britannica.com/topic/socialism

Booker C (1969) The Neophiliacs: a study of the revolution in English life in the fifties and sixties. Collins, London

Bullock A, Trombley S (1999) The new Fontana dictionary of modern thought. HarperCollins, London

Chambre H, McLellan DT (2018) Marxism. Encyclopedia Britannica. https://www.britannica.com/topic/Marxism

Charlston D (2012) Translating Hegel's ambiguity: a culture of humor and witz. In: Foran L (ed) Translation and philosophy. pp 27–39

Cohen R, Kennedy PT (2000) Global sociology. Macmillan, Basingstoke

Collins on-line Dictionary. (2018). Geist. https://www.collinsdictionary.com/dictionary/german-english/geist

Coole D (2017) Agency. Encyclopedia Britannica. https://www.britannica.com/topic/agency-political-theory#ref1252983

Dagger R, Ball T, Girvetz HK, Minogue K (2018) Liberalism. Encyclopedia Britannica. https://www.britannica.com/topic/liberalism

Davies P, Lynch D (2005) The Routledge companion to Fascism and the far right. Routledge, London

de Neufville R (2017) Instrumentalism. Encyclopedia Britannica. https://www.britannica.com/topic/instrumentalism

Desan S, Hunt L, Nelson WM (eds) (2013) Introduction (pp 1.12). The French Revolution in global perspective. Cornell University Press

Dicken P (1992) Global shift: the internationalization of economic activity. Sage, Thousand Oaks, CA

Dreyfus HL (2009) Existentialism. Microsoft® Student 2009 [DVD]. Microsoft Corporation, 2008, Redmond, WA

Encyclopedia Britannica's group of editors (2017) Capitalism. Encyclopedia Britannica. https://www.britannica.com/topic/capitalism

Freeman JL, Stevens JP (1987) A theoretical and conceptual reexamination of subsystem politics. Publ Policy Admin 2(1):9–24

Gaus G, Courtland SD, Schmidtz D (2018). Liberalism. In: Zalta EN (ed) The Stanford encyclopedia of philosophy, Spring edn. https://plato.stanford.edu/entries/liberalism/#NewLib

Giddens A (1990) The consequences of modernity. Polity Press, Cambridge

Gordon PH, Meunier-Aitsahalia S (2004) The French challenge: adapting to globalization. Brookings Institution Press

Gray A (2017) What is globalization anyway? World Economic Forum's website. https://www.weforum.org/agenda/2017/01/what-is-globalization-explainer/

Haarstad H, Fløysand A (2007) Globalization and the power of rescaled narratives: a case of opposition to mining in Tambogrande, Peru. Polit Geogr 26(3):289–308

Haas A (2007) Being and implication: on Hegel and the Greeks. Cosmos Hist 3(2–3):192–210

Harden T (2012) The awful German language, or, is 'Die Geistige Entwicklung' 'The Mental Development'. In: Foran L (ed) Translation and philosophy. pp 13–26

Harvey D (1989) The condition of postmodernity. Blackwell, Oxford. as cited in R. J. Holton, Globalization and the Nation-State (London: Macmillan Press, 1998), p 8

Havemann J (2018) The financial crisis of 2008. Encyclopedia Britannica. https://www.britannica.com/topic/Financial-Crisis-of-2008-The-1484264

Hegel GWF (1807) The phenomenology of mind (trans: Baillie JB in 1910). MacMillan, New York

Heidegger M (1988) Hegel's phenomenology of spirit. Indiana University Press, Bloomington, pp 144–145

Heidegger M (1996) Being and time: a translation of Sein und Zeit (trans: Stambaugh J). State University of New York Press, Albany, NY, p 9

Heilbroner RL (2008) Capitalism. In: Durlauf SN, Blume LE (eds) The new Palgrave dictionary of economics, 2nd edn. Palgrave Macmillan, London

Heizo T, Ryokichi C (1998) Japan. In: Morrison CE, Soesastro H (eds) Domestic adjustments to globalization. Japan Center for International Exchange, Tokyo, pp 76–102

Held D, McGrew A, Goldblatt D, Perraton J (2000) Global transformations: politics, economics and culture. In: Politics at the edge. Palgrave Macmillan, London, pp 14–28

Hyman L, Baptist EE (2017) American capitalism: a reader. Simon and Schuster

Jacquette D (2002) Ontology. Acumen, London

James P (2014) Introduction. In: Globalization and politics. Political philosophies of the global, vol 4. Sage, London

King A (2012) The structure of social theory. Routledge, London

Knox MT (2017) Georg Wilhelm Friedrich Hegel. Encyclopedia Britannica. https://www.britannica.com/biography/Georg-Wilhelm-Friedrich-Hegel#ref468998

Kukoč M (2009) Introduction: philosophy and globalization I. Synth Philos 47(1):3–5

Larsen SU, Hagtvet B, Myklebust JP (eds) (1980) Who were the fascists: social roots of European fascism. Universitetsforlaget/Columbia University Press, Bergen/Irvington-on-Hudson, NY

Love JL (2005) The rise and decline of economic structuralism in Latin America: new dimensions. Lat Am Res Rev 40(3):100–125

Magee GA (2010) Zeitgeist. In: The Hegel dictionary. A & Black, London

Mansbach RW, Rhodes EJ (2009) Global politics in a changing world: a reader. Cengage Learning

Martell L (2010) The sociology of globalization. Policy Press

Marvin Pate C (2011) From Plato to Jesus: what does philosophy have to do with theology? Kregel Publications, Grand Rapids, MI

Marx K (2010) A contribution to the critique of political economy. In: Marx Today. Palgrave Macmillan, New York, pp 91–94

Merriam-Webster's Collegiate Dictionary (2002) 10th edn. Merriam-Webster, Incorporated, Springfield, MA

Merriam-Webster's Dictionary (2018) Sublation. https://www.merriam-webster.com/dictionary/sublation

Merriam-Webster's on-line Dictionary (2018a) Globalization. https://www.merriam-webster.com/dictionary/globalization?utm_campaign=sd&utm_medium=serp&utm_source=jsonld

Merriam-Webster's on-line Dictionary (2018b) Laissez-faire. https://www.merriam-webster.com/dictionary/laissez-faire

Missio F, Jayme FG Jr, Oreiro JL (2015) The structuralist tradition in economics: methodological and macroeconomics aspects. Revista de EconomiaPolítica 35(2):247–266

Ohmae K (1990) The borderless world: power and strategy in the interlinked economy, vol xv. Harper Business, New York

Pease DE, Wiegman R (eds) (2002) The futures of American studies. Duke University Press, Durham, NC

Raico R (2010) What is classical liberalism? Mises Institute website. https://mises.org/library/what-classical-liberalism

Rohr DG (1964) The origins of social liberalism in Germany. University of Chicago Press, Chicago

Schaffer J (2016) Monism. In: Zalta EN (ed) The Stanford encyclopedia of philosophy, Winter edn. https://plato.stanford.edu/archives/win2016/entries/monism

Schreiber M (2012) The age of excess: Berlin in the golden twenties. Spiegel Online. http://www.
    spiegel.de/international/germany/spiegel-series-on-berlin-history-the-golden-twenties-a-
    866383.html
Smith B (1991) German philosophy: language and style. Topoi 10(2):155–161
Smith N (2018) Neoliberalism. Encyclopedia Britannica. https://www.britannica.com/topic/
    neoliberalism
Turner HA (ed) (1975) Reappraisals of fascism. New Viewpoints, New York
UN (2018) Global issues overview. http://www.un.org/en/sections/issues-depth/global-issues-over
    view. Accessed 19 June 2018
UNA-UK website (2018) The UN by decade: 1960s. https://www.una.org.uk/magazine/special-
    issue-2015/un-decade-1960s
Verene DP (1997) Hegel's recollection: a study of images in the phenomenology of spirit. SUNY
    Press.
Wallerstein I (1974) The modern world system: capitalist agriculture and the origins of the
    European world-economy in the sixteenth century. Academic Press, New York. As cited in
    R. J. Holton, Globalization and the Nation-State (London: Macmillan Press, 1998), p. 11
WHO, World Health Organization (2018) PAHO/WHO technical cooperation among countries.
    https://www.paho.org/hq/index.php?option=com_content&view=article&id=2128%3A2009-
    paho-who-technical-cooperation-among-countries&catid=1760%3Atechnical-cooperation-
    among-countries&Itemid=1850&lang=en
Wolf M (2014) Shaping globalization, finance and development. International Monetary Fund
    website. http://www.imf.org/external/pubs/ft/fandd/2014/09/wolf.htm

Institutional Quality and Globalization in Developing Countries

Check for updates

Ali Hussein Samadi (iD)

Abstract The main purpose of this chapter is to analyze the theoretical relationship between globalization and institutional quality and the empirical analysis of this linking in developing countries. For this aim, this chapter seeks to answer three main questions: (1) How do institutions affect globalization (trade openness)? (2) Can the economic globalization and trade openness cause institutional changes? If the answer is positive, does globalization lead to an improvement in the institutional quality or its deterioration? (3) Is there any causal relationship between globalization and institutional quality in developing countries?

To answer these questions, we use analytical-descriptive methods and econometric methods including Granger-type causality test based on panel vector error correction model (PVECM).

The theoretical findings of this chapter show that the good institutional quality via various channels affects the volume, structure, and composition of the trade. Also, economic globalization may improve (or deteriorate) the quality of institutions, but the kind and the extent of its influence depend on the type of institutional system and institutional structure of countries.

The descriptive analysis of data (status of globalization and institutional quality) in developing countries showed that the trend of economic globalization is not favorable in comparison with the world trend. In addition, compared to both three dimensions of globalization and the world as a whole, it presents an unfavorable situation. On the other hand, the position of institutional quality, in particular the quality of regulation and the effectiveness of governments (of the vital factors of trade expansion), has the worst situation. The results of Granger-type causality test showed that there is no causal relationship between economic globalization and legal-economic institutions (such as the rule of law and government effectiveness) in the short term, but there is at least one causal relationship in the long run. This relationship with the index of the rule of law is bidirectional and with other indexes is unidirectional. Also, the findings of this study show that in the short and long run, political globalization is the cause of political institutions (political stability and

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voice) and social globalization is the cause of social institutions. Therefore, the *globalization view of institutional change* can be cautiously supported.

1 Introduction

Globalization has economic, political, and social dimensions. Economic globalization can be measured through *trade openness* and *financial openness*. Trade openness is related to the flow of goods and services. Goods and services, especially in the trade sector, have different categories. On the other hand, institutions have various types. Generally, institutions are divided into political, economic-legal, social, and cultural institutions. Each of these institutions, particularly the economic-legal institutions, has a variety of ranges.

The trend of economic globalization in developing countries is not favorable in comparison with the world trend. On the other hand, the position of institutional quality, in particular the quality of regulation and the effectiveness of governments (of the vital factors of trade expansion), has the worst situation.[1]

Regarding to the status of globalization and institutional quality, various questions can be proposed. An important question faced by developing countries is (1) globalization (trade openness) is influenced by which (institutional and noninstitutional) factors? What are the barriers ahead of it? In this regard, the key question is that what is the effect of institutions on globalization (trade openness)? On the other hand, institutions (both domestic and international) change over time. Another important question, especially for developing countries, is that (2) how do institutional changes happen? Does globalization play a major role in institutional changes in developing countries? Does globalization improve institutional status or lead to its degradation? According to the two previous questions, another important question will be proposed. (3) Is there any causal relationship (theoretically and empirically) between globalization and institutional quality in developing countries in short run and long run? If this relationship exists, how is the direction of causality?

There are various theoretical and empirical literature which are answered to the first and second questions, but negligible attention is given to the third question (especially theoretically).

In the vast majority of studies, the causality between these variables is assumed as unidirectional, and this relationship is investigated theoretically or empirically (for one or more countries). For example, in Francois and Machin (2013), Alvarez et al. (2018), Tang (2012), Araujo et al. (2016), Palangkaraya et al. (2017), Czinkota and Skuba (2014), Gani and Clemes (2013, 2016), Levchenko (2004, 2007), Feenstra et al. (2013), Moenius and Berkowitz (2011), Yu et al. (2015), De Groot et al. (2004), Desroches and Francis (2006), and Aziz et al. (2018), the causality direction from institutions to globalization is assumed. In these studies, the impact of institutions on globalization has been investigated. Also in Do and Levchenko (2009),

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[1]These findings are presented in Sect. 4 of this chapter in detail.

Levchenko (2008, 2012), Bergh et al. (2014), Bhattacharyya (2012), Stefanadis (2010), Kant (2016, 2018), Muye and Muye (2017), Potrafke (2013), and Young and Sheehan (2014), the causal direction from globalization to institutions is assumed. In these studies, the impact of globalization on institutions has been investigated. In many of these studies, the regression models and data from various countries are used, and different results have been achieved.

In few studies the causal relationship between one dimension of globalization and one type of institutions is examined. For example, Nicolini and Paccagnini (2011) investigated the causal relationship between the ratio of the trade flow on GDP [trade openness] and the political rights and civil liberties [political institutions] for 197 countries, and they showed that there is no causal relationship between them.

The main purpose of the present chapter is to fill this gap. Therefore, the first contribution of this chapter is investigating this issue that there is a bidirectional causality between globalization and institutional quality, theoretically. Another contribution of this chapter is to test this causal relationship empirically in developing countries. In this regard, after a comprehensive review of the literature and explaining theoretical relationship between economic globalization and institutions, the causality between (economic, social, and political) globalization and (legal-economic, social, and political) institutions in developing countries has been tested.

Empirical results based on the data during 2001–2015 showed that there is no causal relationship between economic globalization and legal-economic institutions in the short run but at least there is one causal relationship (from globalization to legal-economic institutions) in the long run. Moreover, social globalization has a unidirectional causal relationship with social and political institutions (from globalization to social and political institutions) both in the short and in the long run.

The present chapter consists of six sections. The remainder of this chapter is organized as follows. The second section is devoted to theoretical foundations. In this section, the framework of analysis, the concepts and indexes of measuring the various dimensions of globalization and types of institutions, the impact of institutions on trade, institutional changes through trade, and bidirectional causality between globalization and institutions are discussed. The third section provides the brief overview of the literature review. Empirical findings regarding the status of globalization and institutional quality and causal relationship between them in developing countries are presented in the fourth section. Section 5 presents the discussion of the study, and the final section is devoted to the concluding remarks.

2 Theoretical Background

2.1 Framework of Analysis

Globalization and institutions are multidimensional and interdisciplinary concepts. To analyze the causes and factors affecting each one, interdisciplinary analysis is required. In order to be able to provide a comprehensive analysis of globalization
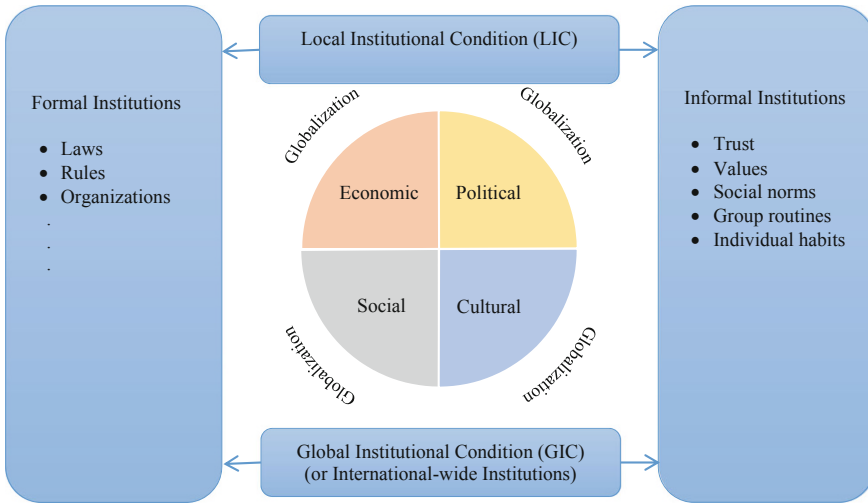
Fig. 1 The links between globalization and formal and informal institutions. Source: Authors' own figure
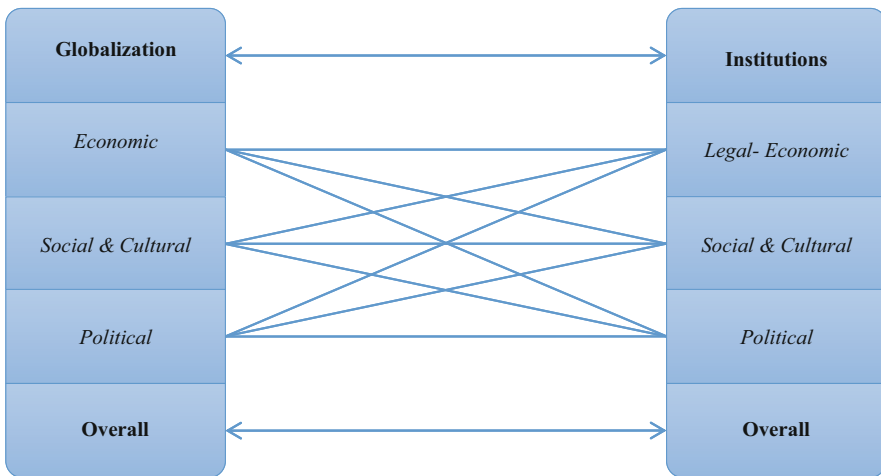
Fig. 2 The links between the dimensions of globalization and the types of institutions. Source: Authors' own figure

and institutions and the relationship between them, one should study these concepts from the perspectives of economics, management, sociology, psychology, history, and political science. Nationally it is not possible to provide such an analysis in one chapter and by one person.

The relationship between formal and informal institutions and globalization is presented in Fig. 1, and the relationship between various dimensions of globalization and various types of institutions is shown in Fig. 2. According to Fig. 1, there is a

mutual impact between the *local (or national or home-country institutions of the origin and destination country) institutional conditions* and the *global (or international-wide) institutional conditions* in the form of formal and informal institutions and various dimensions of globalization. It is also clear from Fig. 2 that there is a mutual impact between the various dimensions of globalization and the types of institutions. It should be mentioned that it's not possible to analyze these issues in this chapter. Therefore, in the present chapter the relationship between trade and trade openness (an indicator of economic globalization) and formal economic institutions (such as property rights, rule of law, etc.) theoretically are investigated. The empirical evidence of this relationship in developing countries will be presented and analyzed in a separate section.

2.2   Globalization and Institutions: Concept and Measurement

There are various definitions for institutions.[2] In general, *institutions* are arrangements that formed the behavior of part of society and it has impact on it. The meaning of *institutional quality* is power, consistency, and robustness of the institutions in a country. The *institutional robustness* refers to the sovereignty, influence, and the real power of institutions. Also, the *institutional structure* refers to the form of *inter-institutional* and *intra-institutional* that can be *producer-friendly* or *rent-seeker/predator-friendly* (Renani and Moayedfar 2012: 160–163).

There are various types of institutions, and one may evaluate by various quantitative and qualitative indexes. Some of the quantitative indexes to measure the quality of *economic-legal, social, and political institutions* are presented in Table 1.

Also, there are numerous definitions for globalization. Globalization is equivalent to integration of the national economies and removing barriers of trade (Stiglitz 2002). This definition is different from the views of sociologists, economists, and theorists of international relations. Each definition refers to the different dimensions and functions of globalization (Mossalanejad 2014: 1–3). The economic, social, cultural, and political dimensions are different dimensions of globalization that are measured by several quantitative and qualitative indexes. Some of these indexes are presented in Table 1.

Economic globalization is measured and analyzed by *trade-openness* indicators—as the representative of the flow of goods and services—and *financial openness* or *capital flow* as the representative of financial and capital markets. Some of the indexes presented in Table 1 focus on both aspects of economic globalization (which is more about trade openness).

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[2]For more details, refer to Samadi (2008, 2018).

Table 1 The types and some proxy variables for globalization and institutions

Globalization	Institutions
Economic	**Economic-legal**
Economic/trade openness:	Contracting institutions—ICRG repudiation of contracts (Bhattacharyya 2012) Enforcement of contracts (Nunn 2007)
– The number of years a country has been open (Bhattacharyya 2012)	Control of corruption (Bergh et al. 2014)
– Trade flows (Al-Marhubi 2005; IMF 2005)	Domestic business environment (the cost of doing business, the security to property rights, contract enforcement, dispute resolution, the extent of Internet diffusion, and the strength of legal rights (Gani and Clemes 2013)
– The D-index (Al-Marhubi 2005)	Economic freedom index[a] (IMF 2005; Young and Sheehan 2014; Depken II and Sonora 2005)
– Sachs and Warner openness index (Al-Marhubi 2005)	Governance (Al-Marhubi 2005)
Economic policies (Bergh et al. 2014)	Government effectiveness (Bergh et al. 2014)
Economic flows (Bergh et al. 2014)	International Property Right Index (Samadi and Amareh 2010)
Economic freedom index:	Index of labor protection (Tang 2012)
– Freedom to trade internationally (Al-Marhubi 2005; IMF 2005)	Labor market institutions such as *unemployment insurance system* (the replacement rate, benefit length, and a measure of active labor policy), *employment protection* (the tax wedge), *collective bargaining* (union contract coverage, union density, and union-employer coordination of bargaining),[b] *labor market regulation*[c] (employment laws, collective relation laws, and social security laws), *labor market freedom indicator of the Fraser Institute, employment protection or minimum wage legislation Fraser Institute, labor market regulations of the Economic Freedom of the World (EFW)—Fraser Institute*[d] (Potrafke 2013)
Foreign direct investment (Long et al. 2015)	Legal formalism index (Bhattacharyya 2012; Djankov et al. 2002; Acemoglu and Johnson 2005)
GDP share of imports (Bonaglia et al. 2001)	Legal system (Young and Sheehan 2014)
Intra-trade flows (Stefanadis 2010)	Property rights[e] (Bhattacharyya 2012; Young and Sheehan 2014; Levchenko 2007; Samadi 2008)
KOF index of economic globalization (Potrafke 2013)	Property rights institutions: ICRG expropriation risk (Bhattacharyya 2012), degree of legal protection that producers enjoy (Stefanadis 2010)
Log of exports as a share of GDP (Levchenko 2008, 2012)	Quality of contract enforcement (Levchenko 2007)
Log of exports plus imports as a share of GDP (Levchenko 2008, 2012)	Quality of the court system or judicial quality (Feenstra et al. 2013)
Predicted total trade as a share of GDP (Levchenko 2008, 2012)	Regulatory quality (Bergh et al. 2014)
The long-distance flow of commodities (i.e., goods and services) and capital, including perceptions and information that accompany such market exchanges (Asongu and Biekpe 2017)	Rent-seeking (Stefanadis 2010)
Trade reforms (Tavares 2007)	Rule of law (Bergh et al. 2014; Levchenko 2008; Stefanadis 2010)
Trade/economic liberalization (export partner growth)	Shareholder protection (Levchenko 2007)
– Sachs and Warner openness index (Al-Marhubi 2005; Bhattacharyya 2012)	The tax and fee burden (Long et al. 2015)
– Export growth rate (Bhattacharyya 2012)	The quality of legal protection (Long et al. 2015)
– Gwartney and Lawson (2005) free trade index (Bhattacharyya 2012)	
– Tariff (Bhattacharyya 2012)	
Trade flows as a share of GDP (Wei 2000; Nicolini and Paccagnini 2011)	

Social and cultural
Cultural proximity (Bergh et al. 2014)
Information flows (Bergh et al. 2014)
KOF index of social globalization (Potrafke 2013)
Personal contacts (Bergh et al. 2014)
The spread of people, images, information, and ideas (Asongu and Biekpe 2017)

Political
KOF index of political globalization (Potrafke 2013)
The diffusion of government policies (Asongu and Biekpe 2017)

Overall[f] (all dimensions of globalization)
KOF index (Potrafke 2013; Bergh et al. 2014; Asongu and Biekpe 2017)

Social
Corruption (Wei 2000; Bonaglia et al. 2001; Tavares 2007)
Domestic and transnational terrorism (Asongu and Biekpe 2017)
Trade barriers (such as longer distances, lack of contiguity, and cultural differences) (Álvarez et al. 2018)

Political
Checks and balances measure (Young and Sheehan 2014)
Civil liberties (Nicolini and Paccagnini 2011; Young and Sheehan 2014)
Civil liberty scores—Freedom House (Young and Sheehan 2014)
Corruption (Aziz et al. 2018)
Democracy (Yu 2010; Aziz et al. 2018)
Political freedoms (Young and Sheehan 2014)
Political rights (Nicolini and Paccagnini 2011; Young and Sheehan 2014)
Political stability (Bergh et al. 2014)
The Polity IV democracy scores (Bhattacharyya 2012; Young and Sheehan 2014)
Voice and accountability (Bergh et al. 2014)

Overall (all dimensions of institutional quality)
Institutional distance (difference in the quality levels of the importing (destination) and the exporting (origin) countries (Álvarez et al. 2018)
World Governance Indicators(WGI Index)[g]—World Bank (Álvarez et al. 2018)

Source: Authors' own table
[a]Subindexes are (1) size of government, expenditures, taxes, and enterprises; (2) legal structure and protection of property rights; (3) access to sound money, inflation rate, possibility to own foreign currency bank accounts; (4) freedom to trade internationally, taxes on international trade, regulatory trade barriers, capital market controls, difference between official exchange rate and black-market rate, etc.; and (5) regulation of credit, labor, and business
[b]Bassanini, A., Duval, R. (2006). Employment patterns in OECD countries: Reassessing the role of policies and institutions. *OECD Social, Employment and Migration Working Papers No. 35*. Organization for Economic Co-operation and Development, Paris
[c]Botero, Jesus, Djankov, Simeon, La Porta, Rafael, Lopez di Silanes, Florencio, Shleifer, Andrei, 2004. The regulation of labor. *Quarterly Journal of Economics*, 119 (4), 1339–1382
[d]This index consists of six subindexes that measure the influence of hiring regulations and minimum wages, hiring and firing regulations, centralized collective bargaining, hours regulation, and mandated cost of worker dismissal and conscription. (Potrafke 2013: 832)
[e]Different indexes of property rights discussed in Samadi (2008)
[f]Contains economic, social, and political globalization
[g]Including six governance indicators: control of corruption, government effectiveness, political stability and absence of violence, rule of law, regulatory quality, and voice and accountability

2.3 Determinants of Trade

Trade can be classified as *trade in goods* and *trade in services*. Also goods are divided into various categories. Some of these categories included:

  I. *Patentable vs. unpatentable goods* (Palangkaraya et al. 2017)
 II. *Homogeneous vs. differentiated goods* (Francois and Manchin 2013)
III. *Simple (commoditized products) vs. complex (highly differentiated products)* (Moenius and Berkowitz 2011)

Services are also categorized into two: *market services* (including producer, distributor, personal and communication services) and *nonmarket services* (including social services such as health, education, and housing) (Gani and Clemes 2013: 297).

Also, the theories of determining factors affecting trade can be divided into two general categories. These categories included:

  I. *Orthodox views* (such as classical Heckscher–Ohlin theory of comparative advantage, Samuelson-Stolper, new trade theory, etc.). In these theories, the main factors or barriers to trade are considered predominant factors such as the income of foreigners and residents of the country, tariffs, quotas, relative price differences, etc. (Gani and Clemes 2016: 512).
 II. *Heterodox views* (such as institutional economists, behavioral economists, etc.). The general view in these theories is that incomplete and asymmetric information and uncertainty in trade cause hidden trading costs and thus lead to increased transaction costs (De Groot et al. 2004: 103).

It should be noted that explaining the views of all theories to identify the factors affecting the trade of goods and services in this chapter is not possible, and according to the title of this chapter, only *Heterodox theories* and, in particular, the views of institutional economists are expressed.

Also on investing the impact of institutions on trade, the following points should be noticed:

  I. *Institutional systems* (seven types introduced in Fainshmidt et al. 2018).
 II. *Institutional structure* (producer-friendly vs. rent-seeker-friendly structure)
III. *Institutional quality* (bad vs. good/strong vs. weak/level and distance)
IV. *The types of institutions* (legal-economic, political, social, and cultural/formal and informal)

In other words, the impact of the level or distance of the institutional quality of the types of institutions in various institutional systems with various institutional structures (rent-seeker-friendly or producer-friendly) on flows, structure, composition, and variety of the goods and services of trade is different. Also these impacts in national and local levels/macro and sectorial level and the origin or destination countries are different. As it is not possible to analyze all the material mentioned in this chapter, based on the above explanation, in the present chapter only the

impact of legal-economic institutions (formal institutions) on trade of goods will be discussed.

Legal-economic institutions included *contracting institutions* and *property rights institutions*.[3] Legal traditions, the kind of legal system of the origin and destination countries, regulation of patent, (physical- and intellectual-)property rights, the rule of law, control of corruption, transparency, doing business, etc. are some legal-economic institutions which arguably effect on the volume and composition of trade in goods and services. A good institutional quality will lead to a change in the volume, structure, and composition of trade via various channels. However, the amount of the changes is different in the various institutional systems and various institutional structures. Some of these channels include *decreasing rent-seeking*, *reducing trade monopolies* (through tariffs and quotas), *increasing long-term profits of trade*, *reducing barriers of entry* (Alvarez et al. 2018), *increasing survival in the market of destination countries*, *reducing informational frictions* (Araujo et al. 2016), *enhancing trust* (Alvarez et al. 2018; Araujo et al. 2016), *decreasing trans-action costs* (Moenius and Berkowitz 2011), *forming relative advantage* (Francois and Manchin 2013; Levchenko 2004, 2007; Desroches and Francis 2006; Tang 2012; Nunn and Trefler 2014), *providing legal security guarantees* (Alvarez et al. 2018; Czinkota and Skuba 2014), *security of contracts* (Nunn 2007; Araujo et al. 2016), and *the strengthening of the legal system of the country* (Gani and Clemes et al. 2013, 2016).

In the hypothesis of *institutional relative advantage* (IRA), institutional quality is considered as the source of the relative advantage of the country. According to the hypothesis, in countries with low institutional quality (most of countries in the South), contracts are not completely executed. In such a situation, there is a moti-vation to expropriate the rights of others. To avoid such a problem, the costs of contract enforcement, the guarantees of security contracts, and property rights should be increased. Therefore, traders, in addition to conventional costs, must also bear the transaction costs.

Also, in countries which have good institutional quality (e.g., good contract institutions) (the North countries), there is a tendency to export relatively capital-intensive goods. This institutional difference leads to the formation of a relative advantage that is known as "institutional relative advantage" (Desroches and Francis 2006: 1; Levchenko 2007: 791–792). Differences in factor endowment, skills of the workforce, contract institutions, etc. are among the factors that may create relative advantages (Tang 2012: 338). A good institutional quality (e.g., contract institutions) will lead countries to find expertise in the production and trade of goods which are institutionally dependent. These goods mostly are relying on the institutions (e.g., the quality of contract execution) (Levchenko 2007: 792). The North countries often specialize in the production and export of these goods, because the productivity of

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[3]The *contract institutions* seek to support private contracts, but *property rights institutions* are seeking to limit expropriation of private property by the government and political elites (Bhattacharyya 2012: 257).

these goods and sectors is higher. Furthermore, it has benefit for the South countries (with weak institutional quality) to prevent production and export these goods to avoid rising costs, because it may weak institutional quality clear in the low efficiency of institutionally intensive sectors.

Generally, the impact of institutions and institutional reforms on the volume and composition of goods can be divided into three categories such as *volume effect*, *compositional effect*, and *scope effect* (Moenius and Berkowitz 2011: 452). Improving the institutional quality increases the exports of complex goods (highly differentiated products) due to the benefits of relative advantage (*volume effect*), and the combination of exports in favor of these goods and to the detriment of simple goods (commoditized products) changes (*compositional effect*). Obviously, the improvement of the institutions decreases the international transaction costs and, thus, increases the amount of diversity in the export of complex products (*scope effect*). So:

Hypothesis 1 Improving institutional quality lead to globalization.

2.4   Globalization View of Institutional Change[4]

Institutions in the viewpoint of the first generation of institutional economists are exogenous and unchangeable, but in terms of the second generation, institutions are endogenous and changeable. From the viewpoint of the second generation of institutional economists, institutions are always changing over time and evolving. These changes are often slow and dull. But incidents such as revolutions, wars, political-social turmoil, and extreme changes in government policies may cause rapid changes in some economic institutions, changes in the political and social structure, and consequently, the quality of existing institutions in the society.

The institutional changes and the reasons of its creation always have been the interest of institutional economists and other professionals. Based on this, several theories have been proposed to explain the reasons for the change in the quality of institutions. These views included:

1. Efficient institutions view or political Coase theorem (PCT)
2. Ideology or the generalized PCT
3. The incidental institutions view
4. The social conflict view
5. Transaction cost theory of institutional change
6. Entrepreneurial view of institutional change
7. *Globalization view of institutional change*

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[4]This naming is from the author.

Here, only the *globalization view of institutional change* will be explained.[5] By considering the trade aspect, the main question that this theory seeks to answer is how does trade openness, and under what circumstances, cause changes (improvement or deterioration) of institutional quality?[6]

Trade openness may affect the quality of economic institutions through a variety channels and may lead to changes in the institutional qualities (improvement or deterioration). Some of these channels included:

1. Institutional structure
2. Change of rents
3. Technology transfer
4. Political power and foreign competition effects

These channels briefly are described in the following.

2.4.1 Institutional Structure

In every country, all talents are allocated between productive activities (producer-friendly) and unproductive or destructive activities (rent-seeker-friendly or predator-friendly). If producer-friendly activities overcome the destructive activities, then the economy is producer-friendly, or else, the economy will be rent-seeker-friendly. The overcoming of one activity to another (the status of an institutional structure) depends on the institutional quality of the society. If in a society, economic institutions (such as property rights, rule of law, quality of contract execution, etc.) are weak and the group of rent-seekers politically are dominant, in this case, they prefer to undermine existing institutions and even create weaker institutions to exploit more resources and for more benefits (Renani and Moayedfar 2012: 160–163). The trade and its benefits will cause the size of firms become larger. If the institutional structure of the society is producer-friendly, then the number and size of the productive firms will increase. Productive firms prefer to follow good institutions and strengthen them. Stefanadis (2010), by expansion of the new trade theory in the framework of political economy and in a theoretical model, showed that in a producer-friendly economy, trade causes increase in the ratio of producer compared to the predators. Vice versa, in a predator-friendly economy, this ratio will decrease. Contrary to the Orthodox theories that focus on the characteristics of the country's trading partners, he relied on the political economy approach and shows that in producer-friendly economies, trade improves institutional quality but in predator-friendly economies, trade conduces into deterioration of institutional quality. These influences will occur

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[5]For more study, the first to four theories refer to Acemoglu et al. (2003). *Entrepreneurship theory of institutional change* is also described in Samadi (2018) and the sources presented therein.

[6]It should be noted that financial openness and FDI have impact on domestic institutions via various channels, especially in developing countries, that are not discussed in this chapter. For further study, refer to the study of Kant (2016).

through the channel of political economy by influencing on the allocation of talent in a country (Stefanadis 2010: 149). Therefore, it can be concluded that trade openness, dependent on the institutional structure of countries, may have a positive or negative impact on the institutional quality of a country.

2.4.2   Rents

Levchenko (2007, 2008, 2011, 2012) by using the theory of incomplete contracts and in the framework of lobbying game of Grossman-Helpman, in a theoretical model, shows that the main key to institutional changes after the country's opening to trade is the changes that have been made to rents. According to him, imperfect institutions create rents for some groups (parties), and there is the source of relative advantage in trade. If trade openness eliminates rents, then economic agents will find motivation to improve institutional quality; otherwise, the quality of the institution will be deteriorated.

Contracts in countries with weak institutions are very incomplete. In the context of incomplete contracts, some people earn rents. Rents by themselves are the main reasons for lobbying to create and strengthen institutions which are bad and weak. Also countries may produce and trade institutionally intensive goods. When trade openness occurs in a country and it ventures to export this kind of goods and therefore gain benefits from the relevant rents, then there will be strong motivations toward the deterioration of institutional quality. Otherwise, it will try to improve the status of institutional quality. Therefore, it can be argued that in case of more trade openness with incomplete contracts, some people will get more rents. These people, by having the political power, will try to make weaker institutions to earn more benefits from the trade. In contrast, if the inferior institutions are dominant in the country, then rents are eliminated, and trade openness will lead to improvements of institutional quality. This mechanism for improving institutional quality is described in the study of Levchenko (2012).

2.4.3   Technology Transfer

Some institutional economists, such as North (1981), and Acemoglu et al. (2005) believe that technological progress leads to institutional change. North (1981) demonstrates the capital accumulation as the main causes of the institutional changes in a society, and according to Acemoglu et al. (2005), the political power is the major element of the changes. Undoubtedly, trade and trade openness have impact on the size of market and technology transfer. One of the positive effects of trade and trade openness is that it leads to the transfer of technology, in particular, the skills-based technology. Such an event will increase the share of the middle-income group in society (Bhattacharyya 2012; Acemoglou and Robinson 2006). By increasing the share of the middle-income group, while the political power of these groups compared to the other groups and other classes of society has increased, these groups will

be able to set the society institutions including economic institutions (such as the property rights institutions and contract institutions) to their own benefit and will create a change in economic institutions. This change can be in favor of good or bad institutions. Therefore, trade and trade openness can cause improvement or deterioration of the institutional quality.

2.4.4 Political Power and Foreign Competition Effects

Manufacturing firms in a country can be divided into (large- and small-)exporting and non-exporter firms. If a country follows autarky, the distribution of profits due to the production and the trade of manufactured goods between these firms will be somewhat equal, and the firm's share from market remains intact for a long period of time. But when trade openness occurs, the productive firms grow, and the small firms will be eliminated. Indeed, the access to the foreign markets will cause the distribution of profits between these firms unequally. While there is trade openness, the productive firms will be larger and will prefer to create and strengthen good institutions to remain in the international economy, and the performance of these firms will improve the institutional quality in the country. This effect is known as *foreign competition effect*.

On the other hand, entering to the international trade will cause larger firms have more export and have more political power compared to the autarky. These firms, in order to gain benefits of political power and the authority of decision-making, create institutions and strengthen them for their benefits. These institutions often act as bad institutions. As a whole, it can be concluded that, in such a case, the trade openness will lead to a worse institutional quality. This effect is known as "political power effect" (Do and Levchenko 2009: 1491).

The overall effect of trade openness on the institutional quality depends on the overcoming effect of foreign competition on the strength of political power (or vice versa). If the foreign competition effect is dominated, then the trade openness will have a positive impact on institutional quality and will lead to their enhancement. Otherwise, the trade openness will worsen and deteriorate the institutional quality.

Whenever a country is large or has a small share in the production and trade of goods that are rent-seeker-friendly, the foreign competition effect will be dominated. Conversely, when a country is small or has a relatively large share in the trade of such goods, the political power effect will be dominated (Ibid, p. 1491). So:

Hypothesis 2 Globalization causes institutional quality.

2.5 *Institutional Change and Globalization: A Causal Relationship*

Trade is a mutual relationship between business parties, and it needs appropriate rules of the game (institutions). The good and appropriate game rules such as trust (of the trade parties to each other) will lead the volume and composition of trade to rise. In such condition, the required opportunity for the economic globalization of the countries will be provided. The proper institutional system, the production-friendly institutional structure, and the good institutional quality are among the other requirements of globalization in all the economic, social, and political dimensions. Therefore, as shown in Sect. 2.3, institutions and institutional changes are the causes of trade openness and, in general, the causes of globalization.

On the other hand, the globalization of the economy depending on the institutional structure (rent-seeker-friendly or producer-friendly) of countries, technology transfer, changes in the rents' amount of countries, and the effect of political power and the effect of external competition ultimately can improve institutions and/or provide the area for the deterioration of institutions. Therefore, as shown in Sect. 2.4, globalization can lead to creating institutional changes or making new institutions. So:

Hypothesis 3 There is a bidirectional causality between globalization and institutional quality.

Furthermore, its possible that no causal relationship between globalization and institutional quality exists. So:

Hypothesis 4 There is no causal relationship between globalization and institutional quality.

3 Literature Review

As mentioned in the second section of the present chapter, the impact of institutions on trade, and also the impact of globalization (trade openness) on the institutional changes (the improvement and deterioration of the quality of institutions), as theoretically, is ambiguous, and it depends on various conditions. There are numerous empirical studies in which the impact of various types of institutions on the trade in different countries, different trade blocks, different time horizon, with different types of data, and different econometric methods are investigated. In this section, we briefly review the relationship between economic globalization and institutions.

In few studies (Gani and Clemes 2013, 2016), the impact of various kinds of institutions (i.e., legal systems) on the trade of service has been emphasized. Gani and Clemes (2013) investigated the impact of the domestic trade environment on the total trade services, and Gani and Clemes (2016) focused on the trade of insurance

and financial services, and they concluded that enhancing the legal system (rule of law and regulatory quality) in the OECD countries led to an increase in the export of services, especially the financial and insurance services. But there are many studies on the impact of various types of institutions on trade of goods.

Several scholars have focused on the various types of goods such as homogeneous and differentiated goods (e.g., Ranjan and Lee 2007; Feenestra et al. 2013) and simple and complex goods (e.g., Moenius and Berkowitz 2011). The majority of existing studies have focused on the total volume of export of goods. Meanwhile, several scholars (e.g., Tang 2012; Aziz et al. 2018) have studied the sectoral level, and others (e.g., Feenstra et al. 2013) have considered the provincial level. Some studies (e.g., Yu et al. 2015; Manolopoulos et al. 2018) compared the effects of formal and informal institutions on export activities and bilateral trade patterns, but in most other studies only formal institutions have been considered.

In some studies (e.g., Aziz et al. 2018), the impact of political institutions has been intended, but a large number of studies have focused on the impact of legal-economic institutions. In this area, we can point to the studies of Araujo et al. (2016), Palangkaraya et al. (2017), Czinkota and Skuba (2014), Gani and Clemes (2013, 2016), Baccini (2014), Francois and Manchin (2013), Tang (2012), Levchenko (2004, 2007), Feenstra et al. (2013), Yu et al. (2015), De Groot et al. (2004), and Desroches and Francis (2006). The common findings of all these studies indicate that contracting institutions and property rights institutions are important factors in the expansion of production and trade.

Moreover, there are numerous theoretical and empirical studies which have investigated the impact of globalization on institutional quality. In this area we can point to the studies done by Levchenko (2007, 2008, 2012), Do and Levchenko (2009), Bergh et al. (2014), Bhattacharyya (2012), Stefanadis (2010), Kant (2016, 2018), Muye and Muye (2017), Asongo and Biekpe (2017), Potrafke (2013), Young and Sheehan (2014), and Long et al. (2015). Among these scholars, studies of Long et al. (2015), Muye and Muye (2017), and Kant (2016, 2018) probed into the foreign direct investment (FDI) and financial aspect of globalization. Study conducted by Young and Sheehan (2014) is related to the foreign aid, and Asongo and Biekpe (2017) have focused on the social and political institutions. But in other studies, the economic aspect of globalization and economic institutions are posed.

Several studies such as Levchenko (2007, 2008, 2012), Do and Levchenko (2009), and Stefanadis (2010) are also theoretical. Do and Levchenko (2009) and Levchenko (2007, 2008, 2012) in the theoretical models based on the doctrines of political economy showed that the trade openness under certain conditions can lead to the improvement of the quality of institutions and, in other circumstances, degrade the improvement of institutional quality, and therefore, it is not possible to determine a conclusive outcome. Bergh et al. (2014), by empirically using data from 109 countries during 1992–2010, showed that the direction of this effect is dependent on the level of economic development of countries (poor or rich). Furthermore, they concluded that trade openness has a positive impact on institutional quality in rich countries and has a negative impact on poor countries.

Bhattacharyya (2012) after using data of 103 countries from 1980 to 2000 highlights the impact of trade openness on the quality of institutions. Other findings of this study are that this result relative to the different criteria from the considered variables and in different examples is robust and the results are not changed relative to the selection of the indicators and the time period.

4 Globalization and Institution: The Case of Developing Courtiers

In order to analyze the trends of globalization and institutional quality, subindexes of the Globalization Index (KOF)[7] and subindexes of the World Governance Index (WGI)[8] are used, respectively. In this chapter, data from 2001 to 2015 are used for subindexes including *control of corruption, rule of law, the quality of regulation, government effectiveness, and voice and political stability*. Furthermore, data of subindexes of the globalization are used such as *KOF Economic Globalization Index (KOFEcGI), KOF Social Globalization Index (KOFSoGI), and KOF Political Globalization Index (KOFPoGI)*.

Although these data only exist for 1970 and after that, to coordinate with the data of the WGI subindex, data from the period of 2001 to 2015 are used. These data are available for the world, MENA, and other categories and each individual country. World Bank provides WGI index for countries including *high income, low income, lower middle income, and upper middle income*. Regarding this fact, most developing countries are not among countries with high income; therefore, in the present study, the simple average of data of low-income, lower middle-income, and upper middle-income countries are considered as a proxy of developing countries.

The globalization trends in the world, developing countries, and MENA countries are shown in Fig. 3. As it is clear from Fig. 3a, from 2001 to 2008, economic, political, and social globalization indexes in the world have been almost the same and do not seem appropriate (a figure of all three indexes is about 60); but from 2009 onward and until 2015, the situation of political globalization appeared to be better than social and economic. In developing countries, as shown in Fig. 3b, the situation is different. In these countries, the index of political globalization has risen from about 51 in 2001 to about 61 in 2015, and it has been a better situation than economic globalization and also social globalization. Indeed, in these countries social globalization has improved over time, but with the exception of 2013–2015, there has always been a worse situation than economic and political globalization.

The situation of MENA countries between developing countries is different. In these countries, the trend of political globalization has been faster than developing

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[7]https://www.kof.etz.ch/en/forecasts-and-indicators/kof-globalisation-index.html

[8]http://info.worldbank.org/governance/wgi/#home
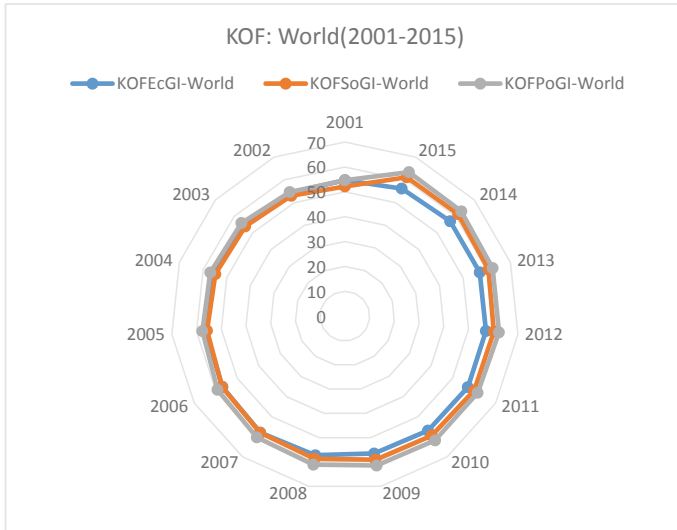
a
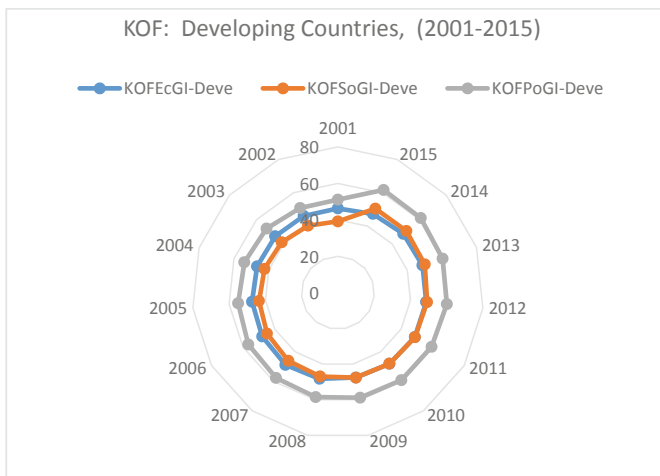
b

Fig. 3 Globalization trends: the world, developing countries, and MENA (2001–2015). (**a**) World, (**b**) developing countries, (**c**) MENA countries, (**d**) world, developing countries and MENA. Source: Authors' own figures

countries and even than that of the world, but unlike other developing countries, economic globalization has been faster than social globalization (Fig. 3c).

The comparison of three dimensions of globalization in the world, developing countries, and MENA countries is shown in Fig. 3d. This figure showed that the trend of political globalization in the MENA countries has the fastest and best
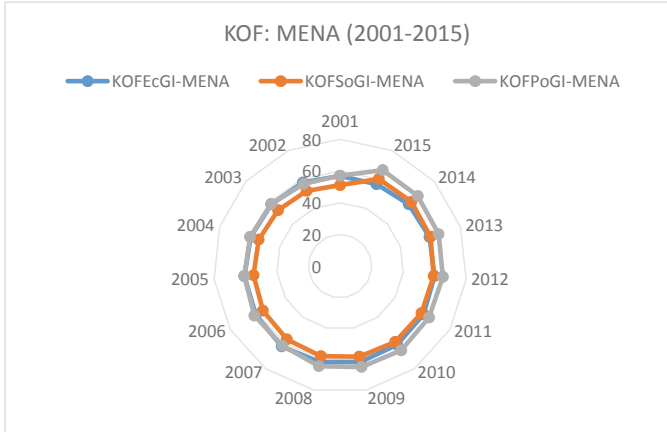
c
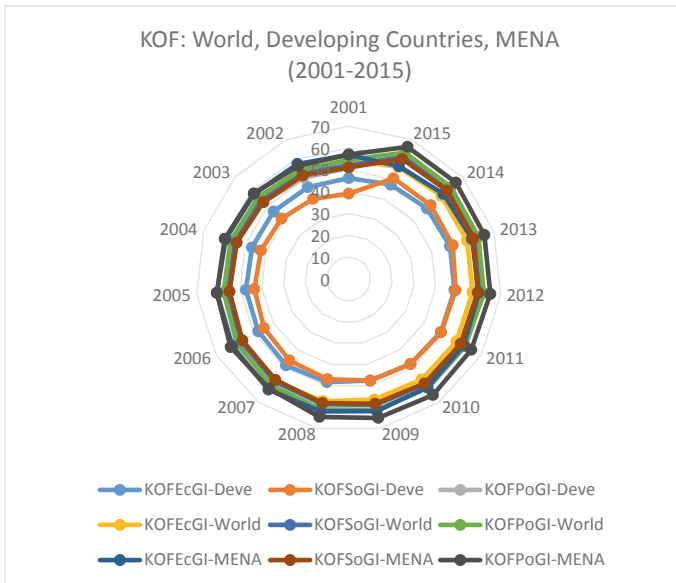
d

Fig. 3 (continued)

conditions and the trend of social globalization, and in the next stage, globalization in the developing countries is in the worst condition.

Another important point based on Fig. 3d is that the trend of globalization is improving in all three dimensions, although economic and social globalization in developing countries is far from the other dimensions of globalization in the world.

The status of institutional quality in developing countries and the MENA countries is illustrated in Fig. 4. In developing countries, institutional quality is in an
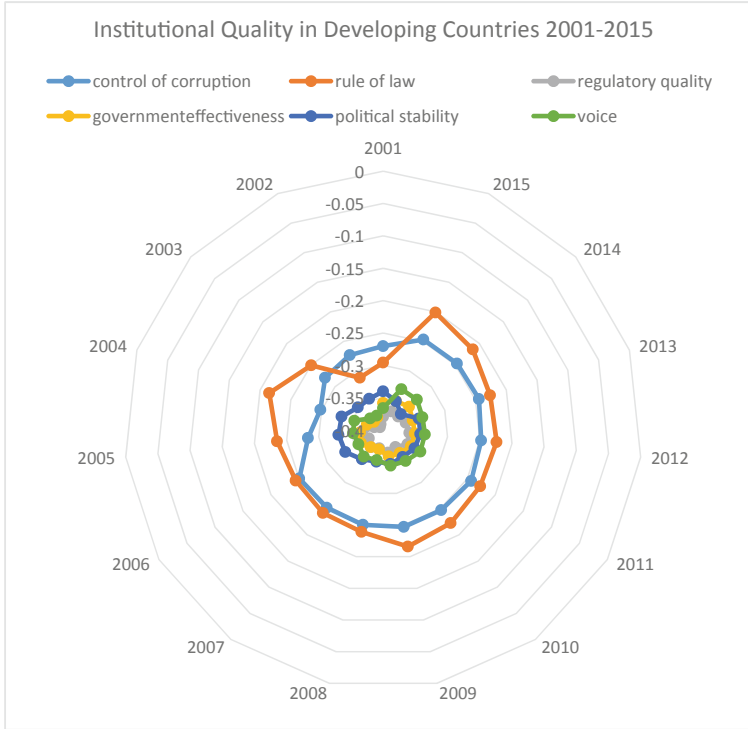
a
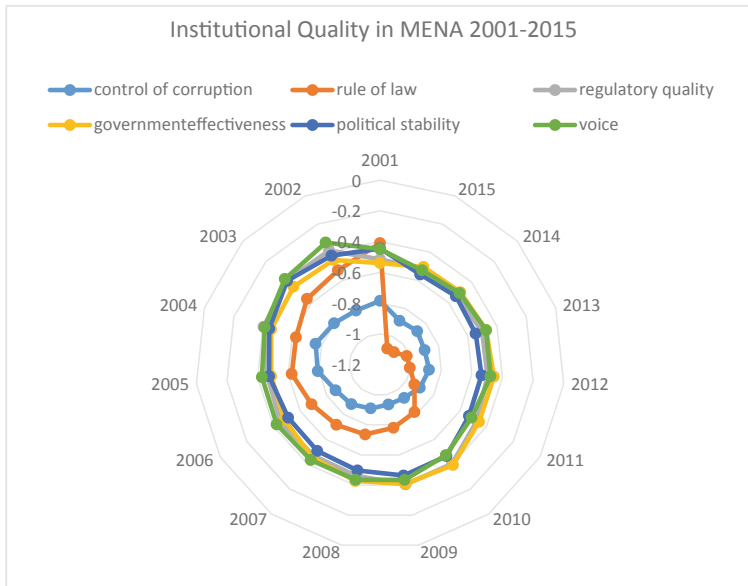
b

Fig. 4 Institutional quality trends: developing countries and MENA (2001–2015). (**a**) Developing countries, (**b**) MENA countries, (**c**) developing countries and MENA. Source: Authors' own figures

c
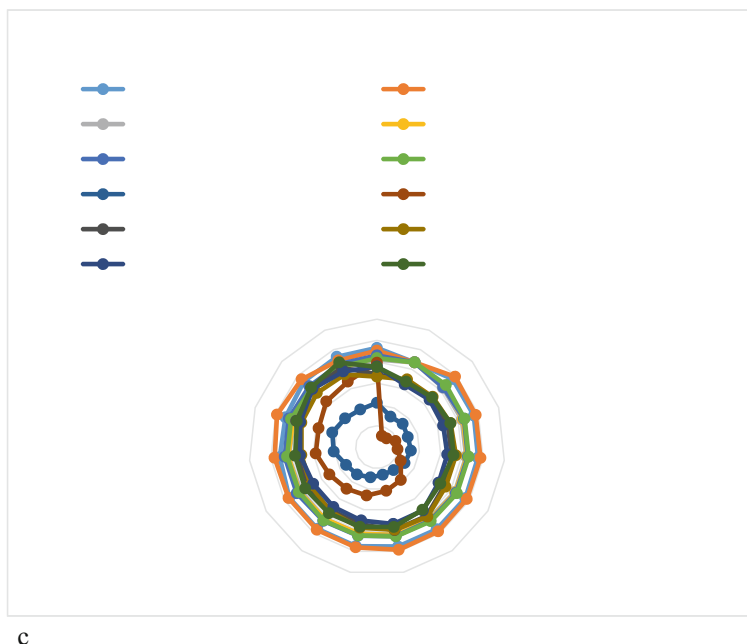
Fig. 4 (continued)

inappropriate status (Fig. 4a). In these countries, *the quality of regulation, government effectiveness, and voice and political stability* have the same condition and are in the worst situation. But the rule of law compared to other subindexes has a relatively better condition, and it showed the improvement of trend. Nevertheless, *the quality of regulation and government effectiveness* is in the worst status. Based on Fig. 4b, institutional quality in the MENA countries has an inappropriate situation compared to other developing countries, and especially the *rule of law* and the *control of corruption*—which are vital to trade—have the worst situation. The trend of the *rule of law* has worsened every year since 2001 and has become an inappropriate trend. In these countries, the *control of corruption* has the most inappropriate, and *voice* has the most appropriate situation.

The comparison of the situation of these indexes in MENA countries and other developing countries is presented in Fig. 4c. According to Fig. 4c, *the political stability and the rule of law* in the MENA countries have the worst situation, and the *rule of law* and the *control of corruption* in the developing countries are at the best situation. However, the value and trend of all indexes in these countries have an inappropriate situation.

Based on the abovementioned data, it can be concluded that the trend of economic globalization in developing countries in comparison with the world trend is inappropriate. Also, the situation of institutional quality in these countries is not desirable, so that the quality of regulation and government effectiveness have the worst

situations. These factors play a vital role in the expansion of trade. Now, this question arises: What is the relationship between economic globalization and the quality of economic-legal institutions (rule of law, regulatory quality, and government effectiveness) in developing countries? Also, what is the relationship between other dimensions of globalization (political and social) and the quality of political institutions (such as political stability and voice) and the quality of social institutions (such as control of corruption) in the short run and long run?

To answer these questions, and testing the hypothesis 1–4, Granger-type causality test has been used.[9]

The results presented in Table 2 reveal that there is no causal relationship between economic globalization and legal-economic institutions (*rule of law and government effectiveness*) in the short run (H4 is accepted) but there is at least one causal relationship in the long run (H1, H2, and H3 are accepted). This relationship with the indexes of the *rule of law* is bidirectional and with other indexes is unidirectional. These results are justified for developing countries by considering the inappropriate trend of the economic globalization and the inappropriate situation of government's effectiveness.

Social globalization has a unidirectional causal relationship with the quality of social institutions (control of corruption) in both the short run and long run. As it can be seen, although the situation of social globalization in developing countries is worst, the trend continues to improve, and control of corruption in these countries is in a better situation than that of the other subindexes and the control of corruption

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[9]Three-step methodology has been used in this chapter. In the first step, a Pesaran (2007) cross-sectional dependency test is used to determine the cross-sectional dependency or independency. In the second step, based on the results of these tests, we use Pesaran's CIPS unit root test. In the third step, we used the panel vector error correction model (PVECM) as Eqs. (1) and (2):

$$\Delta \text{Glob}_{it} = \sum_{j=1}^{n} b_{1j} \Delta \text{Glob}_{i,t-j} + \sum_{j=1}^{n} c_{1j} \Delta \text{Insti}_{i,t-j} + d_1 \text{ECT}_{i,t-1} + \Delta \varepsilon_{1it} \quad (1)$$
$$\Delta \text{Insti}_{it} = \sum_{j=1}^{n} b_{2j} \Delta \text{Glob}_{i,t-j} + \sum_{j=1}^{n} c_{2j} \Delta \text{Insti}_{i,t-j} + d_2 \text{ECT}_{i,t-1} \Delta \varepsilon_{2it} \quad (2)$$

where Δ indicates the first-order difference of the variables and $\text{ECT}_{i,\,t-1}$ is the error correction term with lag (1). Glob stands for subindexes of the Globalization Index (KOF), and Insti stands for subindexes of the World Governance Index. Also n and m are optimal lag length which are determined by some information criteria. According to the estimation of Eqs. (1) and (2) and by the joint significance test, the coefficients of the endogenous variables and the coefficient of ECT can perform the short-term and long-term *Granger-type causality test*. If the coefficient of ECT in Eq. 1 (2) is statistically significant, it can be said that the institution's quality (globalization) causes globalization (institutional quality) in the long run. If two variables are significant ($d_1 = d_2 \neq 0$), thus there is a bidirectional causality between two variables. But for diagnosing the existence or lack of causality in the short term between these variables, the hypotheses test of 3 and 4 should be done:

$$H_0 : c_{11} = c_{12} = \ldots = c_{1n} = 0 \quad (3)$$
$$H_0 : b_{21} = b_{22} = \ldots = b_{2n} = 0 \quad (4)$$

The alternative hypothesis in these cases is that at least one of c_{1j} or b_{2j} is different from zero. If the null hypothesis of the 3 (4) is rejected, then institutional quality (globalization) causes globalization (institutional quality). Otherwise, if the hypotheses 3 and 4 are rejected simultaneously, the direction of causality will be bidirectional.

Table 2 Granger-type causality test between dimensions of globalization and institutions in developing countries (2001–2015)

Globalization and institution indexes	Short-run causality	Long-run causality
KOFPoGI and political stability	KOFPoGI → political stability (H2 is accepted)	KOFPoGI ⇄ political stability (H3 is accepted)
KOFPoGI and voice	KOFPoGI → voice (H2 is accepted)	KOFPoGI → voice (H2 is accepted)
KOFEcGI and rule of law	KOFEcGI → rule of law (H4 is accepted)	KOFEcGI ⇄ rule of law (H3 is accepted)
KOFSoGI and control of corruption	KOFSoGI → control of corruption (H2 is accepted)	KOFSoGI → control of corruption (H2 is accepted)
KOFEcGI and regulatory quality	KOFEcGI ← regulatory quality (H1 is accepted)	KOFEcGI ← regulatory quality (H1 is accepted)
KOFEcGI and government effectiveness	KOFEcGI → government effectiveness (H4 is accepted)	KOFEcGI → government effectiveness (H2 is accepted)

Source: Authors' own table

KOFEcGI KOF Economic Globalization Index, *KOFSoGI* KOF Social Globalization Index, *KOFPoGI* KOF Political Globalization Index

has improved. Therefore, it can be concluded that the improvement of the social globalization in these countries will lead to improvements in the situation of social institutions. Also, there is at least one unidirectional causal relationship from political globalization to the quality of political institutions (political stability and voice) in these countries in the short and long term. These results are also justified by the situation of developing countries.

Another important point is that the quality of the various dimensions of institutions in developing countries is influenced by the corresponding dimensions of globalization and can support the *globalization view of institutional quality* hypothesis in these countries. Also it can be said that the increasing political stability and better rule of law can help the process of political and economic globalization in these countries in the long run.

5 Discussion

The main finding of the empirical part of the present chapter indicates that institutional quality is inappropriate and the trend of globalization, especially the economic globalization, in developing countries is not appropriate. Also, the results of the causality test revealed that different dimensions of globalization (especially in the long run) are the causes of institutional quality. Although the results of the

present study should be cautious, they will be defended for various reasons. Some of these reasons include:

1. In a rent-seeker-friendly economy, as rents are a dominant activity and a barrier to improving institutional quality, the economic globalization (trade openness) cannot eliminate rents. Therefore, moving toward globalization will not noticeably affect institutional improvement (Stefanadis 2010; Levchenko 2012). It's evident that, as the institutional structure of most developing countries is rent-seeker-friendly, it is expected that in these countries, even with a move toward globalization, there will be no noteworthy improvement in institutional quality.

2. The nondemocratic political system in a country and the concentration of political power in the hands of especial groups will lead to the creation and strengthening of bad institutions (Do and Levchenko 2009). In such condition, while economic globalization has both foreign competition and political power effects, the impact of political power effect dominates on the foreign competition effect, and it causes the negative impact of globalization on the institutional quality. These analyses are more consistent with the situation of developing countries.

3. The existence of abundant natural resources and the phenomenon of Dutch disease, along with weak institutional quality, cause an increase in the productivity of opportunistic behaviors, and thus the economic globalization cannot improve the quality of institutions (Bergh et al. 2014). The economic structure of most developing countries, especially the MENA countries, is in such a way that there are many natural resources in these countries.

4. If the circulation of information is weak and people are misinformed, inefficient institutions will be strengthened and lasting. In such a situation trade openness is unable to increase the circulation of information, and it has no positive impact on institutional quality (Bergh et al. 2014). Such a situation exists in developing countries as well.

5. If the uncertainty, instability, and corruption in the society extended, people will have a shorter horizon (Bergh et al. 2014). Such situations exist in developing countries. In this condition, due to a lot of corruption and instability, there is no motivation to improve institutions in order to gain benefit from these conditions by powerful groups, and thus institutional condition cannot be noteworthily improved, even under the condition of expansion of trade.

6 Concluding Remarks

Various (Orthodox and Heterodox) theories exist to illustrate the factors affecting trade in goods and services. Fundamental emphasis of *Orthodox views* is based on the characteristics of trade partners. However *Heterodox views* have emphasized on the quality of institutions which is an important factor for the trade of various kinds of goods and services. Institutions and good institutional quality from various channels lead to a change in the volume, structure, and composition of the trade. These channels include *reducing rents, reducing monopolies, reducing entry*

barriers, reducing friction of information, enhancing trust, the forming of relative advantage, guarantees of legal security and security of contracts, the strength of the legal system, etc. But it should be noted that the amount and direction of influence depend on the kind of institutional systems and institutional structure.

On the other hand, globalization and, in particular, the trade openness, via various channels such as *changes of rents, technology transfer, foreign competition effect and political power effect*, etc., affect the quality of institutions and can lead to improvement or deterioration of institutional quality. Trade openness which depends on the institutional structure of the country can have a positive or negative impact on the institutional quality of the country. If the country's economic structure is rent-seeker-friendly (a feature of most developing countries), trade openness will destroy the institutions and institutional quality, but in producer-friendly economies (mostly in the countries of North regions), trade openness will improve institutional quality. If, after trade openness, the country is engaged in the production and the export of institutionally intensive goods and gain benefits from the related rents, there will be strong motivation for deterioration of institutional quality in these countries. The transfer of technology through trade openness in developing countries leads to increases in the political power of the middle-income group, and the motivation to create and strengthen the good or bad institutions will occur. Depending on institutional conditions in these countries, creation of bad institutions and deterioration of institutional quality will occur.

There are various studies that examine the impact of different kinds of institutions on trade of goods and services. These studies have been done by using time series data (in national and provincial levels), panel data, and different types of goods and institutions. The common finding of most studies related to the impact of legal-economic institutions (mainly contract institutions and property rights institutions) is that the improvement of the situation of these institutions leads to the expansion of the production and trade of goods and services. Furthermore, in various empirical studies, the impact of economic globalization on the quality of institutions has been investigated with the panel data, but the same result has not been achieved. The type and direction of this effect vary depending on the level of economic development of the countries, the amount of available natural resources, the type of indexes used, and so on. The common theme of most studies is that initially the direction of causality (from the economic globalization to the institutional quality or vice versa) is assumed, and then, the effect of these variables has been theoretically or empirically investigated. In a few studies such as in Nicolini and Paccagnini (2011), the investigation of the direction of causality between trade openness and institutions is taken into consideration.

In addition, there are fewer studies that specifically focused on the developing countries. Accordingly, the purpose of this chapter was to fill such a research gap. The findings point to the inappropriate situation of economic globalization and institutional quality, in particular the quality of regulation and government effectiveness in developing countries. Also the control of corruption has no appropriate situation in these countries. Accordingly, there is no causal relationship between these two variables in developing countries in the short run.

The overall finding of the present study shows that mostly there is at least one unidirectional causal relationship between various dimensions of globalization and different types of institutions—from globalization to institutions in developing countries. Therefore, in general we can support the *globalization view of institutional change* cautiously. Therefore, it is suggested that policy-makers in developing countries gain benefit from the advantages of globalization, try to improve the institutional quality of their countries (to a certain threshold), and effort to create and strengthen good institutions.

Empirical analysis in this chapter has been done with some limitations. (1) The time period which is considered in the present study was short because of a lack of data related to the WGI subindexes. (2) Several proxy variables for globalization and institutional quality are used, while there are various indexes. Accordingly, the findings of the present study should be considered with precaution. Regarding this fact that a unique interpretation cannot present for all countries, it is suggested that, in future studies, the causal relationship between the proxies for globalization and institutional quality at the national level with more data and various indexes should be investigated. By accessing more data, other econometric methods can be used.

References

Acemoglu D, Johnson S (2005) Unbundling institutions. J Polit Econ 113(5):949–995

Acemoglu D, Johnson S, Robinson J (2005) The rise of Europe: Atlantic trade, institutional change and economic growth. Am Econ Rev 95(3):546–579

Acemoglu D, Johnson S, Robinson J, Thaicharoen Y (2003) Institutional causes, macroeconomic symptoms: volatility, crises and growth. J Monet Econ 50:49–123

Acemoglu D, Robinson J (2006) Economic origins of dictatorship and democracy. Cambridge University Press, New York

Al-Marhubi FA (2005) Openness and governance: evidence across countries. Oxf Dev Stud 33: 453–471

Álvarez IC, Barbero J, Rodríguez-Pose A, Zofío JL (2018) Does institutional quality matter for trade? Institutional conditions in a sectoral trade framework. World Dev 103:72–87

Araujo L, Mion G, Ornelas E (2016) Institutions and export dynamics. J Int Econ 98:2–20

Asongu SA, Biekpe N (2017) Globalization and terror in Africa. Int Econ. https://doi.org/10.1016/j.inteco.2017.12.005

Aziz N, Hossain B, Mowlah I (2018) Does the quality of political institutions affect intra-industry trade within trade blocs? The ASEAN perspective. Appl Econ. https://doi.org/10.1080/00036846.2018.1430336

Baccini L (2014) Cheap talk: transaction costs, quality of institutions, and trade agreements. Eur J Int Relat 20(1):80–117

Bergh A, Mirkina I, Nilsson T (2014) Globalization and institutional quality: a panel data analysis. Oxf Dev Stud 42(3):365–394

Bhattacharyya S (2012) Trade liberalization and institutional development. J Policy Model 34: 253–269

Bonaglia F, de Macedo JB, Bussolo M (2001) How globalization improves governance. OECD Working Papers, 181

Czinkota MR, Skuba CJ (2014) Contextual analysis of legal systems and their impact on trade and foreign direct investment. J Bus Res 67:2207–2211

De Groot HLF, Linders G-J, Rietveld P, Subramanian U (2004) The institutional determinants of bilateral trade patterns. KYKLOS 57(Fasc. 1):103–124

Depken CA II, Sonora RJ (2005) Asymmetric effects of economic freedom on international trade flows. Int J Bus Econ 4(2):141–155

Desroches B, Francis M (2006) Institutional quality, trade, and the changing distribution of world income. Bank of Canada Working Paper 2006-19

Djankov S, LaPorta R, Lopez-de-Silanes F, Shleifer A (2002) The regulation of entry. Q J Econ 117(1):1–37

Do QT, Levchenko AA (2009) Trade, inequality, and the political economy of institutions. J Econ Theory 144:1489–1520

Fainshmidt S, Judgeb WQ, Aguilerac RW, Smith A (2018) A varieties of institutional systems: a contextual taxonomy of understudied countries. J World Bus 53:307–322

Feenstra RC, Hong C, Mad H, Spencer BJ (2013) Contractual versus non-contractual trade: the role of institutions in China. J Econ Behav Organ 94:281–294

Francois J, Manchin M (2013) Institutions, infrastructure, and trade. World Dev 46:165–175

Gani A, Clemes MD (2013) Modeling the effect of the domestic business environment on services trade. Econ Model 35:297–304

Gani A, Clemes MD (2016) Does the strength of the legal systems matter for trade in insurance and financial services? Res Int Bus Financ 36:511–519

Gwartney J, Lawson R (2005) Economic freedom of the world 2005 annual report. The Fraser Institute

International Monetary Fund (2005) World economic outlook: building institutions. International Monetary Fund, Washington, DC

Kant C (2016) Are institutions in developing countries malleable? J Policy Model 38:272–289

Kant C (2018) Financial openness & institutions in developing countries. Res Int Bus Financ. https://doi.org/10.1016/j.ribaf.2018.03.001

Levchenko AA (2004) Institutional quality and international trade. IMF Working Paper WP/04/231

Levchenko AA (2007) Institutional quality and international trade. Rev Econ Stud 74(3):791–819

Levchenko AA (2008) International trade and institutional change. University of Michigan, Mimeo

Levchenko AA (2011) International trade and institutional change. NBER Working Paper No 17675

Levchenko AA (2012) International trade and institutional change. J Law Econ Organ 29(5): 1145–1181

Long C, Yang J, Zhang J (2015) Institutional impact of foreign direct investment in China. World Dev 66:31–48

Manolopoulos D, Erifili C, Constantina K (2018) Resources, home institutional context and SMEs' exporting: direct relationships and contingency effects. Int Bus Rev. https://doi.org/10.1016/j.ibusrev.2018.02.011

Moenius J, Berkowitz D (2011) Law, trade, and development. J Dev Econ 96:451–460

Mossalanejad A (2014) Institutionalism and globalization. University of Tehran Press [in Persian]

Muye IM, Muye IY (2017) Testing for causality among globalization, institution and financial development: further evidence from three economic blocs. Bursa Istanbul Rev 17(2):117–132

Nicolini M, Paccagnini A (2011) Does trade foster institutions? Rev Econ Inst, 2

North D (1981) Structure and change in economic history. W.W. Norton, New York

Nunn N (2007) Relationship-specificity, incomplete contracts, and the pattern of trade. Q J Econ 122(2):569–600

Nunn N, Trefler D (2014) Domestic institutions as a source of comparative advantage. In: Gopinath G, Helpman E, Rogoff K (eds) Handbook of international economics, vol 4. Elsevier, Amsterdam, pp 263–315

Palangkaraya A, Jensenb PH, Webster E (2017) The effect of patents on trade. J Int Econ 105:1–9

Pesaran MH (2007) A simple panel unit root test in the presence of cross section dependence. J Appl Econ 22:265–312

Potrafke N (2013) Globalization and labor market institutions: international empirical evidence. J Comp Econ 41:829–842

Ranjan P, Lee JY (2007) Contract enforcement and international trade. Econ Polit 19(2):191–218

Renani M, Moayedfar R (2012) The decline cycles of morals and economy: the social capital and development in Iran. Tarh-E-No Press, Tehran

Samadi AH (2008) Property rights and economic growth: an endogenous growth model. Unpublished Ph.D. Dissertation, Isfahan University, Iran

Samadi AH (2018) Institutions and entrepreneurship in MENA countries. In: Faghih N, Zali MR (eds) Entrepreneurship ecosystem in the Middle East and North Africa (MENA), contributions to management science. Springer International Publishing AG. https://doi.org/10.1007/978-3-319-75913-5_3

Samadi AH, Amareh J (2010) Economic crimes, income inequality and economic development: the case of Iran (1983-2006). Journal of Economic Essays 7(14). Autumn & Winter 2010

Stefanadis C (2010) Appropriation, property rights institutions, and international trade. Am Econ J Econ Pol 2(4):148–172

Stieglitz JE (2002) Globalization and its discontents. W.W. Norton

Tang H (2012) Labor market institutions, firm-specific skills, and trade patterns. J Int Econ 87:337–351

Tavares SC (2007) Do rapid political and trade liberalizations increase corruption? Eur J Polit Econ 23(4):1053–1076

Wei SJ (2000) Natural openness and good government. NBER Working Paper 7765

Young AT, Sheehan KM (2014) Foreign aid, institutional quality, and growth. Eur J Polit Econ 36:195–208

Yu M (2010) Trade, democracy, and the gravity equation. J Dev Econ 91:289–300

Yu S, Beugelsdijk S, de Haan J (2015) Trade, trust and the rule of law. Eur J Polit Econ 37:102–115

A Taxonomy of Country Performance Based on GDP and Innovation Indicators for the Group of Twenty (G20)

Nezameddin Faghih and Mahshid Sazegar

Abstract This chapter proposes a taxonomy of country performance based on GDP and innovation indicators within G20 economies. This study considers the impact of GDP on the "development degree" (fi) for the G20 economies and investigates how the development of G20 economies relates to the innovation promotion factors extracted from the *Global Innovation Index* (GII) indicators, used as the secondary data for the period 2010–2016. Various variables are used, such as population (in millions), GDP (in USD billion), and seven indicators that are extracted from the GII data. Through the evaluation process, the seven indicators are divided into input and output data; five of them are the input data (institutions, human capital and research, infrastructure, market sophistication, and business sophistication), and the other two are the output data (knowledge and technology output and creative output). The taxonomy provides the identification of country performance and presents relevant information to policymakers, who seek to apply effective economic strategies and develop global policies.

1 Introduction

A group of world's major economies, G20[1] (Group of Twenty), as a leading global forum, seeks to apply effective economic strategies and develop global policies. Thus, the group attempts to promote innovation and economic growth, by utilizing accumulative capabilities, based on existing resources. The most important resources

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[1]G20 countries (Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States).

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are represented by some indicators to provide proper patterns toward methodical and stable development.

The G20 brings together substantially important advanced economies that account for over 85% of global GDP[2] and two-thirds of the world's population (G20.org. Archived). Nowadays, economic growth has an impact on increasing competitiveness and innovation among nations like G20 countries and the European Union.[3] G20 was formed in 1999 (consisting of 19 major economies plus the European Union[4]) for international collaboration in the promotion of global financial stability (Goedhuysa and Veugelers 2012).

During the depression years (especially from 2010 to 2012), the G20 economies faced many challenges that are manifested in GDP.[5] An estimate of GDP growth for the G20 aggregate, on the basis of quarterly seasonally adjusted data (as reported by G20 members), is rendered by the OECD[6] secretariat:

- Growth of real gross domestic product (GDP) in the G20 area[7] was stable, at 0.9%, in the first quarter of 2017, according to provisional estimates and comprehensive information chosen from the OECD report (in 2016).
- Growth picked up in Korea (to 1.1%, from 0.5%) and, to a lesser extent, in Canada (to 0.9%, from 0.7%), Germany (to 0.6%, from 0.4%), and Italy (to 0.4%, from 0.3%). Real GDP also grew by 1.0% in Brazil.
- Growth was unchanged in India (at 1.5%), Indonesia (1.2%), Mexico (0.7%), the European Union (0.6%), and Japan (0.3%).
- On the other hand, economic growth slowed markedly in Turkey (to 1.4%, from 3.4%) and Australia (to 0.3%, from 1.1%).

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[2]GDP (gross domestic product that is the standard measure of the value of the goods and services produced by a country during a reference period).

[3]The European Union contains 28 of the countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom).

[4]http://www.eprs.ep.parl.union.eu

[5]The study group was chaired by Canada, with the participation of Argentina, Australia, Brazil, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, the Russian Federation, South Africa, Turkey, the United States, the United Kingdom, and the European Central Bank, along with the IMF and the three technical notes for G20 GDP, Paris, 15 June 2017 News Release: G20 GDP growth Quarterly National Accounts.

[6]The OECD (the Organisation for Economic Co-operation and Development countries) is a unique forum where the governments of 30 democracies work together to address the economic, social, and environmental challenges of globalization. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy, and the challenges of an aging population. The Organization provides a setting where governments can compare policy experiences, seek answers to common problems, and identify good practice and work to coordinate domestic and international policies.

[7]See countries notes in the technical analytics notes.

- Growth also weakened in the United Kingdom (to 0.2%, from 0.7%), China (to 1.3%, from 1.7%), the United States (to 0.3%, from 0.5%), and France (to 0.4%, from 0.5%).

In South Africa, GDP declined further (to −0.2%, compared with a drop of 0.1% in the previous quarter).

Innovation policies and technology advancement create new economic benefits and opportunities to boost economic growth and lead to improvement in quality of life. A mix of innovative and highly productive industries promotes economic growth and stability, with information and communication technology playing a key role (Atkinson and Stewart 2012).

Indeed, recently an increasing general policy focus on innovation progress is observed, and not only innovation is remarked as the central phase in economic policymaking, but the perception of a coordinated, coherent, "whole-of-government" approach requirement is emphasized. This encompasses knowledge absorption and exploitation from R&D across countries and industries, and also fruitful cooperation among researchers and scientists (Van de Ven and Johnson 2006).

Access to knowledge depends on the type of research and development (R&D) activities and network governance among companies (Zalewski and Skawinska 2009). Many OECD member countries have adopted national strategic road maps to innovation and enhance its economic impacts (OECD 2017).[8]

Investing in the knowledge has produced a composite indicator of "investment in knowledge" made up of investment in R&D, investment in higher education, and investment in IT software. By this input measure, we can identify three groups of economies.[9]

- High knowledge investment economies of North America, OECD Asia, and Japan, investing around 6% of GDP
- Middle knowledge investment economies of Northern Europe and Australia, investing between 3% and 4% of GDP
- Low investment economies of Southern Europe, investing between 2% and 3% of GDP

In this decade, many transitions have occurred crucially in technology, and the developed economies achieved significant improvements. These countries generate strength and the ability to grow in the global economy. This capability in technology consists of many major elements, for instance, GDP growth, innovation, and entrepreneurship. In contemporary thinking on economic growth, one of the main views is that technological change inherently creates growth in economy (Hu and Png 2013).

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[8]OECD (2017), *Innovation in Energy Technology: Comparing National Innovation Systems at the Sectoral Level*.

[9]Defining the knowledge economy prepared by Ian Brinkley and first published July 2006 ibrinkley@theworkfoundation.com Ian Brinkley.
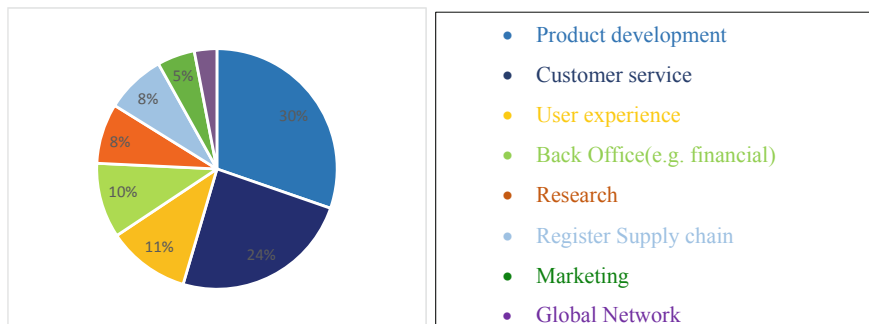
Fig. 1 The area of a business that would benefit most from innovation (% of respondents). Source: www.cbi.org.uk (Annual Conference London 2016) (authors' own figure)

The ICT sector for the European Union, the United States, and Japan is the largest R&D-investing sector.[10] The most considerable percentage of incomes in the ICT industry businesses is spent on R&D in the European Union (Veugelers et al. 2012).

The innovation subindexes rendered by GII emphasize on institution, infrastructure, research, knowledge, and technology as the determining components, highly significant in promoting economic development (GII 2017).

The societies demonstrate evidences of expanding in many layers of the economy. The interest of economists in the sources of long-run economic growth has led to exploring the role of innovation in creating growth (Encaoua et al. 2000).

R&D as the efficient force behind innovation supports economic growth. This goal achieved through effective communication, knowledge sharing, valuable information utilization, and use of appropriate channels of communication depends mainly on workforce abilities and skills, e.g., social capital, collaboration, and co-creation of both individuals and organizations. Trust within individuals and organizations is determinant in its effectiveness (Romuald and Eulalia 2009). Organizations operating on the R&D innovate a new product or process, thus extending markets and sales, promoting investment, and ultimately creating position for vocations. These firms and organizations take advantage of shared knowledge and expertise and are often the first to modify new products and generative technologies.[11] Figure 1 depicts the area of a business that would benefit most from innovation.

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[10]http://is.jrc.ec.europa.eu

[11]North Carolina Department of Commerce Office of Science, Technology & Innovation.

2   Methodology

Innovation in the GII (Global Innovation Index) consists of two categories, input and output data. Input's subindexes include institutions, human capital and resources, infrastructure, market sophistication, and business sophistication factors. Output's subindexes are knowledge, technology outputs, and creative outputs (Framework of the Global Innovation Index 2016). GII as a renowned international index which is published annually, in its 2017 report, included 127 countries which stand for 92.5% of the world population and 97.6% of world's GDP. GII overall index is the simple statistical average of five input indexes and two output ones, which are summarized in Table 1.

The GII indexes (2010–2017) corresponding to the G20 countries, together with two additional indicators, i.e., population and GDP, are compared by application of "numerical taxonomy" analysis (using matrix operations) during 2010–2016. Figure 2 depicts a description of the methodological steps.

Table 1 Input and output indexes which constitute the overall *GII*

GII's input indexes
Institution
Human capital and researcher
Infrastructure
Market sophistication
Business sophistication
GII's output indexes
Knowledge and technology outputs
Creative output

Source: Authors' own table

Step 1: Forming of Data Matrix

Step 2: Forming of Standard Matrix

Step 3: Forming of Compound Distances Matrix

Step 4: Determining of the Shortest Distance

Step 5: Drawing of Optimum Chart

Step 6: Development Ranking of Economies

Step 7: Calculation of Economies Development Degree

Step 8: Assigning of Countries Development Goals

Fig. 2 Description of methodological steps. Authors' own figure

This method of analysis forms matrices containing dimensionless elements (replacing quantities with different units of measurement or dimensions), enabling comparison of indicators by computing dimensionless numbers for matrix elements (Forouharfar et al. 2018; Sazegar et al. 2018).

A method of selecting from a data matrix the characters most likely to lead to valid conclusions is put forward, based on the concept of a uniquely derived character and its logical consequences (Le Quesne 1969). As explained in the next section (and subsections), following final measurements, a development factor (fi) is obtained with a quantitative value between zero and unity, such that an economy with a factor value less than others and closer to zero would be more developed than those closer to unity (Forouharfar et al. 2018; Sazegar et al. 2018).

3   Computations of Comparative Indexes

The computations proceed in seven steps described in the following subsections (Le Quesne 1969; Phillips 1983; Forouharfar et al. 2018; Sazegar et al. 2018).

3.1   Step 1: Development of the Data Matrix

Consider:

$$X_{oj} = \left(\sum_{i=1}^{n} X_{ij}\right)/n \tag{1}$$

The purpose of step 1 was to develop a matrix with "n" members $(1, 2, 3, \ldots, n)$ to represent the variables as a group. The variables were shown with "m" (as an indicator of each study). The matrix, as it was shown in Eq. (1), consisted of "i" rows and "j" columns. Thus, the data matrices of the G20 countries were formed by using the GII's indexes data from 2010 to 2016, as shown in Tables 2, 3, 4, 5, 6, 7, and 8. It should be noted that each indicator (for the scores of the indexes and subindexes) was normalized. In the tables that follow, the subindexes of the innovation input and output for each year are placed in columns. Additionally, population, GDP, and five subindexes of institution, human capacity, infrastructure, market sophistication, and business sophistication (1–7), besides the two subindexes of knowledge (scientific outputs) and creative outputs (8–9), comprise the (GII) innovation input index and innovation output index, respectively.

Considering that the European Union (EU) is also a G20 member, consisting of 28 countries, the data for the EU was obtained as an average of each indicator for the EU members within the time span of 2010–2016.

Table 2 GII's data matrix for G20 countries in 2010

2010 (X_{ij})	Population	GDP (US $ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge creation and technology outputs	Creation output
Argentina	40.7	307.2	51.1	37.2	31.5	28.3	38.3	23.5	43.4
Australia	21.5	924.8	91	57.8	52.3	58.8	54.1	33.1	40.6
Brazil	195.4	1573.4	54.1	33.9	32.2	35.7	41.5	25.2	46.9
Canada	33.9	1336.1	93.3	53.9	53.1	63.4	58.4	42.5	54
China	1354.1	4985.5	51.7	39.9	35.4	54.1	49.3	52.7	40.9
France	62.6	2649.4	77.9	53	43.1	53.8	50.3	41.1	44.7
Germany	82.1	3330	83.5	57.5	43.2	59.3	51.6	49.8	51.7
India	1214.5	1310.2	52.3	26.9	27.7	44.6	30.8	24.8	40.3
Indonesia	232.5	540.3	53.4	29.6	24.5	32.2	28.2	18.3	25.7
Italy	60.1	2112.8	71.1	44.5	35.9	42.7	45.2	27.8	39.2
Japan	127	5069	83.8	53.7	45.4	57.9	55.9	49.8	32.8
Mexico	110.6	874.8	58.6	34.7	27	37.2	29.9	16.7	30.1
Russia	140.4	1231.9	51.8	45.1	25.8	36.4	44.9	32.9	28.9
Saudi Arabia	26.2	369.2	67.5	40.4	27.8	52.7	41.3	18.3	35.6
South Africa	50.5	285.4	71	30	24.8	63.9	42.3	21.5	26.6
South Korea	48.5	832.5	77.4	59.9	48.2	61.8	49.8	53.7	42.2
Turkey	75.7	614.6	62.1	32.9	27.5	38	29.4	18.9	41.6
United Kingdom	61.9	2174.5	86.4	56.1	43.6	74.4	57.8	52.3	44.3
United States	317.6	14,119	86.5	57.4	44.6	70.9	54.8	57.4	43.2
European Union	501.800	608.633	80.707	50.493	38.389	50.793	48.937	37.374	42.211
Sum	4757.60	45,249.23	1405.21	894.89	731.99	1016.89	902.74	697.67	794.91
Ave. (X_{gi})	237.88	2262.46	70.26	44.74	36.60	50.84	45.14	34.88	39.75

Source: Authors' own work based on GII data

Table 3 GII's data matrix for G20 countries in 2011

2011 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	40.9	435.2	44.9	39.1	37.3	31.3	40.6	24.3	36
Australia	22.5	1507.4	90	53.3	56.3	63.2	54	34.9	45.9
Brazil	194.9	2517.9	50.4	31.5	39.1	35.6	44.4	30.5	35.4
Canada	34.4	1758.7	95	53.2	55.2	68.4	57.4	46.4	49.7
China	1348.1	6988.5	39.1	31.4	44.3	47.8	50.9	61.8	34.4
France	63.2	2808.3	82.7	55.1	54.5	52	51.3	45.5	43.3
Germany	81.4	3628.6	76.7	55.4	55.1	54.9	51.7	54.9	52.6
India	1206.9	1843.4	38.4	18.5	31	44.6	37.6	34	40.7
Indonesia	240.5	834.3	25.4	29.9	30.5	33	34.2	20.4	30.6
Italy	60.6	2245.7	70.2	44.7	53.5	41.1	47.8	38.2	36.8
Japan	127.9	5855.4	79	54.6	61.6	57.7	53.6	51.7	32.3
Mexico	109.7	1185.2	55.9	31.8	38.4	36.8	36.1	22.3	29.5
Russia	142.4	1884.9	49.1	43.8	37.8	35	44.3	38.4	29.1
Saudi Arabia	28.2	560.3	63.8	44.8	42.6	47.5	47.5	15.3	43.4
South Africa	50.6	422	69.7	27.2	30.8	62.5	41.9	28.2	28.8
South Korea	49	1163.8	73.8	59	64.2	60.5	51.7	57.5	34.3
Turkey	72.2	763.1	50	31.8	34	39.4	32.5	27.8	33.7
United Kingdom	62.6	2481	90.4	53.8	61.8	76.6	57.3	57.6	51.4
United States	312.9	15,064.8	85.1	53.4	56.1	76.8	59.9	56.1	42.2
European Union	504.600	643.729	77.814	50.304	50.800	50.889	49.596	45.468	44.168
Sum	4753.500	54,592.229	1307.414	862.604	934.900	1015.589	944.296	791.268	774.268
Ave. (X_{oj})	237.675	2729.611	65.371	43.130	46.745	50.779	47.215	39.563	38.713

Source: Authors' own work based on GII data

Table 4 GII's data matrix for G20 countries in 2012

2012 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	42.2	474.8	50.7	36.7	35	37.3	34.2	25.6	47.5
Australia	23.8	1542.1	89.4	57.8	52.7	72.7	48.2	30.9	53.1
Brazil	201.5	2425.1	53.8	30.3	37.2	44.9	38	26.5	37.2
Canada	36.1	1770.1	93.3	49.4	53	78.8	49.3	44.4	56.5
China	1374	8250.2	48.3	40.6	39.8	54.2	42.9	56.4	31.9
France	67	2580.4	79	54.6	52.4	63.1	46.1	44.3	49
Germany	86.3	3366.7	82.5	54.3	53.5	62.8	45.9	49.1	54.7
India	1267.6	1946.8	51.9	21.7	27.5	49.5	28.3	34.5	38.6
Indonesia	246.8	894.9	37.2	24.3	29.1	41.2	25	24.3	40.8
Italy	64.7	1980.4	73.6	43.2	51	54.7	44.1	41.7	43
Japan	135.2	5984.4	83.5	57.2	56.3	69.7	47.4	44.6	38.7
Mexico	117.8	1162.9	61.8	31.9	35.5	45.6	28.9	23.4	42.4
Russia	147	1953.6	56	44.1	37.2	45.4	36.1	30.4	30.8
Saudi Arabia	28.9	657	58.4	39.8	40.6	53.5	37.2	24.8	48.2
South Africa	51.1	390.9	70.1	23.7	28.5	66	31.5	24.7	37.8
Republic of Korea	49.7	1151.3	76	64.8	60.7	65.7	43.3	47.8	41.3
Turkey	75.2	783.1	55.8	29.8	31.2	47.5	25.7	30.4	37.8
United Kingdom	65.8	2433.8	88.4	56.2	59.4	84.6	52.3	51.1	57.5
United States	327.9	15,653.4	86	61.1	52.5	87.1	59.2	53.6	49.2
European Union	532.400	588.286	80.004	47.743	47.789	57.893	43.046	39.586	49.264
Sum	4941.000	55,990.186	1375.704	869.243	880.889	1182.193	806.646	748.086	885.264
Ave. (X_{oj})	247.050	2799.509	68.785	43.462	44.044	59.110	40.332	37.404	44.263

Source: Authors' own work based on GII data

Table 5 GII's data matrix for G20 countries in 2013

2013 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	41.1	488.2	49.1	38.3	38	37.7	32.9	25.2	36.9
Australia	22.7	1505.3	88.9	61.8	60.1	68.1	43.9	38.5	52.5
Brazil	198.7	2242.9	53.9	31.1	39.2	45.2	39.3	28.1	33.6
Canada	34.9	1825.1	92.7	56.4	58.4	75.9	48	43.7	48.3
China	1350.7	9181.4	48.3	43.4	45	50.5	41.8	59	35.7
France	65.7	2737.4	78.6	55.9	54.7	61	47.4	44.2	45.5
Germany	81.9	3636	82.7	56.3	56.3	60.1	46.1	53.1	50.4
India	1236.7	1870.7	50.8	22.7	32.1	51.2	28	32.2	28.6
Indonesia	246.9	870.3	38.1	22.8	33.1	45.3	22.8	23.2	39.2
Italy	60.9	2072	73.2	42.1	49.8	51	40	42.7	37.5
Japan	127.6	4901.5	84.1	54.4	58.9	66.8	46.8	47.2	38.1
Mexico	120.8	1258.5	61.8	32.5	39.9	46.9	29.9	26.9	32.9
Russia	143.5	2118	56.4	44.5	41.1	42.5	34.3	37.6	31.4
Saudi Arabia	28.3	745.3	60	35.6	47	59	37.6	25.7	45
South Africa	51.2	350.8	69.9	28.7	32.9	63.8	32.7	29.1	32.7
Republic of Korea	50	1221.8	75.8	64.1	62.8	65.4	42.7	54.5	42.2
Turkey	74	827.2	54.9	33.3	35.6	49.1	25.4	32.3	41.2
United Kingdom	61.2	2535.8	88.6	60.3	60.6	81.4	50.2	56.4	56.6
United States	313.9	16,399.7	86.2	58.3	57.5	83.8	53.7	58.1	46.5
European Union	506.800	620.425	79.850	46.675	49.671	55.696	42.211	42.475	46.114
Sum	4817.500	57,408.325	1373.850	889.175	952.671	1160.396	785.711	800.175	820.914
Ave. (X_{oj})	240.875	2870.416	68.693	44.459	47.634	58.020	39.286	40.009	41.046

Source: Authors' own work based on GII data

Table 6 GII's data matrix for G20 countries in 2014

2014 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	41.8	540.2	48	37.7	38.2	35.9	36.3	22.2	36.5
Australia	23.6	1444.2	89.3	57	63.7	66.7	47.4	34.8	56.5
Brazil	202	2353	55.8	30.1	40.1	44.3	41.6	25.4	29.6
Canada	35.5	1788.7	92.7	49	60.9	73.5	49.3	41.9	50.9
China	1393.8	10,380.4	54	43.1	50.5	49.2	44.9	58	35.1
France	64.6	2846.9	81.7	55.5	60.8	59	49.3	41.1	50.8
Germany	82.7	3859.5	83.2	56.6	56.7	59.2	49.2	53.4	52.8
India	1267.4	2049.5	50	20	34.6	46.5	26.4	30.1	25.9
Indonesia	252.8	888.6	39.8	24.3	35.6	44.4	24.6	20.9	30.8
Italy	61.1	2148	73.8	41.3	57.6	53.6	40.6	41.2	37.6
Japan	127	4616.3	86.5	55	63.1	64.3	50.4	48.6	39.6
Mexico	123.8	1282.7	61.5	34.3	39.5	47	36.9	29.4	35
Russia	142.5	1857.5	56.6	47.5	40.6	43.5	38.4	36.6	30.1
Saudi Arabia	29.4	752.5	60.4	39.8	50.2	50.3	35.8	25.1	42.9
South Africa	53.1	350.1	71.6	27.4	33.9	59.1	34	28.3	31.1
South Korea	49.5	1416.9	76.1	64.8	62.4	63.3	45.2	56.7	43.6
Turkey	75.8	806.1	55.8	35.9	41	49.5	26.3	27.2	40.6
United Kingdom	63.5	2945.1	87.3	57.5	63	74.3	53.6	54.9	60.5
United States	322.6	17,418.9	86.8	54	58.8	81.5	55.4	58	47.8
European Union	510.300	660.554	80.246	45.936	52.493	55.854	44.189	40.614	48.296
Sum	4922.800	60,405.654	1391.146	876.736	1003.693	1120.954	829.789	774.414	825.996
Ave. (X_{aj})	246.140	3020.283	69.557	43.837	50.185	56.048	41.489	38.721	41.300

Source: Authors' own work based on GII data

Table 7 GII's data matrix for G20 countries in 2015

2015 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	43.4	585.6	47.2	37.3	43.3	34.7	30.8	18	25.3
Australia	24	1223.9	88.8	59.7	65.1	65.8	45	34.3	48.2
Brazil	207.8	1772.6	55.3	32.5	44.9	43.9	37	23.7	23.6
Canada	35.9	1552.4	91.7	52.9	62.3	73.6	46.5	40.9	47.1
China	1376	10,982.8	55.2	48.1	52	56.6	53.8	53.3	42.7
France	64.4	2421.6	80.4	58.9	63.7	61.9	48	41.3	49.8
Germany	80.7	3357.6	84.1	58.9	58.5	59.7	48.3	51.6	56.3
India	1311.1	2090.7	50.7	32.2	37	50.3	32.2	31	22.5
Indonesia	257.6	859	41.6	23.1	38.5	43.3	23.7	23	25.2
Italy	59.8	1815.8	72.8	46.5	59.7	53.6	37.8	38.7	41.8
Japan	126.6	4123.3	87.1	57.5	64.4	68.3	52.8	46.9	39.2
Mexico	127	1144.3	60.5	33.7	42.8	45.7	29.8	23.3	29.9
Russia	14.5	1324.7	57.9	50.4	44.5	43.1	37.5	31.9	28.7
Saudi Arabia	31.5	653.2	57.9	44.7	51.4	49.6	31.3	22.4	34.6
South Africa	54.5	313	69.1	33.1	37.4	58.7	32.2	24.7	26.5
South Korea	50.3	1376.9	75.4	66.9	63.3	62	50.1	54.1	47.4
Turkey	78.7	733.6	54.6	39.2	43.6	47.7	27.6	29.1	42
United Kingdom	64.7	2849.3	87.6	62.6	66.4	71.6	49.2	50.2	62.5
United States	321.8	17,947	85.7	57	61.7	86.6	52.4	56.5	51.6
European Union	505.100	579.300	79.593	48.693	55.221	51.904	42.821	40.225	47.261
Sum	4835.400	57,706.600	1383.193	943.893	1055.721	1128.604	808.821	735.125	792.161
Ave. (X_{oj})	241.770	2885.330	69.160	47.195	52.786	56.430	40.441	36.756	39.608

Source: Authors' own work based on GII data

Table 8 GII's data matrix for G20 countries in 2016

2016 (X_{ij})	Population	GDP (US$ billion)	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creation output
Argentina	43.8	541.7	46.4	42.6	46.6	37.7	33.6	17.6	27.6
Australia	24.3	1256.6	87.4	60.2	64.8	65.3	45.4	32.1	46.1
Brazil	209.6	1769.6	51.8	35.9	48.3	44.2	37.2	18.9	26.6
Canada	36.3	1532.3	91	53.3	62.1	73.7	47.8	38.7	44.8
China	1382.3	11,391.6	54.8	49.2	57.9	54.7	54.5	56.4	45.3
France	64.7	2488.3	80.7	58.1	63.4	64.3	50.6	38.5	51.4
Germany	80.7	3494.9	83.5	60.1	61.5	60	51.4	51.1	55.9
India	1326.8	2251	51.4	32.3	44.1	51.9	34.6	30.3	25.9
Indonesia	260.6	941	41.2	23	42	46	26.2	20.9	28.1
Italy	59.8	1852.5	71.9	46.3	61.8	52.6	39.6	36.1	42.9
Japan	126.3	4730.2	87.4	56.7	64.3	64.3	54.5	47.1	40.8
Mexico	128.6	1063.6	58.5	33.7	49.7	50	30.8	21.5	32.6
Russia	143.4	1267.8	56.1	50	47.5	47.1	40.3	27.6	31
Saudi Arabia	32.2	637.8	52.4	46.5	53.3	49.4	35	21.6	28.4
South Africa	55	280.4	66.3	32.8	43.4	57.4	34.4	21.5	28
South Korea	50.5	1404.4	74.5	66.2	63.4	61.6	51.1	54.7	49.4
Turkey	79.6	735.7	50.6	38.1	45.7	47.8	29.3	27.6	43.4
United Kingdom	65.1	2649.9	88.4	63.3	67.1	70.2	52.2	46.5	60.5
United States	324.1	18,561.9	86.2	57.2	61	83.4	56.4	54.4	53.5
European Union	505.900	589.961	79.307	48.396	58.646	53.171	45.350	38.104	47.346
Sum	4999.600	59,441.161	1359.807	953.896	1106.546	1134.771	850.250	701.204	809.546
Ave. (X_{0j})	249.980	2972.058	67.990	47.695	55.327	56.739	42.513	35.060	40.477

Source: Authors' own work based on GII data

3.2   Step 2: Forming the Standard Matrix

Since the indicators have different units of measurement (dimensions), a "standard matrix" is formed, containing dimensionless elements Z_{ij}:

$$S_j = \sqrt{\sum_{i=1}^{n} \left(X_{ij} - \overline{X_j}\right)^2 / n} \tag{2}$$

$$Z_{ij} = \left(X_{ij} - X_{oj}\right)/S_j \tag{3}$$

"X_{ij}" is a data matrix, "X_{oj}" is an average matrix (Eq. 1), and "S_j" denotes the standard deviation for "j" indicators, which are derived from the GII reports for 2010–2016. Thus, in this data analysis, "i" represents the G20 countries in the above time period. The corresponding standard matrices were computed and presented in the tables that follow. Moreover, eliminating the discrepancy between the indicators' units (by generating scale-free indexes) renders average = 0 and standard deviation = 1 in the Z matrix. Thus, "Z" matrix acceptability could be controlled for the required computations, as shown in Tables 9, 10, 11, 12, 13, 14, and 15.

3.3   Step 3: Computing Compound Distances Among the G20 Economies

Compound distances between the G20 economies are measured by

$$D_{ab} = \sqrt{\sum_{i=1}^{n} \left(Z_{aj} - Z_{bj}\right)^2} \tag{4}$$

where D_{ab} is the distance between any two economies "a" and "b." Thus,

$$D_{aa} = 0$$
$$D_{bb} = 0$$
$$D_{ab} = D_{ba}$$

Therefore, as shown in the following tables, the *compound distance matrices* "D" computed for the G20 countries are symmetric, and their diameter elements are equal to zero. As seen, each element D_{ab} in the matrices D shows the distance between two countries (a, b), as numbered in Tables 16, 17, 18, 19, 20, 21, and 22.

Table 9 Standard matrix for 2010

2010 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.536	−0.641	−1.323	−0.697	−0.551	−1.739	−0.720	−0.834	0.486
Australia = 2	−0.589	−0.439	1.432	1.207	1.696	0.614	0.944	−0.131	0.114
Brazil = 3	−0.116	−0.226	−1.116	−1.002	−0.475	−1.168	−0.383	−0.709	0.951
Canada = 4	−0.555	−0.304	1.591	0.846	1.782	0.968	1.397	0.558	1.895
China = 5	3.037	0.893	−1.282	−0.448	−0.130	0.251	0.438	1.305	0.153
France = 6	−0.477	0.127	0.528	0.763	0.702	0.228	0.544	0.455	0.658
Germany = 7	−0.424	0.350	0.914	1.179	0.713	0.652	0.681	1.093	1.589
India = 8	2.657	−0.312	−1.240	−1.650	−0.961	−0.482	−1.510	−0.739	0.074
Indonesia = 9	−0.015	−0.565	−1.164	−1.400	−1.307	−1.438	−1.784	−1.215	−1.867
Italy = 10	−0.484	−0.049	0.058	−0.023	−0.076	−0.628	0.007	−0.519	−0.073
Japan = 11	−0.302	0.920	0.935	0.828	0.951	0.544	1.134	1.093	−0.923
Mexico = 12	−0.346	−0.455	−0.805	−0.929	−1.037	−1.052	−1.605	−1.332	−1.282
Russia = 13	−0.265	−0.338	−1.275	0.033	−1.167	−1.114	−0.025	−0.145	−1.441
Saudi Arabia = 14	−0.576	−0.621	−0.191	−0.402	−0.951	0.143	−0.404	−1.215	−0.551
South Africa = 15	−0.510	−0.648	0.051	−1.363	−1.275	1.007	−0.299	−0.980	−1.747
South Korea = 16	−0.515	−0.469	0.493	1.401	1.253	0.845	0.491	1.378	0.326
Turkey = 17	−0.441	−0.540	−0.564	−1.095	−0.983	−0.991	−1.658	−1.171	0.246
United Kingdom = 18	−0.479	−0.029	1.115	1.050	0.756	1.817	1.334	1.276	0.605
United States = 19	0.217	3.888	1.121	1.170	0.864	1.547	1.018	1.649	0.459
European Union = 20	0.718	−0.542	0.721	0.531	0.193	−0.004	0.400	0.182	0.328
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 10 Standard matrix for 2011

2011 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.538	−0.696	−1.048	−0.344	−0.855	−1.421	−0.847	−1.106	−0.369
Australia = 2	−0.588	−0.371	1.261	0.869	0.864	0.906	0.869	−0.338	0.977
Brazil = 3	−0.117	−0.064	−0.766	−0.994	−0.692	−1.107	−0.360	−0.657	−0.450
Canada = 4	−0.556	−0.295	1.517	0.860	0.765	1.285	1.304	0.496	1.493
China = 5	3.037	1.293	−1.345	−1.002	−0.221	−0.217	0.472	1.612	−0.586
France = 6	−0.477	0.024	0.887	1.023	0.702	0.089	0.523	0.430	0.623
Germany = 7	−0.427	0.273	0.580	1.048	0.756	0.301	0.574	1.112	1.887
India = 8	2.651	−0.269	−1.380	−2.104	−1.425	−0.451	−1.231	−0.403	0.270
Indonesia = 9	0.008	−0.575	−2.046	−1.130	−1.470	−1.297	−1.666	−1.389	−1.103
Italy = 10	−0.484	−0.147	0.247	0.134	0.611	−0.706	0.075	−0.099	−0.260
Japan = 11	−0.300	0.949	0.698	0.980	1.344	0.505	0.818	0.880	−0.872
Mexico = 12	−0.350	−0.469	−0.485	−0.968	−0.755	−1.020	−1.423	−1.251	−1.252
Russia = 13	−0.261	−0.256	−0.833	0.057	−0.809	−1.151	−0.373	−0.084	−1.307
Saudi Arabia = 14	−0.573	−0.658	−0.080	0.143	−0.375	−0.239	0.037	−1.759	0.637
South Africa = 15	−0.512	−0.700	0.222	−1.361	−1.443	0.855	−0.680	−0.824	−1.347
South Korea = 16	−0.516	−0.475	0.431	1.356	1.579	0.709	0.574	1.300	−0.600
Turkey = 17	−0.453	−0.597	−0.787	−0.968	−1.153	−0.830	−1.884	−0.853	−0.681
United Kingdom = 18	−0.479	−0.075	1.281	0.912	1.362	1.884	1.291	1.307	1.724
United States = 19	0.206	3.744	1.010	0.877	0.846	1.898	1.624	1.199	0.474
European Union = 20	0.730	−0.633	0.637	0.613	0.367	0.008	0.305	0.428	0.741
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 11 Standard matrix for 2012

2012 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.542	−0.665	−1.126	−0.518	−0.845	−1.560	−0.672	−1.095	0.424
Australia = 2	−0.591	−0.360	1.283	1.098	0.808	0.972	0.862	−0.604	1.157
Brazil = 3	−0.121	−0.107	−0.933	−1.008	−0.639	−1.016	−0.256	−1.012	−0.925
Canada = 4	−0.558	−0.295	1.526	0.455	0.836	1.408	0.983	0.649	1.603
China = 5	2.982	1.560	−1.275	−0.219	−0.396	−0.351	0.281	1.763	−1.619
France = 6	−0.476	−0.063	0.636	0.853	0.780	0.285	0.632	0.640	0.620
Germany = 7	−0.425	0.162	0.854	0.830	0.883	0.264	0.610	1.085	1.367
India = 8	2.701	−0.244	−1.051	−1.666	−1.545	−0.687	−1.318	−0.270	−0.742
Indonesia = 9	−0.001	−0.545	−1.966	−1.467	−1.395	−1.281	−1.680	−1.216	−0.454
Italy = 10	−0.483	−0.234	0.300	−0.020	0.649	−0.315	0.413	0.399	−0.165
Japan = 11	−0.296	0.911	0.916	1.052	1.144	0.757	0.774	0.668	−0.729
Mexico = 12	−0.342	−0.468	−0.435	−0.885	−0.798	−0.966	−1.253	−1.300	−0.244
Russia = 13	−0.265	−0.242	−0.796	0.049	−0.639	−0.980	−0.464	−0.650	−1.763
Saudi Arabia = 14	−0.577	−0.613	−0.646	−0.280	−0.322	−0.401	−0.343	−1.170	0.516
South Africa = 15	−0.519	−0.689	0.082	−1.513	−1.452	0.493	−0.968	−1.179	−0.846
South Korea = 16	−0.522	−0.472	0.449	1.634	1.555	0.471	0.325	0.965	−0.388
Turkey = 17	−0.455	−0.577	−0.808	−1.046	−1.199	−0.830	−1.603	−0.650	−0.846
United Kingdom = 18	−0.480	−0.105	1.221	0.975	1.434	1.823	1.311	1.271	1.733
United States = 19	0.214	3.678	1.072	1.351	0.790	2.002	2.067	1.503	0.647
European Union = 20	0.755	−0.633	0.698	0.328	0.350	−0.087	0.297	0.202	0.655
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 12 Standard matrix for 2013

2013 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.540	−0.650	−1.220	−0.472	−0.937	−1.618	−0.760	−1.274	−0.555
Australia = 2	−0.590	−0.373	1.259	1.329	1.212	0.803	0.549	−0.130	1.534
Brazil = 3	−0.114	−0.171	−0.921	−1.024	−0.820	−1.021	0.002	−1.025	−0.997
Canada = 4	−0.557	−0.285	1.495	0.915	1.047	1.424	1.037	0.318	0.971
China = 5	3.002	1.723	−1.270	−0.081	−0.256	−0.599	0.299	1.634	−0.716
France = 6	−0.474	−0.036	0.617	0.877	0.687	0.237	0.966	0.361	0.596
Germany = 7	−0.430	0.209	0.872	0.907	0.843	0.166	0.811	1.126	1.253
India = 8	2.693	−0.273	−1.114	−1.667	−1.510	−0.543	−1.343	−0.672	−1.667
Indonesia = 9	0.016	−0.546	−1.906	−1.660	−1.413	−1.013	−1.962	−1.446	−0.247
Italy = 10	−0.487	−0.218	0.281	−0.181	0.211	−0.559	0.085	0.232	−0.475
Japan = 11	−0.306	0.554	0.960	0.762	1.095	0.699	0.894	0.619	−0.394
Mexico = 12	−0.325	−0.440	−0.429	−0.916	−0.752	−0.886	−1.117	−1.128	−1.091
Russia = 13	−0.263	−0.205	−0.766	0.003	−0.635	−1.236	−0.593	−0.207	−1.292
Saudi Arabia = 14	−0.575	−0.580	−0.541	−0.679	−0.062	0.078	−0.201	−1.231	0.530
South Africa = 15	−0.513	−0.688	0.075	−1.207	−1.432	0.460	−0.784	−0.939	−1.118
South Korea = 16	−0.516	−0.450	0.443	1.505	1.475	0.588	0.406	1.247	0.155
Turkey = 17	−0.451	−0.558	−0.859	−0.855	−1.170	−0.710	−1.653	−0.663	0.021
United Kingdom = 18	−0.486	−0.091	1.240	1.214	1.261	1.862	1.299	1.410	2.083
United States = 19	0.198	3.693	1.090	1.061	0.959	2.053	1.716	1.556	0.730
European Union = 20	0.719	−0.614	0.695	0.170	0.198	−0.185	0.348	0.212	0.679
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 13 Standard matrix for 2014

2014 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.537	−0.629	−1.362	−0.502	−1.112	−1.738	−0.588	−1.339	−0.500
Australia = 2	−0.585	−0.399	1.248	1.076	1.254	0.919	0.669	−0.318	1.582
Brazil = 3	−0.116	−0.169	−0.869	−1.123	−0.936	−1.014	0.013	−1.080	−1.218
Canada = 4	−0.554	−0.312	1.463	0.422	0.994	1.506	0.885	0.258	0.999
China = 5	3.018	1.866	−0.983	−0.060	0.029	−0.591	0.386	1.563	−0.645
France = 6	−0.477	−0.044	0.767	0.953	0.985	0.255	0.885	0.193	0.989
Germany = 7	−0.430	0.213	0.862	1.043	0.604	0.272	0.873	1.190	1.197
India = 8	2.685	−0.246	−1.236	−1.948	−1.446	−0.824	−1.709	−0.699	−1.603
Indonesia = 9	0.018	−0.540	−1.881	−1.597	−1.353	−1.005	−1.913	−1.445	−1.093
Italy = 10	−0.487	−0.221	0.268	−0.207	0.688	−0.211	−0.101	0.201	−0.385
Japan = 11	−0.313	0.405	1.071	0.912	1.198	0.712	1.009	0.801	−0.177
Mexico = 12	−0.322	−0.440	−0.509	−0.779	−0.991	−0.781	−0.520	−0.756	−0.656
Russia = 13	−0.273	−0.295	−0.819	0.299	−0.889	−1.083	−0.350	−0.172	−1.166
Saudi Arabia = 14	−0.570	−0.575	−0.579	−0.330	0.001	−0.496	−0.644	−1.104	0.167
South Africa = 15	−0.508	−0.677	0.129	−1.343	−1.511	0.263	−0.848	−0.845	−1.062
South Korea = 16	−0.517	−0.406	0.413	1.713	1.133	0.626	0.420	1.458	0.239
Turkey = 17	−0.448	−0.561	−0.869	−0.649	−0.852	−0.565	−1.720	−0.934	−0.073
United Kingdom = 18	−0.480	−0.019	1.121	1.117	1.189	1.575	1.372	1.312	1.999
United States = 19	0.201	3.650	1.090	0.831	0.799	2.196	1.576	1.563	0.677
European Union = 20	0.695	−0.598	0.676	0.172	0.214	−0.017	0.306	0.154	0.728
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 14 Standard matrix for 2015

2015 year	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.514	−0.557	−1.410	−0.825	−0.936	−1.767	−1.038	−1.561	−1.233
Australia = 2	−0.564	−0.403	1.261	1.043	1.215	0.762	0.491	−0.204	0.741
Brazil = 3	−0.088	−0.270	−0.890	−1.226	−0.778	−1.019	−0.371	−1.087	−1.380
Canada = 4	−0.533	−0.323	1.447	0.476	0.938	1.396	0.653	0.345	0.646
China = 5	2.939	1.962	−0.896	0.076	−0.078	0.014	1.439	1.377	0.267
France = 6	−0.460	−0.112	0.722	0.976	1.077	0.445	0.814	0.378	0.879
Germany = 7	−0.417	0.114	0.959	0.976	0.564	0.266	0.846	1.235	1.439
India = 8	2.771	−0.193	−1.185	−1.251	−1.557	−0.499	−0.888	−0.479	−1.475
Indonesia = 9	0.041	−0.491	−1.770	−2.010	−1.409	−1.068	−1.803	−1.145	−1.242
Italy = 10	−0.472	−0.259	0.234	−0.058	0.682	−0.230	−0.284	0.162	0.189
Japan = 11	−0.298	0.300	1.152	0.860	1.146	0.965	1.331	0.844	−0.035
Mexico = 12	−0.297	−0.422	−0.556	−1.126	−0.985	−0.873	−1.146	−1.120	−0.837
Russia = 13	−0.589	−0.378	−0.723	0.267	−0.817	−1.084	−0.317	−0.404	−0.940
Saudi Arabia = 14	−0.545	−0.541	−0.723	−0.208	−0.137	−0.555	−0.984	−1.195	−0.432
South Africa = 15	−0.485	−0.623	−0.004	−1.176	−1.518	0.185	−0.888	−1.003	−1.130
South Korea = 16	−0.496	−0.366	0.401	1.644	1.037	0.453	1.040	1.443	0.672
Turkey = 17	−0.423	−0.521	−0.935	−0.667	−0.906	−0.710	−1.383	−0.637	0.206
United Kingdom = 18	−0.459	−0.009	1.184	1.285	1.343	1.234	0.943	1.119	1.973
United States = 19	0.207	3.650	1.062	0.818	0.879	2.454	1.288	1.643	1.034
European Union = 20	0.682	−0.559	0.670	0.125	0.240	−0.368	0.256	0.289	0.660
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 15 Standard matrix for 2016

2016	G20 countries standard matrix (Z_{oj})								
Argentina = 1	−0.534	−0.566	−1.327	−0.435	−1.052	−1.750	−0.961	−1.371	−1.196
Australia = 2	−0.584	−0.400	1.193	1.068	1.142	0.787	0.311	−0.233	0.522
Brazil = 3	−0.105	−0.280	−0.995	−1.008	−0.847	−1.153	−0.573	−1.269	−1.288
Canada = 4	−0.553	−0.336	1.414	0.479	0.817	1.559	0.570	0.286	0.401
China = 5	2.932	1.962	−0.811	0.129	0.310	−0.187	1.293	1.676	0.448
France = 6	−0.480	−0.113	0.781	0.889	0.973	0.695	0.872	0.270	1.014
Germany = 7	−0.438	0.122	0.953	1.060	0.744	0.300	0.958	1.260	1.432
India = 8	2.788	−0.168	−1.020	−1.315	−1.354	−0.445	−0.853	−0.374	−1.353
Indonesia = 9	0.028	−0.473	−1.647	−2.110	−1.607	−0.987	−1.759	−1.112	−1.149
Italy = 10	−0.492	−0.261	0.240	−0.119	0.780	−0.380	−0.314	0.082	0.225
Japan = 11	−0.320	0.410	1.193	0.769	1.082	0.695	1.293	0.946	0.030
Mexico = 12	−0.314	−0.445	−0.583	−1.196	−0.678	−0.619	−1.263	−1.065	−0.731
Russia = 13	−0.276	−0.397	−0.731	0.197	−0.944	−0.886	−0.239	−0.586	−0.880
Saudi Arabia = 14	−0.564	−0.544	−0.958	−0.102	−0.244	−0.675	−0.810	−1.057	−1.121
South Africa = 15	−0.505	−0.627	−0.104	−1.272	−1.438	0.061	−0.875	−1.065	−1.158
South Korea = 16	−0.517	−0.365	0.400	1.581	0.973	0.447	0.926	1.543	0.828
Turkey = 17	−0.441	−0.521	−1.069	−0.820	−1.161	−0.822	−1.425	−0.586	0.271
United Kingdom = 18	−0.479	−0.075	1.254	1.333	1.419	1.238	1.045	0.899	1.859
United States = 19	0.192	3.633	1.119	0.812	0.684	2.451	1.497	1.519	1.209
European Union = 20	0.663	−0.555	0.696	0.060	0.400	−0.328	0.306	0.239	0.638
Ave. Z_{oj}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S_{oj}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Authors' own work based on GII data

Table 16 Compound distance matrix for G20 countries in 2010 ("*D*" matrix)

2010	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.024	1.078	5.671	5.035	3.857	4.871	3.711	2.876	2.261	5.149	2.292	2.478	2.528	3.947	4.904	1.597	5.692	7.248	3.626
Australia=2	5.024	0	4.725	2.039	5.550	1.812	2.372	6.364	6.297	3.051	2.343	5.455	4.833	3.989	4.824	1.924	5.189	2.238	4.932	2.400
Brazil=3	1.078	4.725	0	5.125	4.362	3.422	4.338	3.298	3.348	2.047	4.788	2.721	2.790	2.458	3.815	4.597	1.772	5.176	6.610	3.182
Canada=4	5.671	2.039	5.125	0.000	5.739	2.304	1.775	6.902	7.466	4.017	3.341	6.608	5.970	5.035	5.935	2.406	5.916	2.075	4.803	3.097
China=5	5.035	5.550	4.362	5.739	0.000	4.399	4.772	3.500	5.654	4.427	4.541	5.425	4.522	4.977	5.369	4.831	5.281	5.043	5.341	3.724
France=6	3.857	1.812	3.422	2.304	4.399	0.000	1.359	5.312	5.443	1.995	2.061	4.608	3.799	3.214	4.292	1.554	3.303	2.068	4.313	1.576
Germany=7	4.871	2.372	4.338	1.775	4.772	1.359	0.000	6.092	6.615	3.227	2.655	5.776	4.947	4.335	5.355	1.717	5.110	1.729	3.936	2.399
India=8	3.711	6.364	3.298	6.902	3.500	5.312	6.092	0.000	3.517	4.176	6.098	3.504	4.082	3.929	4.364	6.133	3.303	6.588	7.537	4.306
Indonesia=9	2.876	6.297	3.348	7.466	5.654	5.443	6.615	3.517	0.000	3.600	5.951	1.040	2.593	2.920	3.160	6.271	2.329	6.970	8.173	4.865
Italy=10	2.261	3.051	2.047	4.017	4.427	1.995	3.227	4.176	3.600	0.000	3.079	2.752	2.313	1.668	3.062	3.213	2.456	3.792	5.492	1.924
Japan=11	5.149	2.343	4.788	3.341	4.541	2.061	2.655	6.098	5.951	3.079	0.000	5.293	4.180	4.103	4.503	2.176	5.336	2.254	3.532	2.668
Mexico=12	2.292	5.455	2.721	6.608	5.425	4.608	5.776	3.504	1.040	2.752	5.293	0.000	2.262	2.040	2.707	5.505	1.573	6.184	7.514	4.138
Russia=13	2.478	4.833	2.790	5.970	4.522	3.799	4.947	4.082	2.593	2.313	4.180	2.262	0.000	2.291	3.039	4.526	2.909	5.218	6.652	3.427
Saudi Arabia=14	2.528	3.989	2.458	5.035	4.977	3.214	4.335	3.929	2.920	1.668	4.103	2.040	2.291	0.000	1.826	4.170	2.035	4.521	6.454	2.843
South Africa=15	3.947	4.824	3.815	5.935	5.369	4.292	5.355	4.364	3.160	3.062	4.503	2.707	3.039	1.826	0.000	4.977	3.224	5.040	6.859	3.857
South Korea=16	4.904	1.924	4.597	2.406	4.831	1.554	1.717	6.133	6.271	3.213	2.176	5.505	4.526	4.170	4.977	0.000	5.181	1.641	4.580	2.370
Turkey=17	1.597	5.189	1.772	5.916	5.281	3.303	5.110	3.303	2.329	2.456	5.336	1.573	2.909	2.035	3.224	5.181	0.000	5.800	7.281	3.751
United Kingdom=18	5.692	2.238	5.176	2.075	5.043	2.068	1.729	6.588	6.970	3.792	2.254	6.184	5.218	4.521	5.040	1.641	5.800	0.000	4.023	2.810
United States=19	7.248	4.932	6.610	4.803	5.341	4.313	3.936	7.537	8.173	5.492	3.532	7.514	6.652	6.454	6.859	4.580	7.281	4.023	0.000	5.085
European Union=20	3.626	2.400	3.182	3.097	3.724	1.576	2.399	4.306	4.865	1.924	2.668	4.138	3.427	2.843	3.857	2.370	3.751	2.810	5.085	0.000

Source: Authors' own work based on GII data

Table 17 Compound distance matrix for G20 countries in 2011 ("*D*" matrix)

2011	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	4.541	1.284	5.366	5.318	4.007	4.809	3.985	1.900	2.597	4.803	1.448	1.644	2.240	3.039	4.843	1.466	6.165	7.214	3.717
Australia=2	4.541	0	4.245	1.174	5.920	1.364	2.081	6.190	6.122	2.551	2.729	4.886	4.361	2.843	4.419	2.597	5.031	2.179	4.669	2.068
Brazil=3	1.284	4.245	0	4.962	4.358	3.664	4.442	3.409	2.289	2.199	4.215	1.560	1.498	2.394	2.650	4.524	1.761	5.695	6.395	3.316
Canada=4	5.366	1.174	4.962	0.000	6.048	1.827	1.814	6.634	6.916	3.331	3.036	5.751	5.065	3.774	5.058	2.831	5.798	1.241	4.378	2.442
China=5	5.318	5.920	4.358	6.048	0.000	5.181	5.343	3.605	5.454	4.735	5.336	5.443	5.335	5.729	5.443	5.355	5.379	6.149	5.598	4.377
France=6	4.007	1.364	3.664	1.827	5.181	0.000	1.507	5.788	5.617	1.769	2.008	4.426	3.554	2.912	4.329	1.995	4.536	2.531	4.411	1.516
Germany=7	4.809	2.081	4.442	1.814	5.343	1.507	0.000	6.086	6.346	2.913	2.933	5.405	4.514	3.716	5.274	2.784	5.302	2.022	4.282	2.108
India=8	3.985	6.190	3.409	6.634	3.605	5.788	6.086	0.000	3.498	4.878	6.304	3.871	4.200	4.691	4.255	6.528	3.624	7.115	7.624	4.687
Indonesia=9	1.900	6.122	2.289	6.916	5.454	5.617	6.346	3.498	0.000	4.168	6.077	1.814	2.632	3.769	3.386	6.199	1.629	7.607	8.225	5.141
Italy=10	2.597	2.551	2.199	3.331	4.735	1.769	2.913	4.878	4.168	0.000	2.457	2.897	2.179	2.265	3.388	2.626	3.193	4.043	5.311	1.999
Japan=11	4.803	2.729	4.215	3.036	4.802	2.008	2.933	6.304	6.077	2.457	0.000	4.862	3.816	4.162	4.662	1.641	5.173	3.236	3.596	2.824
Mexico=12	1.448	4.886	1.560	5.751	5.336	4.426	5.405	3.871	1.814	2.897	4.862	0.000	1.927	2.862	2.338	5.063	1.005	6.520	7.283	4.129
Russia=13	1.644	4.361	1.498	5.065	5.335	3.554	4.514	4.200	2.632	2.179	3.816	1.927	0.000	2.933	2.907	3.985	2.166	5.753	6.414	3.352
Saudi Arabia=14	2.240	2.843	2.394	3.774	5.729	2.912	3.716	4.691	3.769	2.265	4.162	2.862	2.933	0.000	3.166	4.203	2.992	4.741	6.251	2.812
South Africa=15	3.039	4.419	2.650	5.058	5.443	4.329	5.274	4.255	3.386	3.388	4.662	2.338	2.907	3.166	0.000	4.824	2.450	5.785	6.704	4.063
South Korea=16	4.843	2.597	4.524	2.831	5.355	1.995	2.784	6.528	6.199	2.626	1.641	5.063	3.985	4.203	4.824	0.000	5.237	2.902	4.807	2.601
Turkey=17	1.466	5.031	1.761	5.798	5.379	4.536	5.302	3.624	1.629	3.193	5.173	1.005	2.166	2.992	2.450	5.237	0.000	6.504	7.430	4.171
United Kingdom=18	6.165	2.179	5.695	1.241	6.149	2.531	2.022	7.115	7.607	4.043	3.236	6.520	5.753	4.741	5.785	2.902	6.504	0.000	4.133	3.082
United States=19	7.214	4.669	6.395	4.378	5.598	4.411	4.282	7.624	8.225	5.311	3.596	7.283	6.414	6.251	6.704	4.807	7.430	4.133	0.000	5.084
European Union=20	3.717	2.068	3.316	2.442	4.377	1.516	2.108	4.687	5.141	1.999	2.824	4.129	3.352	2.812	4.063	2.601	4.171	3.082	5.084	0.000

Source: Authors' own work based on GII data

Table 18 Compound distance matrix for G20 countries in 2012 ("*D*" matrix)

2012	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	4.559	1.762	5.188	5.692	4.018	4.476	3.966	2.024	3.163	5.003	1.368	2.467	1.424	2.956	4.789	1.932	5.995	7.577	3.464
Australia=2	4.559	0	4.629	1.566	6.448	1.715	2.006	6.380	6.073	2.623	2.679	4.496	4.662	3.322	4.627	2.635	5.139	2.293	4.927	2.318
Brazil=3	1.762	4.629	0	5.210	4.703	3.958	4.592	3.327	2.102	2.794	4.356	1.418	1.433	1.914	2.294	4.555	1.628	5.983	7.026	3.407
Canada=4	5.188	1.566	5.210	0.000	6.403	1.834	1.586	6.592	6.578	2.873	2.872	5.121	5.351	4.028	5.033	2.911	5.596	1.203	4.535	2.565
China=5	5.692	6.448	4.703	6.403	0.000	5.252	5.540	3.791	5.595	4.778	4.840	5.520	4.576	5.599	5.785	5.427	5.303	6.560	5.954	4.711
France=6	4.018	1.715	3.958	1.834	5.252	0.000	0.932	5.671	5.454	1.416	1.815	4.058	3.865	3.027	4.398	1.633	4.464	2.291	4.545	1.658
Germany=7	4.476	2.006	4.592	1.586	5.540	0.932	0.000	6.049	5.945	2.107	2.353	4.593	4.620	3.566	4.984	2.212	5.017	1.904	4.351	2.023
India=8	3.966	6.380	3.327	6.592	3.791	5.671	6.049	0.000	3.122	4.837	6.013	3.500	3.824	4.229	3.772	6.236	3.300	7.271	8.024	4.439
Indonesia=9	2.024	6.073	2.102	6.578	5.595	5.454	5.945	3.122	0.000	4.443	6.092	1.870	2.830	2.853	2.880	6.024	1.564	7.355	8.558	4.746
Italy=10	3.163	2.623	2.794	2.873	4.778	1.416	2.107	4.837	4.443	0.000	2.189	3.089	2.789	2.358	3.523	2.152	3.422	3.495	5.317	1.684
Japan=11	5.003	2.679	4.356	2.872	4.840	1.815	2.353	6.013	6.092	2.189	0.000	4.737	3.976	4.035	4.812	1.782	5.003	3.016	3.737	2.786
Mexico=12	1.368	4.496	1.418	5.121	5.520	4.058	4.593	3.500	1.870	3.089	4.737	0.000	2.107	1.566	1.938	4.733	1.130	6.017	7.468	3.397
Russia=13	2.467	4.662	1.433	5.351	4.576	3.865	4.620	3.824	2.830	2.789	3.976	2.107	0.000	2.506	2.771	4.028	1.955	6.018	6.969	3.526
Saudi Arabia=14	1.424	3.322	1.914	4.028	5.599	3.027	3.566	4.229	2.853	2.358	4.035	1.566	2.506	0.000	2.526	3.872	2.301	4.852	6.681	2.611
South Africa=15	2.956	4.627	2.294	5.033	5.785	4.398	4.984	3.772	2.880	3.523	4.812	1.938	2.771	2.526	0.000	5.060	1.877	5.982	7.398	3.839
South Korea=16	4.789	2.635	4.555	2.911	5.427	1.633	2.212	6.236	6.024	2.152	1.782	4.733	4.028	3.872	5.060	0.000	4.960	2.928	5.055	2.619
Turkey=17	1.932	5.139	1.628	5.596	5.303	4.464	5.017	3.300	1.564	3.422	5.003	1.130	1.955	2.301	1.877	4.960	0.000	6.422	7.755	3.895
United Kingdom=18	5.995	2.293	5.983	1.203	6.560	2.291	1.904	7.271	7.355	3.495	3.016	6.017	6.018	4.852	5.982	2.928	6.422	0.000	4.148	3.264
United States=19	7.577	4.927	7.026	4.535	5.954	4.545	4.351	8.024	8.558	5.317	3.737	7.468	6.969	6.681	7.398	5.055	7.755	4.148	0.000	5.426
European Union=20	3.464	2.318	3.407	2.565	4.711	1.658	2.023	4.439	4.746	1.684	2.786	3.397	3.526	2.611	3.839	2.619	3.895	3.264	5.426	0.000

Source: Authors' own work based on GII data

Table 19 Compound distance matrix for G20 countries in 2013 ("*D*" matrix)

2013	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.228	1.419	5.542	5.426	4.317	4.988	3.932	2.089	2.820	4.861	1.386	1.629	2.376	2.687	5.061	1.635	6.675	7.744	3.738
Australia=2	5.228	0	5.051	1.185	6.167	1.622	1.720	6.981	6.383	3.242	2.403	5.033	4.781	3.499	4.951	2.1543	4.969	2.113	4.871	2.515
Brazil=3	1.419	5.051	0	5.101	4.694	3.920	4.659	3.381	2.545	2.330	4.216	1.290	1.514	2.200	2.159	4.795	2.1019	6.290	6.973	3.335
Canada=4	5.542	1.185	5.101	0.000	6.021	1.590	1.749	6.932	6.646	3.213	1.893	5.166	4.899	3.734	4.798	2.073	5.228	1.712	4.364	2.610
China=5	5.426	6.167	4.694	6.021	0.000	5.003	5.082	4.137	5.769	4.543	4.795	5.220	4.439	5.430	5.630	5.279	5.326	6.378	5.589	4.352
France=6	4.317	1.622	3.920	1.590	5.003	0.000	1.095	6.043	5.641	2.016	1.393	4.151	3.604	2.924	4.158	1.623	4.247	2.626	4.472	1.758
Germany=7	4.988	1.720	4.659	1.749	5.082	1.095	0.000	6.557	6.173	2.637	1.868	4.836	4.251	3.618	4.859	1.716	4.722	2.094	4.178	2.119
India=8	3.932	6.981	3.381	6.932	4.137	6.043	6.557	0.000	3.331	4.638	6.042	3.384	3.718	4.583	3.712	6.563	3.712	7.926	8.196	4.780
Indonesia=9	2.089	6.383	2.545	6.646	5.769	5.641	6.173	3.331	0.000	4.151	6.087	2.200	3.068	3.153	3.001	6.304	1.701	7.632	8.539	4.779
Italy=10	2.820	3.242	2.330	3.213	4.543	2.016	2.637	4.638	4.151	0.000	2.271	2.414	1.916	2.185	2.756	2.714	2.805	4.388	5.587	1.856
Japan=11	4.861	2.403	4.216	1.893	4.795	1.393	1.868	6.042	6.087	2.271	0.000	4.386	3.817	3.590	4.296	1.721	4.754	3.007	3.858	2.458
Mexico=12	1.386	5.033	1.290	5.166	5.220	4.151	4.836	3.384	2.200	2.414	4.386	0.000	1.522	2.243	1.691	4.827	1.470	6.436	7.327	3.469
Russia=13	1.629	4.781	1.514	4.899	4.439	3.604	4.251	3.718	3.068	1.916	3.817	1.522	0.000	2.707	2.566	4.102	2.126	6.027	6.773	3.168
Saudi Arabia=14	2.376	3.499	2.200	3.734	5.430	2.924	3.618	4.583	3.153	2.185	3.590	2.243	2.707	0.000	2.416	3.876	2.165	4.855	6.401	2.543
South Africa=15	2.687	4.951	2.159	4.798	5.630	4.158	4.859	3.712	3.001	2.756	4.296	1.691	2.566	2.416	0.000	4.881	2.141	6.074	7.073	3.565
South Korea=16	5.061	2.154	4.795	2.073	5.279	1.623	1.716	6.563	6.304	2.714	1.721	4.827	4.102	3.876	4.881	0.000	4.885	2.657	4.780	2.641
Turkey=17	1.635	4.969	2.102	5.228	5.326	4.247	4.722	3.712	1.701	2.805	4.754	1.470	2.126	2.165	2.141	4.885	0.000	6.221	7.410	3.491
United Kingdom=18	6.675	2.113	6.290	1.712	6.378	2.626	2.094	7.926	7.632	4.388	3.007	6.436	6.027	4.855	6.074	2.657	6.221	0.000	4.122	3.570
United States=19	7.744	4.871	6.973	4.364	5.589	4.472	4.178	8.196	8.539	5.587	3.858	7.327	6.773	6.401	7.073	4.780	7.410	4.122	0.000	5.390
European Union=20	3.738	2.515	3.335	2.610	4.352	1.758	2.119	4.780	4.779	1.856	2.458	3.469	3.168	2.543	3.565	2.641	3.491	3.570	5.390	0.000

Source: Authors' own work based on GII data

3.4   Step 4: Assignment of the Shortest Distances

In this step of the methodology, the cells exhibit the gaps between the economies. Every matrix "*D*" line defines the distances between the economies; i.e., the lowest

Table 20 Compound distance matrix for G20 countries in 2014 ("*D*" matrix)

2014	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.383	1.587	5.555	5.587	4.701	5.143	4.059	2.121	3.333	5.255	1.479	1.860	1.983	2.780	5.303	1.831	6.522	7.762	3.922
Australia=2	5.383	0	5.193	1.269	6.061	1.248	1.963	7.232	6.550	2.996	2.299	4.598	4.711	3.642	4.983	2.495	4.793	1.982	4.911	2.421
Brazil=3	1.587	5.193	0	5.057	4.865	4.436	4.867	3.496	2.331	2.810	4.628	1.061	1.741	2.140	2.059	5.060	2.243	6.186	6.976	3.552
Canada=4	5.555	1.269	5.057	0	5.805	1.553	1.903	7.014	6.523	2.787	1.825	4.507	4.684	3.832	4.617	2.409	4.869	1.755	4.401	2.381
China=5	5.587	6.061	4.865	5.805	0	5.136	4.908	4.566	5.880	4.578	4.759	4.948	4.534	5.283	5.690	5.123	5.481	5.972	5.266	4.303
France=6	4.701	1.248	4.436	1.553	5.136	0	1.126	6.617	5.992	2.189	1.524	3.920	3.827	3.159	4.538	1.836	4.329	2.108	4.525	1.836
Germany=7	5.143	1.963	4.867	1.903	4.908	1.126	0.0	6.837	6.377	2.604	1.648	4.296	4.082	3.766	4.869	1.625	4.705	1.753	4.117	2.137
India=8	4.059	7.232	3.496	7.014	4.566	6.617	6.837	0.000	2.940	5.016	6.629	3.674	4.083	4.515	3.854	6.909	3.815	8.014	8.351	5.086
Indonesia=9	2.121	6.550	2.331	6.523	5.880	5.992	6.377	2.940	0.000	4.265	6.316	2.337	3.026	3.009	2.743	6.404	1.980	7.613	8.458	4.935
Italy=10	3.333	2.996	2.810	2.787	4.578	2.189	2.604	5.016	4.265	0.000	2.251	2.305	2.355	1.929	2.947	2.624	2.848	3.879	5.367	1.875
Japan=11	5.255	2.299	4.628	1.825	4.759	1.524	1.648	6.629	6.316	2.251	0.000	4.252	3.973	3.829	4.654	1.654	4.843	2.474	3.846	2.441
Mexico=12	1.479	4.598	1.061	4.507	4.948	3.920	4.296	3.674	2.337	2.305	4.252	0.000	1.419	1.472	1.567	4.492	1.434	5.626	6.764	2.971
Russia=13	1.860	4.711	1.741	4.684	4.534	3.827	4.082	4.083	3.026	2.355	3.973	1.419	0	2.119	2.590	3.978	2.220	5.578	6.589	3.123
Saudi Arabia=14	1.983	3.642	2.140	3.832	5.283	3.159	3.766	4.515	3.009	1.929	3.829	1.472	2.119	0.000	2.454	3.928	1.476	4.925	6.539	2.549
South Africa=15	2.780	4.983	2.059	4.617	5.690	4.538	4.869	3.854	2.743	2.947	4.654	1.567	2.590	2.454	0.000	5.022	2.089	5.952	6.974	3.554
South Korea=16	5.303	2.495	5.060	2.409	5.123	1.836	1.625	6.909	6.404	2.624	1.654	4.492	3.978	3.928	5.022	0.000	4.797	2.436	4.724	2.676
Turkey=17	1.831	4.793	2.243	4.869	5.481	4.329	4.705	3.815	1.980	2.848	4.843	1.434	2.220	1.476	2.089	4.797	0.000	5.917	7.224	3.425
United Kingdom=18	6.522	1.982	6.186	1.755	5.972	2.108	1.753	8.014	7.613	3.879	2.474	5.626	5.578	4.925	5.952	2.436	5.917	0.000	4.049	3.222
United States=19	7.762	4.911	6.976	4.401	5.266	4.525	4.117	8.351	8.458	5.367	3.846	6.764	6.589	6.539	6.974	4.724	7.224	4.049	0.000	5.266
European Union=20	3.922	2.421	3.552	2.381	4.303	1.836	2.137	5.086	4.935	1.875	2.441	2.971	3.123	2.549	3.554	2.676	3.425	3.222	5.266	0.000

Source: Authors' own work based on GII data

Table 21 Compound distance matrix for G20 countries in 2015 ("*D*" matrix)

2015	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.454	1.404	5.784	6.346	5.347	5.850	3.795	1.821	3.731	5.901	1.432	2.032	1.934	2.569	5.934	2.103	6.861	8.304	4.322
Australia=2	5.454	0	4.815	1.086	5.414	0.986	1.934	6.211	6.260	2.146	1.750	4.647	3.949	3.690	4.518	2.063	4.293	1.986	4.921	2.303
Brazil=3	1.404	4.815	0	4.954	5.427	4.674	5.176	3.129	1.982	3.091	4.996	1.072	1.785	1.805	1.845	5.304	2.084	6.182	2.218	1.517
Canada=4	5.784	1.086	4.954	0	5.263	1.354	1.890	6.182	6.347	2.366	1.442	4.803	4.244	4.050	4.446	2.173	4.491	1.861	4.467	2.454
China=5	6.346	5.414	5.427	5.263	0	4.750	4.599	4.567	6.451	4.790	4.565	5.784	5.240	5.640	5.992	4.809	5.590	5.287	4.717	4.109
France=6	5.347	0.986	4.674	1.354	4.750	0	1.206	6.003	6.136	1.916	1.411	4.603	3.715	3.685	4.589	1.358	4.146	1.666	4.545	1.990
Germany=7	5.850	1.934	5.176	1.890	4.599	1.206	0.0	6.272	6.518	2.448	1.868	5.041	4.128	4.313	5.006	1.387	4.450	1.420	4.282	2.198
India=8	3.795	6.211	3.129	6.182	4.567	6.003	6.272	0.000	3.184	4.752	6.146	3.351	3.918	4.006	3.613	6.423	3.778	7.191	7.800	4.420
Indonesia=9	1.821	6.260	1.982	6.347	6.451	6.136	6.518	3.184	0.000	4.390	6.588	1.786	3.145	2.810	2.561	6.716	2.373	7.479	8.563	4.904
Italy=10	3.731	2.146	3.091	2.366	4.790	1.916	2.448	4.752	4.390	0.000	2.607	2.907	2.371	2.125	3.148	2.675	2.531	3.310	5.460	1.546
Japan=11	5.901	1.750	4.996	1.442	4.565	1.411	1.868	6.146	6.588	2.607	0.000	5.092	4.190	4.365	4.858	1.697	4.900	2.162	3.944	2.649
Mexico=12	1.432	4.647	1.072	4.803	5.784	4.603	5.041	3.351	1.786	2.907	5.092	0.000	1.827	1.400	1.397	5.301	1.338	6.014	7.404	3.463
Russia=13	2.032	3.949	1.785	4.244	5.240	3.715	4.128	3.918	3.145	2.371	4.190	1.827	0	1.525	2.343	4.101	1.902	5.221	6.812	2.934
Saudi Arabia=14	1.934	3.690	1.805	4.050	5.640	3.685	4.313	4.006	2.810	2.125	4.365	1.400	1.525	0	2.110	4.404	1.328	5.138	6.915	2.944
South Africa=15	2.569	4.518	1.845	4.446	5.992	4.589	5.006	3.613	2.561	3.148	4.858	1.397	2.343	2.110	0	5.266	2.116	5.883	7.153	3.618
South Korea=16	5.934	2.063	5.304	2.173	4.809	1.358	1.387	6.423	6.716	2.675	1.697	5.301	4.101	4.404	5.266	0	4.764	1.839	4.690	2.657
Turkey=17	2.103	4.293	2.084	4.491	5.590	4.146	4.450	3.778	2.373	2.531	4.900	1.338	1.902	1.328	2.116	4.764	0	5.387	7.085	3.099
United Kingdom=18	6.861	1.986	6.182	1.861	5.287	1.666	1.420	7.191	7.479	3.310	2.162	6.014	5.221	5.138	5.883	1.839	5.387	0	4.13	3.14
United States=19	8.304	4.921	2.218	4.467	4.717	4.545	4.282	7.800	8.563	5.460	3.944	7.404	6.812	6.915	7.153	4.690	7.085	4.13	0.00	5.48
European Union=20	4.322	2.303	1.517	2.454	4.109	1.990	2.198	4.420	4.904	1.546	2.649	3.463	2.934	2.944	3.618	2.657	3.099	3.14	5.48	0

Source: Authors' own work based on GII data

value in each line is marked to be the shortest distance of that economy in the year of measurement. For instance, there is the most approximation among two economies if "*a*" and "*b*" have the shortest distance, that is, economy "*b*" is a model for economy "*a*" and economy "*a*" is named a shade. The shortest distances between the

Table 22 Compound distance matrix for G20 countries in 2016 ("*D*" matrix)

2016	Argentina=1	Australia=2	Brazil=3	Canada=4	China=5	France=6	Germany=7	India=8	Indonesia=9	Italy=10	Japan=11	Mexico=12	Russia=13	Saudi Arabia=14	South Africa=15	South Korea=16	Turkey=17	United Kingdom=18	United States=19	European Union=20
Argentina=1	0	5.075	1.128	5.522	6.353	5.237	5.732	3.859	2.197	3.526	5.593	1.736	1.687	1.478	2.394	5.672	2.021	6.601	8.158	4.179
Australia=2	5.075	0	4.711	1.206	5.394	1.068	2.054	5.886	6.091	2.102	1.849	4.288	3.755	3.836	4.396	2.160	4.451	2.019	4.986	2.207
Brazil=3	1.128	4.711	0	4.992	5.746	4.838	5.397	3.181	1.936	3.145	5.072	1.190	1.546	1.350	1.765	5.416	2.011	6.228	7.537	3.695
Canada=4	5.522	1.206	4.992	0	5.317	1.365	2.127	5.883	6.210	2.523	1.629	4.507	4.110	4.261	4.374	2.323	4.715	2.005	4.511	2.466
China=5	6.353	5.394	5.746	5.317	0	4.770	4.517	4.644	6.635	4.824	4.415	5.894	5.211	5.786	6.236	4.693	5.797	5.236	4.716	4.106
France=6	5.237	1.068	4.838	1.365	4.770	0	1.219	5.873	6.186	2.142	1.448	4.493	3.823	4.088	4.636	1.552	4.464	1.433	4.445	2.008
Germany=7	5.732	2.054	5.397	2.127	4.517	1.219	0.0	6.220	6.651	2.641	1.639	5.067	4.280	4.733	5.236	1.158	4.833	1.364	4.225	2.312
India=8	3.859	5.886	3.181	5.883	4.644	5.873	6.220	0.000	3.241	4.619	5.893	3.380	3.581	3.829	3.560	6.259	3.741	6.995	7.649	4.275
Indonesia=9	2.197	6.091	1.936	6.210	6.635	6.186	6.651	3.241	0.000	4.394	6.500	1.872	3.061	2.778	2.302	6.708	2.203	7.466	8.558	4.934
Italy=10	3.526	2.102	3.145	2.523	4.824	2.142	2.641	4.619	4.394	0.000	2.606	2.687	2.451	2.452	3.200	2.772	2.814	3.374	5.623	1.545
Japan=11	5.593	1.849	5.072	1.629	4.415	1.448	1.639	5.893	6.500	2.606	0.000	4.871	4.099	4.444	4.885	1.769	5.063	2.097	3.958	2.450
Mexico=12	1.736	4.288	1.190	4.507	5.894	4.493	5.067	3.380	1.872	2.687	4.871	0.000	1.846	1.399	1.295	5.159	1.391	5.803	7.291	3.386
Russia=13	1.687	3.755	1.546	4.110	5.211	3.823	4.280	3.581	3.061	2.451	4.099	1.846	0	1.177	2.124	4.184	1.993	5.179	6.772	2.891
Saudi Arabia=14	1.478	3.836	1.350	4.261	5.786	4.088	4.733	3.829	2.778	2.452	4.444	1.399	1.177	0	2.020	4.585	1.986	5.455	7.155	3.290
South Africa=15	2.394	4.396	1.765	4.374	6.236	4.636	5.236	3.560	2.302	3.200	4.885	1.295	2.124	2.020	0	5.331	2.141	5.927	7.253	3.692
South Korea=16	5.672	2.160	5.416	2.323	4.693	1.552	1.158	6.259	6.708	2.772	1.769	5.159	4.184	4.585	5.331	0	4.948	1.787	4.708	2.622
Turkey=17	2.021	4.451	2.011	4.715	5.797	4.464	4.833	3.741	2.203	2.814	5.063	1.391	1.993	1.986	2.141	4.948	0	5.652	7.285	3.405
United Kingdom=18	6.601	2.019	6.228	2.005	5.236	1.433	1.364	6.995	7.466	3.374	2.097	5.803	5.179	5.455	5.927	1.787	5.652	0	4.185	3.070
United States=19	8.158	4.986	7.537	4.511	4.716	4.445	4.225	7.649	8.558	5.623	3.958	7.291	6.772	7.155	7.253	4.708	7.285	4.185	0.000	5.449
European Union=20	4.179	2.207	3.695	2.466	4.106	2.008	2.312	4.275	4.934	1.545	2.450	3.386	2.891	3.290	3.692	2.622	3.405	3.070	5.449	0

Source: Authors' own work based on GII data

economies in the years 2010–2016 are shown (highlighted in green) in Tables 16, 17, 18, 19, 20, 21, and 22.

## 3.5   Step 5: Optimum Chart Drawing

In the drawing of the optimum chart, economies which have the most commonalities are connected by designating a vector toward the economy which is considered as the model with the vector length equal to the shortest distance between the economies. For determining homogeneous economies, at first, upper-line distance $d(+)$ and lower-limit distance $d(-)$ were computed, using Eqs. (5) and (6), where d is the shortest distances' average and S_d is the standard deviation:

$$d(+) = d + 2S_d \tag{5}$$

$$d(-) = d - 2S_d \tag{6}$$

It is to be noted that 95.45% of data lie within a band around the mean in a normal (Gaussian) distribution with a width of four standard deviations, i.e., $-2S_d$ to $+2S_d$ (Le Quesne 1969; Phillips 1983).

Furthermore, after calculating $d(+)$ and $d(-)$ for the G20 economies in 2010–2016 from Eqs. (5) and (6), it became evident that the distances among the
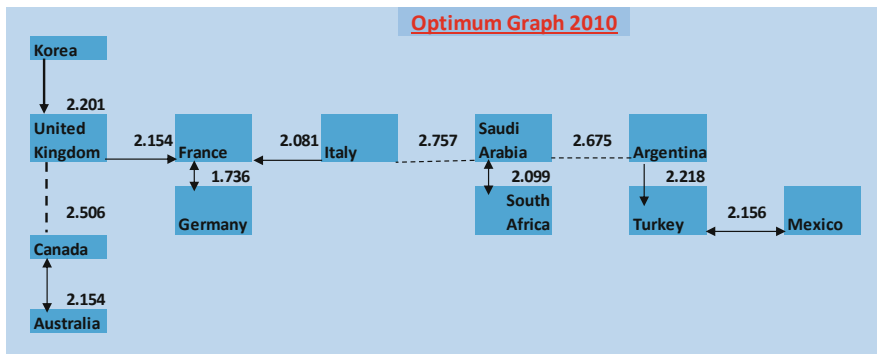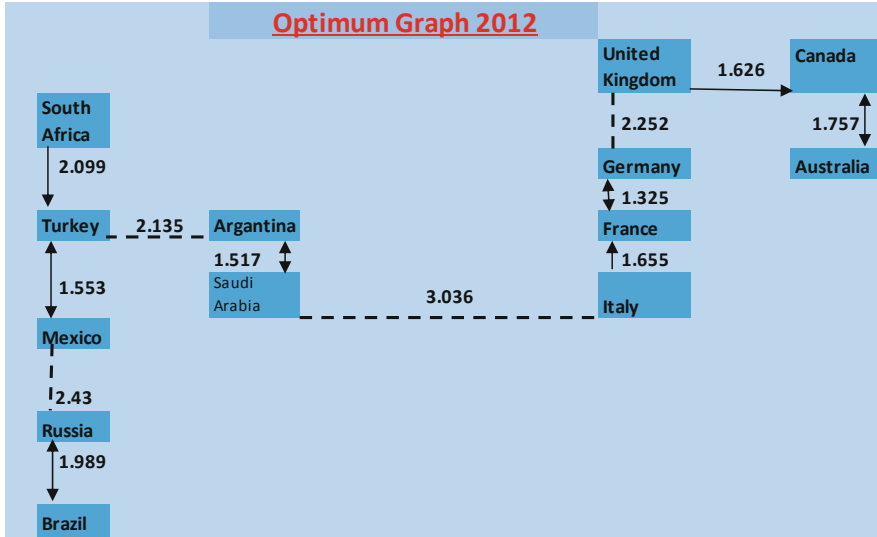
Fig. 3 Final values of the shortest distances between economies in the optimum graph for 2010. Source: Authors' own work based on analyzed GII data
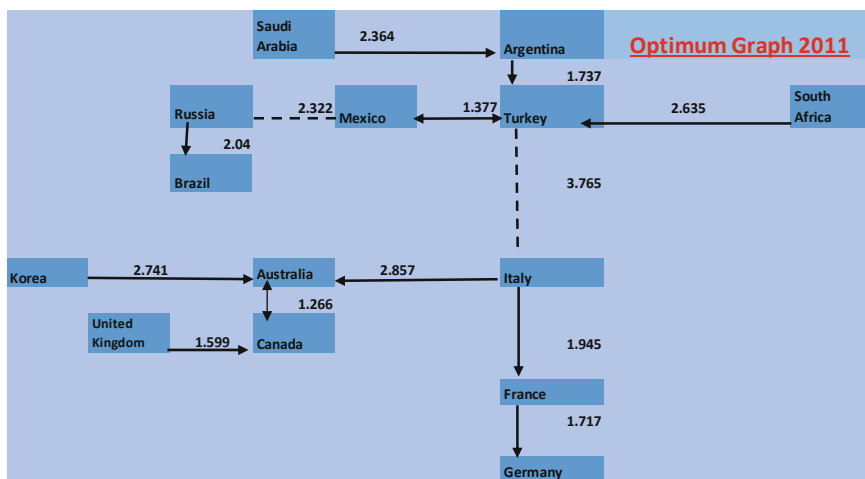
Fig. 4 Final values of the shortest distances between economies in the optimum graph for 2011. Source: Authors' own work based on analyzed GII data

economies should not be out of upper $d(+)$ and lower $d(-)$ limits range for the years 2010 to 2016; if each economy is out of the range $d(-)$ and $d(+)$, it has to be set aside, and then the other economies pass through this process until the remaining economies are settled within $d(-)$ and $d(+)$ range. This leads to a homogenous group of economies that could be compared with one another. Then the countries are connected by vectors. Consequently, the optimum charts, or "optimum graphs," for the years 2010–2016 are shown in Figs. 3, 4, 5, 6, 7, 8, and 9.
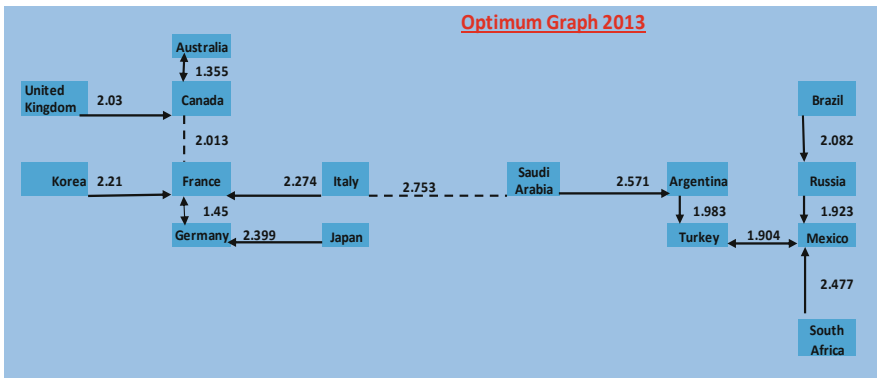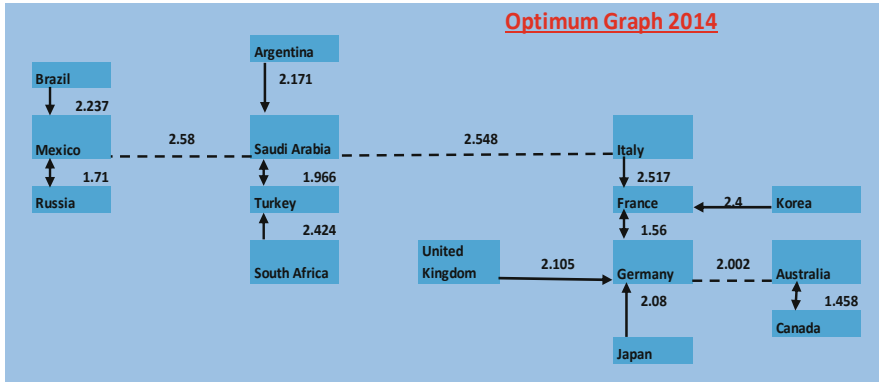
Fig. 5 Final values of the shortest distances between economies in the optimum graph for 2012. Source: Authors' own work based on analyzed GII data

Fig. 6 Final values of the shortest distance between economies in the optimum graph for 2013. Source: Authors' own work based on analyzed GII data

3.6 Step 6: Ranking of the Economies in Terms of Improvement and Development

According to step 5, if the G20 economies are not settled in homogeneous groups, then the new data matrix could be formed for homogenous group of economies, and again the standard matrix can be computed. In the standard matrix, the largest value in each column can be found and named the "ideal amount." It is noteworthy that for

Fig. 7 Final values of the shortest distances between economies in the optimum graph for 2014. Source: Authors' own work based on analyzed GII data

Fig. 8 Final values of the shortest distances between economies in the optimum graph for 2015. Source: Authors' own work based on analyzed GII data
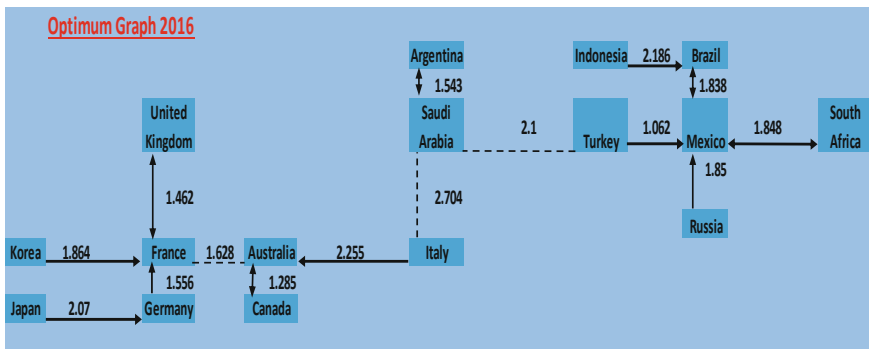
Fig. 9 Final values of the shortest distances between economies in the optimum graph for 2016. Source: Authors' own work based on analyzed GII data
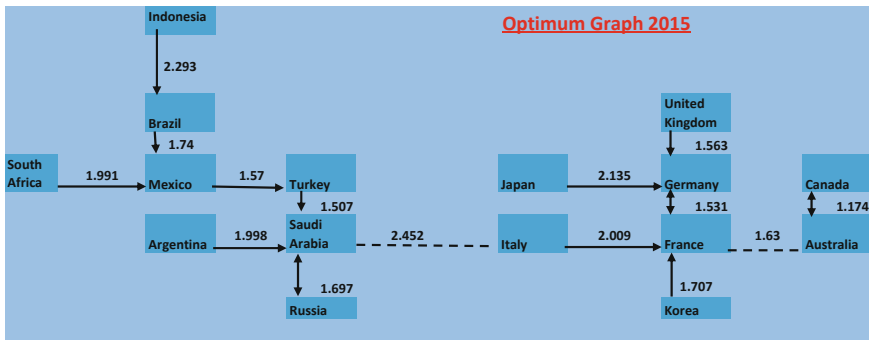
development being a positive function of the indicators, the largest value is the "ideal amount," and the lowest value is the shortest distance between two economies.

In this chapter, the twenty reviewed economies do not all settle in an equally seamlessly space. Hence, the computation process was followed to achieve a homogeneous group, by calculations in a process of eight steps, for every year from 2010 to 2016 with the outranging data. Thus, an acceptable seamlessly space of distinct economies was obtained (with similar economic features) which could be measured and compared to distinguish the degree of development in economies in order to present a benchmark pattern for development. The calculation processes are shown in Tables 23, 24, 25, 26, 27, 28, and 29.

Table 23 The eighth round of the homogenization process for the year 2010 (the shortest distances between economies highlighted in blue)

2010 year	Argentina=1	Australia=2	Canada=3	France=4	Germany=5	Italy=6	Mexico=7	Saudi Arabia=8	South Africa=9	South Korea=10	Turkey=11	United Kingdom=12	Shortest distance
Argentina=1		5.323	5.970	4.697	6.096	3.084	3.739	2.675	4.041	5.046	2.218	6.212	2.218
Australia=2	5.323		2.154	3.029	4.177	3.675	6.663	4.055	5.001	2.301	5.734	3.043	2.154
Canada=3	5.970	2.154		2.936	3.308	4.285	7.437	5.172	6.069	2.614	6.290	2.506	2.154
France=4	4.697	3.029	2.936		1.736	2.081	5.362	4.193	4.894	2.434	4.663	2.154	1.736
Germany=5	6.096	4.177	3.308	1.736		3.605	6.457	5.736	6.289	3.299	5.845	2.234	1.736
Italy=6	3.084	3.675	4.285	2.081	3.605		3.694	2.757	3.558	3.488	2.960	3.853	2.081
Mexico=7	3.739	6.663	7.437	5.362	6.457	3.694		4.085	3.752	6.113	2.156	6.732	2.156
Saudi Arabia=8	2.675	4.055	5.172	4.193	5.736	2.757	4.085		2.099	4.286	2.911	5.128	2.099
South Africa=9	4.041	5.001	6.069	4.894	6.289	3.558	3.752	2.099		4.990	3.430	5.426	2.099
South Korea=10	5.046	2.301	2.614	2.434	3.299	3.488	6.113	4.286	4.990		5.338	2.201	2.201
Turkey=11	2.218	5.734	6.290	4.663	5.845	2.960	2.156	2.911	3.430	5.338		6.121	2.156
United Kingdom=12	6.212	3.043	2.506	2.154	2.234	3.853	6.732	5.128	5.426	2.201	6.121		2.154

Source: Authors' own work based on GII data

Table 24 The fifth round of the homogenization process for the year 2011 (the shortest distances between economies highlighted in blue)

2011 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Italy=7	Mexico=8	Russia=9	Saudi Arabia=10	South Africa=11	South Korea=12	Turkey=13	United Kingdom=14	Shortest distance
Argentina=1		5.005	4.164	5.866	4.975	6.018	3.387	2.247	3.119	2.364	3.174	5.208	1.737	6.796	1.737
Australia=2	5.005		5.973	1.266	2.119	3.299	2.857	5.479	5.241	3.219	4.780	2.741	5.551	2.594	1.266
Brazil=3	4.164	5.973		6.360	4.908	5.354	3.779	2.790	2.040	4.808	4.642	5.942	3.693	6.610	2.040
Canada=4	5.866	1.266	6.360		2.232	2.894	3.496	6.253	5.741	4.215	5.429	2.922	6.306	1.599	1.266
France=5	4.975	2.119	4.908	2.232		1.717	1.945	5.069	4.201	3.940	5.148	2.618	5.317	2.561	1.717
Germany=6	6.018	3.299	5.354	2.894	1.717		3.220	6.093	5.013	5.101	6.305	3.678	6.250	2.427	1.717
Italy=7	3.387	2.857	3.779	3.496	1.945	3.220		3.423	2.914	2.971	3.971	2.979	3.765	4.099	1.945
Mexico=8	2.247	5.479	2.790	6.253	5.069	6.093	3.423		2.322	3.447	2.835	5.557	1.377	6.948	1.377
Russia=9	3.119	5.241	2.040	5.741	4.201	5.013	2.914	2.322		4.056	3.957	4.719	2.990	6.158	2.040
Saudi Arabia=10	2.364	3.219	4.808	4.215	3.940	5.101	2.971	3.447	4.056		3.247	4.462	3.300	5.392	2.364
South Africa=11	3.174	4.780	4.642	5.429	5.148	6.305	3.971	2.835	3.957	3.247		5.218	2.635	6.319	2.635
South Korea=12	5.208	2.741	5.942	2.922	2.618	3.678	2.979	5.557	4.719	4.462	5.218		5.654	3.135	2.741
Turkey=13	1.737	5.551	3.693	6.306	5.317	6.250	3.765	1.377	2.990	3.300	2.635	5.654		7.053	1.377
United Kingdom=14	6.796	2.594	6.610	1.599	2.561	2.427	4.099	6.948	6.158	5.392	6.319	3.135	7.053		1.599

Source: Authors' own work based on GII data

Table 25 The sixth round of the homogenization process for the year 2012 (the shortest distances between economies highlighted in blue)

2012 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Italy=7	Mexico=8	Russia=9	Saudi Arabia=10	South Africa=11	Turkey=12	United Kingdom=13	Shortest distance
Argentina=1		5.080	4.242	5.720	4.976	5.863	3.828	2.234	3.592	1.517	3.076	2.135	6.783	1.517
Australia=2	5.080		6.205	1.757	2.331	3.211	2.937	5.278	5.434	3.775	5.278	5.743	2.794	1.757
Brazil=3	4.242	6.205		6.469	5.098	5.541	4.152	2.661	1.989	4.430	4.480	3.602	6.917	1.989
Canada=4	5.720	1.757	6.469		2.172	2.613	2.978	5.773	5.927	4.510	5.639	6.128	1.626	1.757
France=5	4.976	2.331	5.098	2.172		1.325	1.655	4.855	4.382	4.032	5.440	5.286	2.352	1.325
Germany=6	5.863	3.211	5.541	2.613	1.325		2.676	5.594	5.142	5.038	6.366	6.122	2.252	1.325
Italy=7	3.828	2.937	4.152	2.978	1.655	2.676		3.699	3.361	3.036	4.270	4.009	3.633	1.655
Mexico=8	2.234	5.278	2.661	5.773	4.855	5.594	3.699		2.436	2.522	2.567	1.533	6.709	1.533
Russia=9	3.592	5.434	1.989	5.927	4.382	5.142	3.361	2.436		3.684	3.962	2.893	6.452	1.989
Saudi Arabia=10	1.517	3.775	4.430	4.510	4.032	5.038	3.036	2.522	3.684		2.747	2.620	5.636	1.517
South Africa=11	3.076	5.278	4.480	5.639	5.440	6.366	4.270	2.567	3.962	2.747		2.099	6.868	2.099
Turkey=12	2.135	5.743	3.602	6.128	5.286	6.122	4.009	1.533	2.893	2.620	2.099		7.127	1.533
United Kingdom=13	6.783	2.794	6.917	1.626	2.352	2.252	3.633	6.709	6.452	5.636	6.868	7.127		1.626

Source: Authors' own work based on GII data

Table 26 The fourth round of homogenization process for the year 2013 (the shortest distances between economies highlighted in blue)

2013 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Italy=7	Japan=8	Mexico=9	Russia=10	Saudi Arabia=11	South Africa=12	South Korea=13	Turkey=14	United Kingdom=15	Shortest distance
Argentina=1		5.831	3.999	6.270	5.201	6.190	3.475	6.787	2.387	3.137	2.571	2.957	5.650	1.983	7.560	1.983
Australia=2	5.831		6.695	1.355	2.231	2.890	3.595	4.373	5.887	5.800	3.973	5.459	2.445	5.686	2.649	1.355
Brazil=3	3.999	6.695		6.638	5.198	5.816	3.949	5.392	2.403	2.082	4.491	4.260	6.227	3.775	7.472	2.082
Canada=4	6.270	1.355	6.638		2.013	2.629	3.553	3.776	6.038	5.866	4.337	5.416	2.398	6.026	2.027	1.355
France=5	5.201	2.231	5.198	2.013		1.450	2.274	2.653	4.936	4.328	3.799	4.982	2.210	5.094	2.823	1.450
Germany=6	6.190	2.890	5.816	2.629	1.450		3.149	2.399	5.759	4.976	4.873	5.986	2.776	5.818	2.458	1.450
Italy=7	3.475	3.595	3.949	3.553	2.274	3.149		3.697	3.097	2.773	2.753	3.334	3.052	3.378	4.734	2.274
Japan=8	6.787	4.373	5.392	3.776	2.653	2.399	3.697		5.757	4.829	5.688	6.255	3.927	6.428	3.947	2.399
Mexico=9	2.387	5.887	2.403	6.038	4.936	5.759	3.097	5.757		1.923	3.131	2.477	5.561	1.904	7.257	1.904
Russia=10	3.137	5.800	2.082	5.866	4.328	4.976	2.773	4.829	1.923		3.952	3.729	4.960	2.954	6.778	1.923
Saudi Arabia=11	2.571	3.973	4.491	4.337	3.799	4.873	2.753	5.688	3.131	3.952		2.623	4.388	2.637	5.674	2.571
South Africa=12	2.957	5.459	4.260	5.416	4.982	5.986	3.334	6.255	2.477	3.729	2.623		5.401	2.438	6.859	2.477
South Korea=13	5.650	2.445	6.227	2.398	2.210	2.776	3.052	3.927	5.561	4.960	4.388	5.401		5.494	3.043	2.210
Turkey=14	1.983	5.686	3.775	6.026	5.094	5.818	3.378	6.428	1.904	2.954	2.637	2.438	5.494		7.095	1.904
United Kingdom=15	7.560	2.649	7.472	2.027	2.823	2.458	4.734	3.947	7.257	6.778	5.674	6.859	3.043	7.095		2.027

Source: Authors' own work based on GII data

For instance, the results of the homogenization process for the year 2010 suggested elimination of China and the United States and then India, the European Union, Japan, Brazil, Indonesia, and Russia, in successive steps of the homogenization process calculations. These results are illustrated in Table 23, and Fig. 3 demonstrates the compound distances between homogenous economies.

Similarly, the results for the year 2011, again, suggested elimination of China and the United States and then India, the European Union, Japan, and Indonesia in

Table 27 The fourth round of homogenization process for the year 2014 (the shortest distances between economies highlighted in blue)

2014 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Italy=7	Japan=8	Mexico=9	Russia=10	Saudi Arabia=11	South Africa=12	South Korea=13	Turkey=14	United Kingdom=15	Shortest distance
Argentina=1		6.006	4.130	6.284	5.592	6.440	3.935	7.019	2.491	3.182	2.171	3.128	5.953	2.245	7.542	2.171
Australia=2	6.006		6.866	1.458	2.002	3.218	3.436	4.231	5.470	5.724	4.132	5.530	2.831	5.556	2.712	1.458
Brazil=3	4.130	6.866		6.625	5.696	6.083	4.298	5.702	2.237	2.385	4.544	4.272	6.526	3.967	7.436	2.237
Canada=4	6.284	1.458	6.625		2.040	2.905	3.176	3.632	5.356	5.645	4.443	5.230	2.754	5.692	2.255	1.458
France=5	5.592	2.002	5.696	2.040		1.560	2.517	2.569	4.695	4.573	4.073	5.405	2.400	5.255	2.338	1.560
Germany=6	6.440	3.218	6.083	2.905	1.560		3.264	2.080	5.311	4.955	5.135	6.157	2.783	5.969	2.105	1.560
Italy=7	3.935	3.436	4.298	3.176	2.517	3.264		3.577	2.916	3.086	2.548	3.506	3.026	3.440	4.355	2.517
Japan=8	7.019	4.231	5.702	3.632	2.569	2.080	3.577		5.489	4.975	5.796	6.450	3.639	6.479	3.268	2.080
Mexico=9	2.491	5.470	2.237	5.356	4.695	5.311	2.916	5.489		1.710	2.580	2.427	5.230	2.026	6.508	1.710
Russia=10	3.182	5.724	2.385	5.645	4.573	4.955	3.086	4.975	1.710		3.447	3.697	4.805	3.047	6.414	1.710
Saudi Arabia=11	2.171	4.132	4.544	4.443	4.073	5.135	2.548	5.796	2.580	3.447		2.699	4.499	1.966	5.899	1.966
South Africa=12	3.128	5.530	4.272	5.230	5.405	6.157	3.506	6.450	2.427	3.697	2.699		5.621	2.424	6.909	2.424
South Korea=13	5.953	2.831	6.526	2.754	2.400	2.783	3.026	3.639	5.230	4.805	4.499	5.621		5.499	2.981	2.400
Turkey=14	2.245	5.556	3.967	5.692	5.255	5.969	3.440	6.479	2.026	3.047	1.966	2.424	5.499		6.963	1.966
United Kingdom=15	7.542	2.712	7.436	2.255	2.338	2.105	4.355	3.268	6.508	6.414	5.899	6.909	2.981	6.963		2.105

Source: Authors' own work based on GII data

Table 28 The second round of homogenization process for the year 2015 (the shortest distances between economies highlighted in blue)

2015 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Indonesia=7	Italy=8	Japan=9	Mexico=10	Russia=11	Saudi Arabia=12	South Africa=13	South Korea=14	Turkey=15	United Kingdom=16	Shortest distance
Argentina=1		5.571	3.091	6.020	5.702	6.513	3.731	3.981	7.008	2.021	2.219	1.998	2.720	6.080	2.235	7.308	1.998
Australia=2	5.571		5.579	1.174	1.630	2.949	7.175	2.300	3.604	4.902	3.999	3.763	4.551	2.165	4.406	2.615	1.174
Brazil=3	3.091	5.579		5.675	5.187	5.737	2.293	3.819	5.650	1.740	3.432	3.381	3.306	5.838	3.025	6.667	1.740
Canada=4	6.020	1.174	5.675		1.680	2.677	7.259	2.509	3.134	5.099	4.383	4.249	4.603	2.223	4.691	2.258	1.174
France=5	5.702	1.630	5.187	1.680		1.531	6.938	2.009	2.343	4.858	3.966	4.115	4.952	1.707	4.459	1.754	1.531
Germany=6	6.513	2.949	5.737	2.677	1.531		7.429	2.876	2.135	5.528	4.701	5.120	5.766	2.350	5.120	1.562	1.531
Indonesia=7	3.731	7.175	2.293	7.259	6.938	7.429		5.372	7.563	2.666	4.827	4.400	4.067	7.422	3.582	8.261	2.293
Italy=8	3.981	2.300	3.819	2.509	2.009	2.876	5.372		3.585	3.148	2.518	2.462	3.424	2.721	2.743	3.497	2.009
Japan=9	7.008	3.604	5.650	3.134	2.343	2.135	7.563	3.585		5.869	5.306	5.710	6.124	3.293	5.942	2.632	2.135
Mexico=10	2.021	4.902	1.740	5.099	4.858	5.528	2.666	3.148	5.869		2.486	2.043	1.991	5.456	1.570	6.342	1.570
Russia=11	2.219	3.999	3.432	4.383	3.966	4.701	4.827	2.518	5.306	2.486		1.697	2.624	4.197	2.205	5.545	1.697
Saudi Arabia=12	1.998	3.763	3.381	4.249	4.115	5.120	4.400	2.462	5.710	2.043	1.697		2.144	4.539	1.507	5.637	1.697
South Africa=13	2.720	4.551	3.306	4.603	4.952	5.766	4.067	3.424	6.124	1.991	2.624	2.144		5.330	2.207	6.325	1.991
South Korea=14	6.080	2.165	5.838	2.223	1.707	2.350	7.422	2.721	3.293	5.456	4.197	4.539	5.330		4.852	2.326	1.707
Turkey=15	2.235	4.406	3.025	4.691	4.459	5.120	3.582	2.743	5.942	1.570	2.205	1.507	2.207	4.852		5.798	1.507
United Kingdom=16	7.308	2.615	6.667	2.258	1.754	1.562	8.261	3.497	2.632	6.342	5.545	5.637	6.325	2.326	5.798		1.562

Source: Authors' own work based on GII data

consecutive steps of homogenization process calculations. The corresponding results are presented in Table 22 and Fig. 4.

Moreover, based on the results for the year 2012, China, the United States, India, the European Union, Japan, Indonesia, and South Korea were omitted in continued steps of homogenization process calculations. These results are depicted in Table 25 and Fig. 5. It is observed that within the G20 economies, only thirteen economies remained in the homogenization process after six rounds of computations.

Table 29 The third round of homogenization process for the year 2016 (the shortest distances between economies highlighted in blue)

2016 Year	Argentina=1	Australia=2	Brazil=3	Canada=4	France=5	Germany=6	Indonesia=7	Italy=8	Japan=9	Mexico=10	Russia=11	Saudi Arabia=12	South Africa=13	South Korea=14	Turkey=15	United Kingdom=16	Shortest distance
Argentina=1		5.183	2.964	5.755	5.592	6.380	3.969	3.742	6.844	2.247	2.395	1.543	2.510	5.846	2.155	6.959	1.543
Australia=2	5.183		5.511	1.285	1.628	2.982	7.023	2.255	3.834	4.553	4.170	3.890	4.405	2.294	4.526	2.465	1.285
Brazil=3	2.964	5.511		5.752	5.388	5.982	2.186	3.890	5.863	1.838	1.881	3.163	3.237	6.004	2.976	6.705	1.838
Canada=4	5.755	1.285	5.752		1.678	2.850	7.137	2.690	3.472	4.820	4.521	4.439	4.512	2.399	4.885	2.256	1.285
France=5	5.592	1.628	5.388	1.678		1.556	6.971	2.257	2.575	4.772	4.163	4.456	4.958	1.864	4.722	1.462	1.462
Germany=6	6.380	2.982	5.982	2.850	1.556		7.509	3.040	2.070	5.562	4.814	5.436	5.914	2.156	5.396	1.600	1.556
Indonesia=7	3.969	7.023	2.186	7.137	6.971	7.509		5.360	7.537	2.725	3.506	4.412	3.944	7.438	3.517	8.160	2.186
Italy=8	3.742	2.255	3.890	2.690	2.257	3.040	5.360		3.757	2.951	2.774	2.704	3.422	2.847	2.944	3.504	2.255
Japan=9	6.844	3.834	5.863	3.472	2.575	2.070	7.537	3.757		5.825	5.086	5.881	6.258	3.513	6.162	2.893	2.070
Mexico=10	2.247	4.553	1.838	4.820	4.772	5.562	2.725	2.951	5.825		1.850	2.033	1.848	5.349	1.602	6.071	1.838
Russia=11	2.395	4.170	1.881	4.521	4.163	4.814	3.506	2.774	5.086	1.850		2.134	2.649	4.476	2.262	5.488	1.850
Saudi Arabia=12	1.543	3.890	3.163	4.439	4.456	5.436	4.412	2.704	5.881	2.033	2.134		2.031	4.736	2.100	5.807	1.543
South Africa=13	2.510	4.405	3.237	4.512	4.958	5.914	3.944	3.422	6.258	1.848	2.649	2.031		5.409	2.237	6.231	1.848
South Korea=14	5.846	2.294	6.004	2.399	1.864	2.156	7.438	2.847	3.513	5.349	4.476	4.736	5.409		5.032	2.114	1.864
Turkey=15	2.155	4.526	2.976	4.885	4.722	5.396	3.517	2.944	6.162	1.602	2.262	2.100	2.237	5.032		5.913	1.602
United Kingdom=16	6.959	2.465	6.705	2.256	1.462	1.600	8.160	3.504	2.893	6.071	5.488	5.807	6.231	2.114	5.913		1.462

Source: Authors' own work based on analyzed GII data

Subsequently, for the year 2013, in the fourth round, the results lead to omission of China, the United States, India, the European Union, and Indonesia in the consecutive steps of homogenization process calculations. The results are shown in Table 26 with Fig. 6.

Furthermore, for the year 2014, China, the United States, India, the European Union, and Indonesia were eliminated in the successive steps of homogenization process calculations. The results are rendered in Table 27 and Fig. 7.

Nevertheless, in the year 2015, the second round leads to deletion of China, India, the United States, and the European Union in the consecutive steps of homogenization process calculations. This process is demonstrated in Table 28 and Fig. 8.

Finally, in 2016, the third round leads to omission of China, the United States, India, and the European Union in the consecutive steps of homogenization process calculations. Table 29 with Fig. 9 presents the corresponding results.

3.7 Step 7: Calculation of the Economies' Development Degrees

To find development degrees (fi) for the economies within the G20 group, Co, i.e., the upper limit of the development pattern should be measured for substitution in the following relationship:

$$\mathrm{fi} = (\mathrm{Cio}/\mathrm{Co})$$

where Cio is development pattern over the upper limit of the development pattern and Co is obtained from Eq. (7):

$$\mathrm{Co} = \overline{\mathrm{Cio}} + 2\,\mathrm{Sio}, \tag{7}$$

where $\overline{\mathrm{Cio}}$ and Sio are the average and standard deviation of the development pattern corresponding to fi (Le Quesne 1969; Phillips 1983).

The development degree is between "0" and "1," that is, when "fi" values get near to "0," the economy is more developed than the case "fi" approaches to "1"; namely, the economy gets close to less developed characteristics. By measuring Cio and fi, the economies were ranked based on the development degrees. In this step, results obtained for the G20 economies lead to the development degree (fi) for each of the economies, as presented in Tables 30, 31, 32, 33, 34, 35, and 36.

4 Conclusion

In this chapter, population and GDP, together with seven indicators, extracted from the Global Innovation Index (GII), were used in the measurement of the "development degree" for G20 countries. It was remarkable not only to find out the indicators most effective on the development degrees but also to rank the G20 economies on this basis, as shown in Tables 30, 31, 32, 33, 34, 35, and 36 for the period 2010–2016.

Table 30 Development degrees for 2010

2010 year	fi	Development ranking	
Argentina = 1	0.910	Germany	0.369
Australia = 2	0.547	France	0.446
Brazil = 3	0.713	Canada	0.469
Canada = 4	0.469	Australia	0.547
France = 5	0.446	Korea	0.555
Germany = 6	0.369	Italy	0.603
Italy = 7	0.603	Brazil	0.713
Mexico = 8	0.856	Russia	0.726
Russia = 9	0.726	Saudi Arabia	0.786
Saudi Arabia = 10	0.786	Mexico	0.856
South Africa = 11	0.865	South Africa	0.865
South Korea = 12	0.555	Argentina	0.910

Source: Authors' own work

Table 31 Development degrees for 2011

2011 year	fi	Development ranking	
Argentina = 1	0.880	United Kingdom	0.338
Australia = 2	0.529	Germany	0.357
Brazil = 3	0.689	France	0.431
Canada = 4	0.454	Canada	0.454
France = 5	0.431	Australia	0.529
Germany = 6	0.357	Korea	0.537
Italy = 7	0.583	Italy	0.583
Mexico = 8	0.828	Brazil	0.689
Russia = 9	0.702	Russia	0.702
Saudi Arabia = 10	0.760	Saudi Arabia	0.760
South Africa = 11	0.837	Mexico	0.828
South Korea = 12	0.537	South Africa	0.837
Turkey = 13	0.877	Turkey	0.877
United Kingdom = 14	0.338	Argentina	0.880

Source: Authors' own work

Table 32 Development degrees for 2012

2012 year	fi	Development ranking	
Argentina = 1	0.846	United Kingdom	0.314
Australia = 2	0.511	Germany	0.329
Brazil = 3	0.697	France	0.400
Canada = 4	0.427	Canada	0.427
France = 5	0.400	Australia	0.511
Germany = 6	0.329	Italy	0.520
Italy = 7	0.520	Brazil	0.697
Mexico = 8	0.766	Russia	0.701
Russia = 9	0.701	Saudi Arabia	0.751
Saudi Arabia = 10	0.751	Mexico	0.766
South Africa = 11	0.845	South Africa	0.845
Turkey = 12	0.848	Argentina	0.846
United Kingdom = 13	0.314	Turkey	0.848

Source: Authors' own work

Scrutinizing the selected indicators measuring the development degrees leads to significant remarks. The United States and China having the largest GDP among these countries during 2010 to 2016 underwent elimination from the group in the first round of iterations for homogeneity (leading to a homogenous group of economies that could be compared with one another). In Tables 16, 17, 18, 19, 20, 21, and 22, compound distance matrices were rendered for the first round of iterations during 2010–2016. Computations for similar homogenous economic groups finally lead to

Table 33 Development degrees for 2013

2013 year	fi	Development ranking	
Argentina = 1	0.910	Japan	0.350
Australia = 2	0.532	United Kingdom	0.361
Brazil = 3	0.745	Germany	0.363
Canada = 4	0.480	France	0.453
France = 5	0.453	Canada	0.480
Germany = 6	0.363	Australia	0.532
Italy = 7	0.623	Korea	0.533
Japan = 8	0.350	Italy	0.623
Mexico = 9	0.808	Russia	0.723
Russia = 10	0.723	Brazil	0.745
Saudi Arabia = 11	0.763	Saudi Arabia	0.763
South Africa = 12	0.848	Mexico	0.808
South Korea = 13	0.533	Turkey	0.842
Turkey = 14	0.842	South Africa	0.848
United Kingdom = 15	0.361	Argentina	0.910

Source: Authors' own work

Table 34 Development degrees for 2014

2014 year	fi	Development ranking	
Argentina = 1	0.880	United Kingdom	0.241
Australia = 2	0.450	Germany	0.264
Brazil = 3	0.772	Japan	0.283
Canada = 4	0.412	France	0.349
France = 5	0.349	Canada	0.412
Germany = 6	0.264	Korea	0.444
Italy = 7	0.553	Australia	0.450
Japan = 8	0.283	Italy	0.553
Mexico = 9	0.735	Russia	0.696
Russia = 10	0.696	Saudi Arabia	0.735
Saudi Arabia = 11	0.735	Mexico	0.735
South Africa = 12	0.823	Brazil	0.772
South Korea = 13	0.444	Turkey	0.808
Turkey = 14	0.808	South Africa	0.823
United Kingdom = 15	0.241	Argentina	0.880

Source: Authors' own work

country performance rankings (based on the economic development degrees in consecutive years) presented in Tables 23, 24, 25, 26, 27, 28, and 29.

From the 20 economies within the G20, in 2010, 12 economies formed the homogenous category. Similarly, 14, 13, 15, 16, and 16 economies formed the homogenous categories, corresponding to the years 2011, 2012, 2013, 2014, 2015, and 2016, respectively. Nonetheless, throughout the entire homogenization iterative

Table 35 Development
degrees for 2015

2015 year	fi	Development ranking	
Argentina = 1	0.899	Japan	0.309
Australia = 2	0.524	United Kingdom	0.333
Brazil = 3	0.722	Germany	0.340
Canada = 4	0.482	France	0.409
France = 5	0.409	Korea	0.466
Germany = 6	0.340	Canada	0.482
Indonesia = 7	0.874	Australia	0.524
Italy = 8	0.550	Italy	0.550
Japan = 9	0.309	Brazil	0.722
Mexico = 10	0.757	Russia	0.746
Russia = 11	0.746	Turkey	0.747
Saudi Arabia = 12	0.762	Mexico	0.757
South Africa = 13	0.806	Saudi Arabia	0.762
South Korea = 14	0.466	South Africa	0.806
Turkey = 15	0.747	Indonesia	0.874
United Kingdom = 16	0.333	Argentina	0.899

Source: Authors' own work

Table 36 Development
degrees for 2016

2016 year	fi	Development ranking	
Argentina = 1	0.890	Japan	0.313
Australia = 2	0.551	Germany	0.349
Brazil = 3	0.745	United Kingdom	0.365
Canada = 4	0.510	France	0.422
France = 5	0.422	Korea	0.480
Germany = 6	0.349	Canada	0.510
Indonesia = 7	0.873	Australia	0.551
Italy = 8	0.574	Italy	0.574
Japan = 9	0.313	Russia	0.681
Mexico = 10	0.754	Brazil	0.745
Russia = 11	0.681	Mexico	0.754
Saudi Arabia = 12	0.797	Turkey	0.776
South Africa = 13	0.821	Saudi Arabia	0.797
South Korea = 14	0.480	South Africa	0.821
Turkey = 15	0.776	Indonesia	0.873
United Kingdom = 16	0.365	Argentina	0.890

Source: Authors' own work

processes, the United States, China, the European Union (EU), and India were set
aside to achieve homogeneity, with the employed GII data. These countries have
highest populations (China, India, and EU) or largest GDPs (the United States,
China, and EU) compared to others. It is also noted that the EU encompasses

28 countries (some of them members of G20). Hence, the data for the European Union were prorated; i.e., for GDP and the other indicators, the average values over 28 countries and, for population, the sum of populations of the 28 member countries were calculated and used in each year.

Subsequently, the development degrees "fi" for every year were computed and shown on the left side of Tables 30, 31, 32, 33, 34, 35, and 36. The right side of each table also ranks the countries based on their development degrees. It was noted that the development degrees were between "0" and "1," that is, when "fi" values get near to "0," the economy is more developed than the case "fi" approaches to "1"; namely, the economy gets closer to less developed characteristics. For instance, in 2010, Germany with a development degree of 0.369 (fi = 0.369) is observed to be the most developed, and Argentina with a development degree of 0.91 (fi = 0.91) is marked as the least developed. Thenceforth, the United Kingdom and Japan appear to alternate as the most developed, while Argentina remains (alternating with Turkey only in 2012) the least developed in the years 2011 to 2016. Moreover, based on the GII data used in this research (setting aside the United States, China, EU, and India for homogenous grouping), it was explored that Germany, the United Kingdom, and Japan made the most progress in development during 2010–2016. However, as outlined in Tables 1, 2, 3, 4, 5, 6, and 7, the latter three are countries with higher GDPs and other indicators such as institutions, market sophistication, etc., contributing to innovation and prosperity.

Nevertheless, in the course of development degrees computations, shortest distances between the G20 economies were also generated. The results were yielded in Tables 23, 24, 25, 26, 27, 28, and 29 and Figs. 3, 4, 5, 6, 7, 8, and 9, which can be useful for benchmarking within the Group of Twenty.

Finally, for future research, use of the following indicators may be suggested:

– Human Development Index (HDI)—which includes GDP, education, and health
– Gini coefficient as a measure of inequality in society
– Environmental sustainability, including factors such as pollution, climate change, deforestation, etc.
– The United Nations' Sustainable Development Goals
– Inclusion of the following forms of capital (as defined by the United Nations): human capital, social capital, and natural capital

References

Atkinson RD, Stewart LA (2012) The 2012 state new economy index. SSRN Electron J. https://doi.org/10.2139/ssrn.3064936

Encaoua D, Hall BH, Laisney F, Mairesse J (2000) The economics and econometrics of innovation. Springer, Dordrecht

Forouharfar A, Sazegar M, Hill V, Faghih N (2018) A taxonomic study of innovation in the MENA region economies: reflections on entrepreneurism in Egypt and Qatar. In: Faghih N, Zali M (eds) Entrepreneurship education and research in the Middle East and North Africa (MENA). Contributions to management science. Springer, Cham. https://doi.org/10.1007/978-3-319-90394-1_14

GII, Global Innovation Index (2017) Innovation feeding the world. Cornell University, INSEAD, and WIPO, Ithaca, Fontainebleau, and Geneva. https://www.globalinnovationindex.org/about-gii#reports Accessed 16 Dec 2017

Goedhuysa M, Veugelers R (2012) Structural change and economic dynamics. Econ Pap 23:516–529

http://is.jrc.ec.europa.eu/pages/ISG/documents/Lessons_from_ICT_innovative_industries_DRAFTFORWEBSITE_29082012.pdf

Hu AG, Png I (2013) Patent rights and economic growth: evidence from cross-country panels of manufacturing industries. Oxf Econ Pap 65(3):675–698. https://doi.org/10.1093/oep/gpt011

Le Quesne WJ (1969) A method of selection of characters in numerical taxonomy. Syst Biol 18 (2):201–205. https://doi.org/10.2307/2412604

OECD (2017) News release: G20 GDP quarterly national accounts: better policies for the better. OECD, Paris. http://www.oecd.org/std/na/G20QuarterlyGDPGrowth_Methodology.pdf. Accessed 15 June 2017

Phillips RB (1983) Shape characters in numerical taxonomy and problems with ratios. Taxon 32 (4):535–544

Romuald IZ, Eulalia S (2009) Impact of technological innovations on economic growth of nations. Poznan

Sazegar M, Forouharfar A, Hill V, Faghih N (2018) The innovation-based competitive advantage in Oman's transition to a knowledge-based economy: dynamics of innovation for promotion of entrepreneurship. In: Faghih N, Zali M (eds) Entrepreneurship ecosystem in the Middle East and North Africa (MENA). Contributions to Management Science. Springer, Cham. https://doi.org/10.1007/978-3-319-75913-5_18

Van de Ven AH, Johnson PE (2006) Knowledge for theory and practice. Acad Manag Rev 31 (4):802–821

Veugelers R, Pottelsberghe BV, Véron N (2012) Lessons from ICT innovative industries: three experts' positions on financing, IPR and industrial ecosystems (working paper, Publications Office of the European Union, Luxembourg, 2012)

Zalewski RI, Skawinska E (2009) Impact of technological innovations on economic growth of nations. Syst Cybern Inf 7(6):35–40

The Disruption and Global Implications of Massive Open Online Courses (MOOCs) for Higher Education

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Abstract There has been a great deal of discussion on Massive Open Online Courses (MOOCs) since 2012 (considered by some as the year of the MOOCs). The emergence of MOOCs caused a great deal of interest among academics and technology experts as well as the general public. Some of the authors who wrote on MOOCs predicted it would be the next big thing to disrupt education. Other authors saw it as another fad that will go away once it had run its course (as most fads often do). But MOOCs did not turn out to be as such, and they are still around. Most importantly, they have evolved into something that resembles a viable business model. This development will have global implications for higher education and raises the prospect of bridging the North-South divide. This chapter examines this phenomenon and its implications from the theoretical frameworks of disruptive innovations and Jobs to Be Done—as developed by Clayton Christensen and his colleagues—and also explores its global dimension and its implications for higher education.

1 Introduction

Digital technology has impacted and continues to impact on many aspects of our personal and professional lives. This impact is continuously evolving as new developments in technology emerge. Like other industries, education has been affected by digital innovations. Cloud computing, the Internet, and wearable technology have transformed learning and teaching at schools, colleges, and universities (Sultan 2010, 2013, 2014, 2015a, b). One consequence of this transformation is MOOCs. MOOCs are courses provided free of charge and are widely available to all. At least, this is how they were being sold to people since 2012. This model differs from the online educational model that existed before. Online education has been

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(and continues to be) used by educational institutes throughout the world as a tool that complements class-based curriculum delivery.

The MOOCs model has great implications for educational institutes, especially, higher education. It raises many issues that impact several important aspects of traditional education in terms of income, quality, student experience, employability, and acceptability. Most importantly, the MOOCs model raises a big question over the future of education (especially higher education). Moreover, it has global implications for education and the potential to bridge the south-north divide in this area.

2 Objectives and Methodology

In this article, MOOCs are examined within the theoretical frameworks of disruptive innovations and Jobs to Be Done (developed by Clayton Christensen and his colleagues). This approach is helpful as it will highlight the process, implications, and future direction of this innovation in relation to education. More specifically, this chapter has three main objectives. It is aimed at:

1. Establishing MOOCs as a disruptive innovation (both new market and low-end)
2. Predicting its impact on higher education (especially in Western countries)
3. Predicting its impact on higher education in developing countries

These theories are the product of years of research into the failures and successes of many innovations and organizations, and their insightful, convincing interpretations of historical and current events are widely acknowledged by executives, directors, and authors throughout the world (McGregor 2007). This approach will be preceded by an introduction of the MOOCs phenomenon and its recent origins.

3 Background

3.1 MOOCs

The history of using the Web to provide courses to the masses for free goes back to 2006 with the establishment of the Khan Academy, a nonprofit organization founded by Salman Khan (an American of an Asian origin). The Khan Academy is a portal that contains thousands of free educational resources on different subjects (some made available through YouTube) translated into different languages. Subsequently, two Canadians by names of George Siemens (an educator Professor at the Center for Distance Education) and Stephen Downes (an online learning designer and researcher) delivered a free online course in 2008 entitled "Connectivism and Connective Knowledge 2008 (CCK08)." The course was also offered formally through the University of Manitoba and informally through open enrolment (at no

cost) to everyone in the world (Fini 2009). Some initiatives aimed at providing free university education have emerged since then. One of those was initiated by the University of the People (UoPeople). UoPeople was founded in 2009 by Shai Reshef (an Israeli educational entrepreneur. Courses provided by UoPeople are free, but students are required to pay a one-time application processing fee (e.g., US$60) and subsequent examination processing fee (e.g., US$100–200) levied per course. UoPeople offers undergraduate and postgraduate programs in business administration and computer science and has more than 9000 students from 194 countries.

It is interesting to note that since 2011, there has been a surge in interest in MOOCs by leading highly prestigious US universities that seemed keen to deliver their own online courses for "free." Examples include Harvard, Stanford, Michigan, Pennsylvania, Princeton, and MIT (to name but a few). Several start-up companies (for-profit and nonprofit) emerged since then and developed partnerships with universities and professors to offer MOOCs. By 2015 companies such as Coursera, Udacity, and edX became the biggest providers in terms of numbers of students registered. There are now over 7000 MOOCs worldwide and tens of MOOC providers worldwide (Shah 2017). The biggest and most successful of the MOOC providers are those which operate from the USA and have partnerships with leading American universities.

Despite the universal use of the term "MOOCs," some analysts (with some justification) claim that there are mainly two types of MOOCs: xMOOCs and cMOOCs. According to these views, xMOOCs relate to platforms that employ courses delivered by institutions to subscribers (a traditional one-to-many instructor-students model). xMOOCs employ a cognitive-behaviorist or instructivist pedagogical approach which relies on content-based training delivered at scale through a one-to-many learning environment (Anders 2015). Many existing MOOCs provided by companies such as edX, Coursera, and Udacity fall into this category which is the focus of this chapter. The origin of the letter "X" comes from "eXtended" or "eXtension" to indicate that the offering is an extension of the core curriculum. cMOOCs, on the other hand, relate to platforms where the subscribers can also be instructors who deliver content and take part in the discussions and learning (a kind of many-to-many model of learning). The C in cMOOCs is borrowed from the early open course Canadian initiative that began with the aforementioned course "Connectivism and Connective Knowledge" (Kennedy 2014). cMOOCs follow the pedagogic principles of connectivism through which learning is viewed as residing in the connections that exist between people and digital artifacts within a ubiquitous network (Milligan et al. 2013). Examples of cMOOCs include Change 11, Personal Learning Environments Networks and Knowledge (PLENK 2010), and Connectivism and Connected Knowledge 2011 (CCK11).

4   Theoretical Frameworks

4.1   Disruptive Innovations

The concept of disruptive innovations was first proposed and developed into a theory known as the "theory of disruptive innovations" by Christensen and his Harvard colleagues (Christensen 1997; Christensen and Raynor 2003; Christensen et al. 2004).

According to this theory, there are two types of innovations: sustaining innovations and disruptive innovations. Sustaining innovations take place frequently and are developed by large and well-established incumbent companies in order to improve/enhance the performance of their existing products or services that already have strong market share. New models of mobile phones and enhancements to popular software are examples of this type of innovation. Disruptive innovations, on the other hand, occur less frequently and initially tend to have performance problems. Furthermore, there are two main types of disruptive innovations: new market and low-end disruptions. Disruptive innovations that create new markets, according to this theory, occur when characteristics of existing products and services limit the number of potential consumers (defined in the theory as "non-consumers")—perhaps due to price or complexity—or force consumption to take place in inconvenient or centralized settings. Moreover, such innovations tend—initially—to be of lower quality than the well-established ones and often take a long time before they overcome such limitations. The personal computer (PC) is one example of a new market disruptive innovation. Prior to using PCs, gaining access to software and hardware for business and personal tasks could only be provided by gaining access to a terminal connected to a mainframe or minicomputer. Mini and mainframe computers were very expensive to buy and rent, and using their services often required a great deal of effort and expertise (e.g., requiring authorization, travel to gain access to a building that houses the terminal, technical skills). Moreover, when the PCs emerged, they had many limitations (e.g., limited memory, storage, and processing power and limited screen resolution) but were able eventually to overcome those limitations and disrupt the mainframe and minicomputers and create a new market in PCs.

Low-end disruptions affect the low-end of the original business or mainstream value network by attracting customers at this level of the business, who are often over served (i.e., they have too many excellent products to choose from). One example of this type of disruption was the Korean automakers' entry into the US market. The Korean automakers did not create a new market; they simply attracted the "least attractive" customers (e.g., those who could not afford the big cars and are happy with a "good-enough" vehicle). A hybrid of the two types (new market and low-end) of disruption can also exist. The American low-cost Southwest Airlines is one example of a hybrid disruption. It initially targeted people who were not flying (the non-consumers of air travel who used cars or buses) but later pulled customers out of the low-end of the major airlines' value network as well.

Faced with this type of disruption, managers (often those who successfully built their companies) tend to ignore or dismiss the potential of these innovations. The classical example is William Orton (President of Western Union in 1876) who called Alexander Graham Bell's telephone invention an "electrical toy." Western Union then had a monopoly on the telegraph which at the time was the world's most advanced communication technology (Melville 2015). Christensen (1997) does not fault these executives because he argues that these people are essentially following what is taught at business schools as being two principles of good management. These are as follows: (1) you should always listen to and respond to the needs of your best customers and (2) you should focus investments on those innovations that promise the highest returns. What often happens (according to Christensen) is that these two principles actually sow the seeds of every successful company's ultimate demise. Christensen brands it the "innovator's dilemma" because doing the right thing is the wrong thing.

The theory of disruptive innovations has recently been criticized due to the emergence of disruptive innovations (e.g., Uber, Airbnb, Google Maps) which did not go through the usual process/trajectory of suffering from performance issues in the initial stages of their development. The discussion of this critique is beyond the scope of this article. However, in a recent Web article, Michael Raynor (one of Clayton Christensen's colleagues) argues that the disruption theory, like any good theory, has remained a work in progress and that it has matured into a core set of concepts without slipping into an ossified orthodoxy. As such, disruptive innovations need not start with cheap and poor quality products which less resourceful (and unattractive) customers can afford. Rather, disruptive innovations can also get their start in entirely new markets, quite independent of the characteristics of the customers or markets in question (Raynor 2014).

4.2   Jobs to Be Done

In his recent writings, Christensen (see Christensen et al. 2016) describes the theory of disruptive innovations as "a theory of competitive response to an innovation." He claims that the theory explains and predicts the behavior of companies in danger of being disrupted and provides insights into the mistakes that incumbent leaders make in response to what initially seem to be minuscule threats. According to Christensen, the theory does not explain where to look for new opportunities, and it does not predict or explain how companies should innovate to undermine established leaders or where to create new markets. Nor does the theory explain how to create products and services that customers will want to buy or predict which new products will succeed. However, he claims in his thought-provoking book *Competing Against Luck: The Story of Innovation and Customer Choice* that the theory of Jobs to Be Done (his new theory) can address these deficiencies.

The theory of Jobs to Be Done (according to Christensen) is developed through inductive research and is the result of two decades of research to determine what

motivates customers to buy products and services. The theory is based on the premise that it is not the customer, but rather the job that a customer is trying to do is the right unit of analysis. What causes people to buy products and services (according to Christensen) is the "stuff" that happens to all of us every day. He contends that we all have jobs that we need to do which arise in our day-to-day lives and consumers buy or "hire" products and services to get these jobs done. He argues that this is what causes people to buy these products and services: to get a job done. He further explains that not everything we do is a job. For example, the need to eat is not a job to be done and neither is the need to feel healthy. The job to be done (according to Christensen) is different from the traditional marketing concept of "needs" because it entails a much higher degree of specificity of what one is trying to achieve. As such, a job to be done is progress that an individual seeks to achieve in a given circumstance. The circumstance is fundamental to defining the job (and finding a solution for it) because the nature of the desired progress will always be influenced (according to Christensen) by the circumstance.

Christensen provides the case of "milkshake" in his book as the first example of what motivates people to buy and prefer one product to another. He narrates the story of a US fast-food restaurant trying to determine how to increase sales of its milkshake. Having conducted a series of interviews with customers and improved its products based on those interviews sales of milkshake did not grow. When the restaurant managers finally approached a team of consultants to look into this matter further, the team looked at the problem from a different perspective. Following several observations inside the restaurant, it became clear that most sales of milkshakes took place early in the morning (before 9:0 a.m.). When customers—who purchased the milkshake—were interviewed when leaving the restaurant, it transpired that the milkshake fulfilled one purpose for them: to keep them full when midmorning hunger strikes. Other competitor products did not seem to fulfill this job very well. Customers were able to consume the product (milkshake) while driving on their way to work. Other products available (e.g., bagels, doughnuts) did not do the job so well because they were more difficult to consume. Bagels were often dry and tasteless. Doughnuts can be crumbly and leave customers' fingers sticky. The research team learned (following this experience) that what these buyers had in common had nothing to do with individual demographics or product characteristics. Rather, they all shared a common job that needed to get done in the morning.

The question that poses itself then is: To what extent can we make sense of these theories in understanding MOOCs and predicting their future? This question is addressed in the following section.

5   Disrupting Higher Education

Christensen et al. (2010) see great potential for online education to have a disruptive impact on traditional class-based teaching. This is because there are significant areas of non-consumption (often one of the main targets of disruptive innovations) that

online education can meet. The authors highlighted online learning as a classic example of a new market disrupting or substituting an existing business model (i.e., class-based education). They argue that this substitution is already happening because of the technological and economic advantages of computer-based learning, compared to the monolithic school model. Online technology provides accessibility for those who previously would not have been able to take the course. Moreover, it provides convenience for students to fit the course into their schedules at the time and place that is most desirable to them and, as such, can scale with ease (ibid.).

The high cost of Western higher education is also likely to create non-consumption among many students who are unable (or unwilling to be in debt) to meet the rising costs of degree qualifications. Degree courses delivered fully through online education are relatively inexpensive when compared with traditional college or university degrees (Clark 2009). This is especially true in many Western countries. In the UK, for example, a university home student can pay a total of up to £27,000 in fees for a 3-year undergraduate degree. In the USA, the annual degree fees charged by some universities can exceed US$40,000 (Bridgestock 2012). Online learning enables people to gain access to education at a significantly reduced cost. It also removes many of the inconveniences associated with a traditional education, e.g., registering at rigid, predetermined times of the year, commuting, attending classes, finding a seat in a crowded classroom.

> The MOOC phenomenon is an interesting case of online learning. Like online learning, digital technology is used for its delivery but differs in the sense that it is delivered on a massive scale and is also free or much cheaper. Given the aforementioned "rationale" of the theory of disruptive innovation, it is argued here that the MOOCs phenomenon has the potential to become both a new market and low-end disruption (i.e., hybrid disruption). MOOCs can target non-consumers of higher education (i.e., those who cannot afford its increasing costs) and can pull the least attractive students (especially from low tier higher education institutes that normally charge low fees) who want degrees that bear the names of "prestigious" universities. On that basis, the potential impact on higher education institutes worldwide could be huge (as will be demonstrated later in this chapter). MOOCs are not a sustaining innovation because sustaining innovations often target demanding, high-end users with better performance than what was previously available. For example, MOOCs are not an improvement to the online degrees that are currently being offered by many educational institutes throughout the world. By contrast, disruptive innovations do not attempt to bring better products to existing markets. Rather, they disrupt (as is the case with MOOCs) by introducing products or services that are less expensive to use, simple and convenient that appeal to new (non-consumers) or less-demanding customers (Christensen and Raynor 2003). Moreover, MOOCs did have performance issues (as disruptive innovations often do) when they emerged. For example, preventing cheating in online tests was a concern. Inability to provide credits and acceptability by employers was also a major challenge (Palin 2013). As MOOCs develop, solutions are being offered by MOOC providers to overcome these challenges. For example, many MOOC providers have adopted processes and technology to ensure effective proctoring in exams. Moreover, an increasing number of providers now offer credits and degrees, and some (as explained below) have teamed up with industry leaders to provide opportunities for internships and employment. The MOOC phenomenon is unlikely (at least not in the short or medium term) to radically impact existing educational practices and force traditional education providers (as disruptive innovations often do) out of business. However, if MOOCs manage to overcome its challenges (and win the trust of employers), its future impact on higher education could be

massive. This scenario will materialize when MOOC degrees (delivered by MOOC providers) become a viable and attractive alternative to traditional university degrees (i.e., when they establish a new market in this sector). When this happens, there will be two main winners and losers. The winners: these will be high tier reputable universities delivering MOOCs, either themselves or in partnership with entrepreneurial MOOC providers, and relying on massive revenues from substantial numbers of MOOC students worldwide. The losers: these will be the low tier and less reputable universities as MOOCs begin to attract the least attractive students (e.g., students with limited resources) from these universities. Some universities (of all sizes and backgrounds) tried to develop some MOOCs. However, these attempts were often more reactive than purposeful. Moreover, by introducing MOOCs, these universities could risk impacting their own traditional degrees as they will not be able to gain the international MOOC appeal and market that seems to be dominated by top-tier international universities that are in partnership with well-established and innovative MOOC providers. In a rare Web article, Horn and Christensen (2013) acknowledged that most universities which currently try to embrace MOOCs do so for fear of being left behind and because "disruption theory is finally widely enough understood that astute leaders know how to identify and chase opportunities early." However, much of the future of MOOCs will depend on the extent to which employers will be willing to recognize MOOC qualifications.

Recent announcements and activities by MOOC providers have created a great deal of debate on the future of MOOCs. In November 2013 Udacity (to the delight of MOOC sceptics) announced a radical change of its business model. Its co-founder (Sebastian Thrun) branded it a "great pivot." Since 2013, Udacity began to concentrate on providing courses that are vocational in nature (and partnering with employers) with the purpose of enabling learners find employment or improve their career prospects and also helping companies find candidates with the right skills. For example, Coursera partnered with Snapdeal, Shazam, and Instagram, Edx partnered with Microsoft, and Udacity partnered with Google, Facebook, Amazon, GitHub, and AT&T (Murray 2016).

What is significant about these partnerships is the emergence of MOOC credits that can be used to enter college or university and nanodegrees (Shah 2016). Nanodegrees are small programs aimed at addressing specific skills (often technical such as front-end Web developing, iOS, Android programming, and machine learning) and cost less than US$1000. Students pay US$200 per month for the course and can take as little or as much time as they need to finish. Those who finish within 12 months receive half of their tuition back, thus keeping the cost of tuition below US$1000 for most students. Upon completion, students receive a nanodegree. This credential may not mean much to traditional academia but is increasingly recognized by Udacity's partner technology companies looking for programmers and other skilled workers. AT&T, for instance, has pledged to reserve 100 paid internships for Udacity's nanodegree program graduates, and Google has invited top nanodegree graduates to visit its Silicon Valley campus.

Furthermore, in an effort to further legitimize its nanodegrees, the company began by attaching a job-placement guarantee onto some of its degrees. Although more costly at US$299 per month, Udacity's "nanodegree plus" programs come with a commitment from the MOOC provider to place graduates in jobs related to their coursework within 6 months of graduation or a full refund of tuition costs will be given.

To provide an example of the potential of this development, Udacity has enrolled more than 11,000 students on its nanodegree programs and graduated 3000 of those. In 2015, according to Thrun (one of its main founders), Udacity's revenue was growing nearly 30% each month, thus pushing the company into profit and its valuation to approximately US$1.1 billion (Dillow 2016). This development is a milestone for MOOC providers. Courses and degrees offered by such MOOC providers are developed in partnership with reputable American universities. As such, this relationship enables universities to achieve two objectives: (1) allow large number of its own students to take the MOOC course (possibly for credit) and (2) open the class to the public who might be interested in taking the course on a noncredit basis (Ong and Grigoryan 2015).

When MOOCs began in 2011, they lacked a real business model. According to Christensen et al. (2011), the most reliable sources of unexpected growth in revenues and margins are disruptive products and business models. They began by offering courses to everyone in the world for free (they still do). They had vague ideas of how to generate profit and began to struggle financially. However, developments since 2014 and 2015 saw a number of MOOC providers partnering with companies to offer short courses and degrees based on skills that are in demand by employers. These developments suggest that MOOC providers may have finally managed to carve a business model which will ensure their survival. Weise (2014) contends that this approach appeared to map well to employer needs and what can be described as areas of non-consumption (which disruptive innovations often target). Weise also argues that by not focusing on career-oriented training, colleges and universities have unwittingly left unattended a niche of low-end consumers who are over-served by traditional forms of higher education, underprepared for the workforce, and seeking lifelong learning pathways (ibid.). Winning the trust and confidence of employers could be a turning point for the future of MOOCs and the disruption this might cause to traditional higher education institutes, both high tier and low tier ones. The fact that MOOCs finally seem to have found a viable business model could be a game changer for their providers. According to Christensen et al. (2015), disrupters tend to focus on getting the business model, rather than merely the product, right. But when they succeed in doing so, they become able to move from the fringe to the mainstream, thus eroding first the incumbents' market share and then their profitability.

Education technology companies and alternative learning providers are, according to Christensen and Weise (2014), finding disruptive footholds by targeting non-consumers and graduates from well-regarded colleges who are struggling to launch their careers, make it into the workforce, or transition between jobs.

This is further echoed by Horn (one of Christensen's co-authors of the theory of disruptive innovations) who contends that the real disruption in US higher education was never going to come from "slapping" traditional courses online for free. The real disruption in higher education, according to Horn, was always going to come from a new system that looks quite different from the current one, a system that begins by serving non-consumers of traditional higher education and linking the learning provision with employer needs (Horn 2013).

MOOCs will eventually impact higher education establishments. The extent of this impact is not yet clear. However, small and less endowed universities and colleges (referred to as low tier in this chapter) will most likely be affected as they will struggle to team up with MOOC providers who will be interested in keeping the brand affinity almost exclusively with "pedigree" universities (Ong and Grigoryan 2015). Moreover, any attempts by these low tier universities and colleges to develop their own MOOCs could risk impacting their own campus-based degree programs which are the mainstay of these universities. Thrun (the founder of Udacity) once predicted that in 50 years' time (thanks to MOOCs), there would only be ten universities left in the world (Watters 2013). He listed these as:

1. Oxford
2. Cambridge
3. Harvard
4. MIT
5. Stanford
6. Princeton
7. The University of Pearson (acquires Coursera, 2016)
8. The University of Google (acquires Udacity, 2014)
9. The University of Walmart (acquires University of Phoenix, 2017)
10. Brigham Young University

This doomsday scenario for traditional higher education is probably far from reality and may not even happen. This is because there will always be consumers of brick-and-mortar educational establishments. These will be people who seek more than just the skills and the knowledge that are provided by these entities but also the social and emotional experience. Moreover, there are subject areas that cannot be fully replaced by MOOCs such as medicine. Nevertheless, MOOCs could impact the future income and growth of higher education establishments. This brings to mind the rationale proposed by the theory of Jobs to Be Done (introduced above). There will always be possibilities to "hire" brick-and-mortar higher education institutes by some consumers, not just for the social or emotional experience they provide but maybe also for the type of degree and the future aspirations of those consumers (dictated by their own circumstances) in order to get a job done. The same thing can also be said about MOOCs. Some consumers of higher education could hire certain MOOCs to do or accomplish an objective or progress such as getting a job or gaining a special skill that will enhance their career (a job to be done) but does not require years of training and high expenses. Indeed, research suggests that many of the registered students with MOOCs already have degrees. For example, a study revealed that 83% of MOOC students have a postsecondary degree, 79.4% of students have a Bachelor's degree or higher, and 44.2% indicated a level of education beyond a bachelor degree (Bayeck 2016). These students do not neces-sarily require another degree which may take several years to complete. This type of students would normally turn to higher education institutes for continuous profes-sional development (and employer-recognized) courses in order to upgrade their

skills or gain new knowledge for career or employment purposes. But these students are now turning to MOCCs.

MOOCs are essentially cloud-based educational platforms. As such, people with access to the Web are able to access and use them. This factor creates huge opportunities for the MOOC providers. In fact, MOOCs owe their popularity to the international appeal and interest which was created when they first started. They have globalized education in a manner that is unprecedented in history. Moreover, we are only witnessing the beginning of this phenomenon. Their potential disruption to higher education has global implications, especially in developing countries.

6   The Global Impact on MOOCs

The Web has opened learning possibilities for people all over the world and is likely to have a major impact on developing countries in particular which have suffered for decades from poor education due to factors including lack of resources, bureaucracy, political interferences, and ill-equipped teaching and academic staff. The Web offers almost unhindered access to the developing world and opens opportunities for learning which did not previously exist. This situation could accelerate further due to the increasing penetration of the Internet in many of these countries (Internet World Stats 2018).

High rates of Internet usage in developing countries provide huge opportunities for MOOCs from international MOOC providers and reputable Western universities to enhance education in these regions that promise quality and the prospects of recognition by global companies such as Google and Amazon. Indeed, MOOCs have the potential to bridge the educational gap that exists between developing and developed countries.

However, there are massive IT infrastructural problems in many developing countries; many of which were the consequences of decades of neglect and corrupt regimes. In this type of environment, mobile technology could be the answer to this problem. If there is any future in taking advantage of the learning that is made available through the Web by new online learning and teaching developments such as MOOCs, it is likely to be through Web-enabled mobile devices. Shipments for smartphones are expected to reach almost 1.9 billion by 2018, a tenfold increase from the amount of shipments in 2009 (Statistica 2018). The increase in demand for smartphones is driven partly by their availability at low prices and partly by increased consumer appetite for Internet browsing, content consumption, and engaging with apps and services on mobile devices (Canalys 2012).

Accessing Internet services over lightweight portable devices, according to Dikaiakos et al. (2009), is one of the visions of the twenty-first-century computing. Using traditional desktop PCs to access the Web through broadband coverage is likely to be problematic in many developing countries (especially Africa) which suffer from low penetrations of broadband coverage and frequent power cuts. The difficulties of rolling out fixed-line networks across the continent's vast land mass

explains why in mid-2010 mobile users constituted around 90% of all African telephone subscribers (Internet World Stats 2012).

However, the advent of low-cost smartphones and netbooks with mobile data capabilities could be a game changer for many learners in developing countries to overcome problems related to lack or inadequacy of broadband coverage and power blackouts that often afflict many of their cities. Interestingly, some MOOC providers such as Coursera and Khan Academy began to develop mobile apps in order to enable learners to access MOOC material through their mobile devices. The comfort level of mobile phone usage in these countries—combined with such infrastructural limitations—offers learners a unique opportunity to take advantage of free and/or low-cost online learning opportunities made available by MOOCs. Such a scenario will no doubt have a disruptive impact on the ability of developing counties to access IT resources and will potentially bridge the digital and the educational divide that currently exists between them and the developed world. Most interestingly, free (or low cost) learning offerings by MOOCs could have a huge transformational impact on education in developing countries and could potentially improve the lives of many millions of people by reducing poverty which is often caused by lack of access to proper education. According to a UNESCO publication, education can reduce poverty in a number of ways.

Firstly, educated people are more likely to get jobs, be more productive, and earn high salaries. Secondly, although there is no simple causal relationship between educational attainment and the economic growth of a country, recent research shows that quality-adjusted education is important for economic growth. More and better education improves a poor country's economic growth and thereby generates economic opportunities and incomes (Van der Berg 2008).

The MOOCs phenomenon (as a disruptive innovation) will have a fertile ground of non-consumption in developing countries. Many learners in developing countries are unable to gain access to Western universities due to their inability to afford the fees, travel, relative high cost of living in Western countries, and the unrecognized status of their existing qualifications. Such prospective learners could find MOOCs provided by popular Western MOOC providers (associated with reputable universities) hugely attractive and maybe willing to pay for them if they offer credits for their courses and/or become widely acceptable for using their courses or degrees to gain further education or employment (as some popular MOOCs now do).

As is the case in Western societies, acceptability of online qualifications (including those emanating from MOOCs) will depend on the extent to which society (especially employers) are able to see value in them. In many Western societies, online degrees (granted by well-established universities) have become popular with students and accepted by many employers. Indeed, MOOCs experience with employers in the USA (as outlined in this chapter) is a good indication of the preparedness of employers to accept (and indeed support) credentials gained through online learning. This new development of online education provider–employer relationship could inspire other developing countries to recognize the merits of online education which may not be the case currently. In some developing countries

(e.g., Arab), job applications still require indications that applicants have qualified through full time, part time, or distant/open learning methods.

7 Concluding Thoughts

As demonstrated in this article, the MOOCs phenomenon has exhibited character-istics of a disruptive innovation: both low-end and new market. It has the potential (as evidenced from the provided examples) to attract low-end consumers (those who are overserved by traditional higher education offerings that shunned job-oriented training) and also to attract non-consumers (those who do not have the means to go to higher education colleges or universities). Many of these non-consumers exist in developing countries which have traditionally suffered from lack of resources and poor educational standards.

However, MOOCs are evolving, and it is early days to suggest that MOOCs will disrupt higher education in the way the PCs disrupted minicomputers. To replace the traditional college or university experience, MOOCs will have to operate like one, and there is no strong evidence to suggest that this is what MOOC providers intend to do. Some MOOC providers have acknowledged this fact and adopted a different business model that seems to be paying dividends. Partnerships with businesses to provide students with sought-after skills and jobs (a vocational business model) are where some major MOOC providers are focusing their resources. This direction seems to be successful.

Research indicates that many of the students who subscribe to MOOCs often have college and university degrees. This suggests that MOOC providers could be providing some of their consumers with opportunities to "hire" courses or short duration degrees to enable them to do a job that they need to do such as improving their careers or employment prospects. Focusing on the Jobs to Be Done, MOOC providers have the potential to attract huge numbers of consumers who wish to study or "pull" MOOC courses or degrees into their lives.

In summary, MOOCs (provided by innovative MOOC providers in partnership with reputable universities) have the potential to compete with higher education institutes by disrupting them in three ways: (1) new market disruption by competing with higher education establishments on quality and employability; (2) low market disruption by attracting the least desired or well-off students (both national and international); and (3) by attracting huge numbers of students who would tradition-ally approach higher education institutes for continuous professional development courses or postgraduate programs in order to upgrade their skills or gain new knowledge for employment and career purposes.

Realistically, no one can predict how MOOCs will eventually develop. We can only speculate. If the theory of disruptive innovations holds true, we could be at the beginning of a major change that will impact higher education and indeed the way we learn in the future. With developments in data-enabled smart mobile devices, learning and teaching provided by MOOCs could turn education into a scalable and

ubiquitous service. Many non-consumers in the world (especially in developing counties) could, as argued in this chapter, benefit hugely from this innovation. Ultimately, the success of MOOCs will depend on the extent to which employers (in developed and developing countries) are prepared for a cultural change. Recent developments of MOOCs suggest that employers (at least in the developed world) are beginning to see merit in this educational innovation. What is certain, however, is that MOOCs are evolving and their future impact on higher education could potentially create few winners and many losers in this sector.

References

Anders A (2015) Theories and applications of massive online open courses (MOOCs): the case for hybrid design. Int Rev Res Open Dist Learn 16(6). http://www.irrodl.org/index.php/irrodl/article/view/2185/3526. Accessed 8 Sept 2017

Bayeck RY (2016) Exploratory study of MOOC learners' demographics and motivation: the case of students involved in groups. Open Praxis 8(3):223–233

Bridgestock L (2012) How much does it cost to study in the US?. http://www.topuniversities.com/student-info/student-finance/how-much-does-it-cost-study-us. Accessed 23 Dec 2013

Canalys (2012) Smart phones overtake client PCs in 2011. http://www.canalys.com/newsroom/smart-phones-overtake-client-pcs-2011. Accessed 10 Jan 2013

Christensen CM (1997) The innovator's dilemma: when new technologies cause great firms to fail. Harvard Business School Press, Boston

Christensen CM, Raynor ME (2003) The innovator's solution: creating and sustaining successful growth. Harvard Business School Press, Boston

Christensen CM, Weise MR (2014) MOOCs' disruption is only beginning. https://www.bostonglobe.com/opinion/2014/05/09/moocs-disruption-only-beginning/S2VlsXpK6rzRx4DMrS4ADM/story.html#. Accessed 18 July 18 2015

Christensen CM, Anthony SD, Roth EA (2004) Seeing what's next: using theories of innovation to predict industry change. Harvard Business School Press, Boston

Christensen CM, Horn MB, Johnson CW (2010) Disrupting class: how disruptive innovation will change the way the world learns, 2nd edn. McGraw Hill, New York

Christensen CM, Alton R, Rising C, Waldeck A (2011) The big idea: the new M&A playbook. Harv Bus Rev 89:48–57

Christensen CM, Raynor ME, McDonald R (2015) What is disruptive innovation? Harv Bus Rev 93:44–53

Christensen CM, Hall T, Dillon K, Duncan DS (2016) Competing against luck: the theory of innovation and customer choice. HarperCollins, New York

Clark K (2009) Online education offers access and affordability. US News. http://www.usnews.com/education/online-education/articles/2009/04/02/online-education-offers-access-and-affordability. Accessed 9 Jan 2013

Dikaiakos MD, Katsaros D, Mehra P, Pallis G, Vakalis A (2009) Cloud computing: distributed Internet computing for IT and scientific research. IEEE Internet Comput 13(5):10–13. http://www.computer.org/csdl/mags/ic/2009/05/mic2009050010.html. Accessed 10 June 2012

Dillow C (2016) Want a high-paying job? Get a 'nanodegree'. https://www.cnbc.com/2016/06/20/udacity-reinvents-skills-training-with-the-nanodegree.html#. Accessed 7 Sept 2017

Fini A (2009) The technological dimension of a massive open online course: the case of the CCK08 course tools. http://www.irrodl.org/index.php/irrodl/article/view/643/1402. Accessed 31 Dec 2012

Horn MB (2013) The audacity of Udacity. http://www.christenseninstitute.org/the-audacity-of-udacity/. Accessed 19 July 2015

Horn MB, Christensen CM (2013) Beyond the buzz, where are MOOCs really going? http://www.wired.com/opinion/2013/02/beyond-the-mooc-buzz-where-are-they-going-really/. Accessed 24 Dec 2013

Internet World Stats (2012) Internet users in Africa: 2012 – Q2. http://www.internetworldstats.com/stats1.htm. Accessed 23 Dec 2013

Internet World Stats (2018) Internet usage statistics. https://www.internetworldstats.com/stats.htm. Accessed 2 Feb 2018

Kennedy J (2014) Characteristics of massive open online courses (MOOCs): a research review, 2009–2012. J Interact Online Learn 13(1):1–16

McGregor J (2007) Clayton Christensen's innovation brain. http://www.businessweek.com/stories/2007-06-15/clayton-christensens-innovation-brainbusinessweek-business-news-stock-market-and-financial-advice. Accessed 23 Feb 2018

Melville B (2015) The big book of senior moments. Skyhorse Publishing, New York

Milligan C, Littlejohn A, Margaryan A (2013) Patterns of engagement in connectivist MOOCs. J Online Learn Teach 9(2). http://jolt.merlot.org/vol9no2/milligan_0613.htm. Accessed 8 Sept 2017

Murray S (2016) EdTech: why employers from Google to Goldman Sachs are warming To MOOCs. http://www.businessbecause.com/news/mba-distance-learning/3780/employers-are-warming-to-moocs. Accessed 7 Sept 2017

Ong BS, Grigoryan A (2015) MOOCs and universities: competitors or partners? Int J Inf Educ Technol 5(5):373–376

Palin A (2013) On course to become a credit worthy qualification. https://www.ft.com/content/003fef1a-505e-11e3-9f0d-00144feabdc0. Accessed 23 Feb 2018

Raynor M (2014) Of waves and ripples: disruption theory's newest critic tries to make a splash. http://dupress.com/articles/disruptive-innovation-theory-lepore-response/. Accessed 24 July 2015

Shah D (2016) MOOC trends in 2016: college credit, credentials, and degrees. https://www.class-central.com/report/mooc-trends-credit-credentials-degrees/. Accessed 2 Feb 2018

Shah D (2017) Massive list of MOOC providers around the world. https://www.class-central.com/report/mooc-providers-list

Statistica (2018) Global smartphone shipments forecast from 2010 to 2021 (in million units). https://www.statista.com/statistics/263441/global-smartphone-shipments-forecast/. Accessed 23 Feb 2018

Sultan N (2010) Cloud computing in education: a new dawn? Int J Inf Manag 30(2):109–116

Sultan N (2013) Knowledge management in the age cloud computing and web/internet? 2.0: experiencing the power of disruptive innovations. Int J Inf Manage 33(1):160–165

Sultan N (2014) Making use of cloud computing for healthcare provision: opportunities and challenges. Int J Inf Manage 34(1):177–184

Sultan N (2015a) Reflective thoughts on the potential and challenges of wearable technology for healthcare provision and medical education. Int J Inf Manage 35(5):521–526

Sultan N (2015b) Education as a Service (EaaS): the MOOCs phenomenon. In: Sultan N, Al-Lail HJ (eds) Creative learning and MOOCs: harnessing the technology for a 21st century higher education. Cambridge Scholars, Newcastle upon Tyne, pp 20–38

Van der Berg S (2008) Poverty and education. Education Policy Series (produced by the International Academy of Education (IAE) and the International Institute for Educational Planning (IIEP), UESCO

Watters A (2013) A future with only 10 universities (minding the future. #OpenVA). http://hackeducation.com/2013/10/15/minding-the-future-openva. Accessed 8 Sept 2017

Weise MR (2014) MOOCs ain't over. http://www.christenseninstitute.org/moocs-aint-over/. Accessed 19 July 19 2015

Part II
Africa

Chinese Foreign Direct Investment (FDI) and Barriers to Technology Transfer in Sub-Saharan Africa: Innovation Capacity and Knowledge Absorption in Senegal

Vanessa Casadella and Zeting Liu

Abstract Innovation capacity and knowledge absorption are recognized in the literature as two fundamental enablers to achieve growth through innovation. Technology transfer is based on knowledge absorption that is crucial in the innovation process. In African countries, especially sub-Saharan countries, technology transfer is even more important since it allows countries to emerge from poverty and weak economic growth. Do China-Senegal partnerships favor Senegal's innovation capacity building? This chapter will review the importance of knowledge absorption and the difficulty of its construction in Senegal, before studying the links between Senegal and China. Although the Chinese foreign direct investment (FDI) flows in Senegal are growing in recent years, the relations between the two countries remain an opportunistic relation rather than a real transfer of knowledge.

Technology transfer is the process by which technology or knowledge developed in one place or for one purpose is applied and explored in another place for some other purpose. The transfer has a main characteristic: it is the communication of a know-how adapted to fit the purpose of the purchaser under new context. These transfers are at the origin of innovation capability building, as they will be able to create new knowledge. The issue of North-South technology transfers and technological capabilities has been the subject of abundant literatures in the 1990s (Lall 1992; Kim 1997; Bell and Pavitt 1997). But these literatures mainly focused on the empirical comparison of developed/emerging countries (Edquist and Hommen 2008) or on understanding developing countries (Dutrenit and Sutz 2014). Studies focusing

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North Africa (Djeflat 2016) and sub-Saharan Africa are rare (Muchie et al. 2003; Muchie and Baskaran 2012).

Learning process, as the source of innovation, is affected by a firm's absorptive capability to combine its existing knowledge and the intensity of efforts in relation to the production of new knowledge and innovation (Cohen and Levinthal 1989). At the national level, a country's innovation capability depends both on its basic resources (infrastructures, institutions) and on its ability to internalize external knowledge. The internalization of knowledge is identified as the shift from explicit knowledge to tacit knowledge, including *learning by doing* and operational knowledge (Nonaka and Takeuchi 1995) but also through more macroeconomic institutional efforts (Lall 1992). Local population must therefore be able to reclaim foreign knowledge and forge a *learning culture* (Johnson and Lundvall 2003). It is from this point of view that our paper studies the case of Senegal, a least developed country in sub-Saharan Africa (SSA), and its relations with China and its technologies.

The choice of Senegal is not insignificant. There is little research on innovation capacity of sub-Saharan Africa due to the lack of data and of reliable information that limits the scope of analysis. However, the main reason of this lack of literature lies in the scope of the research on innovation, which may seem *provocative* in view of the fundamental problems in these economies such as poverty and famine. In recent years, foreign direct investment (FDI) has become not only a source of capital for low-income countries but also one of the main tools for building national technological capabilities (Viotti 2002; Lall and Pietrobelli 2003). The importance of FDI has led many low-income countries to compete with each other to attract FDI and the benefits they generate. In this context, China-Africa relations have been discussed for the last 10 years. In our case, Senegal hopes to accelerate its development through the transfer of Chinese technologies and expertise. On the other hand, China's interest in Senegal is essentially political. The diplomatic weight of Senegal in African policy means that the country may support the construction of Chinese political influence in Africa and thus confirm the claims of People's Republic of China to a leading role in South. The relation between China and Senegal raises the following questions that we will try to answer on this paper: Do China-Senegal partnerships favor Senegal's innovation capability building? Can we observe an internalization of Chinese knowledge in Senegal that generates a real innovation dynamic in the country? If not, what are the main obstacles? This paper is organized in three parts: In the first place, we will conduct a literature review on innovation capability and technological transfer in developing countries. Secondly, we will then study the role of FDI and Chinese technology transfer in Senegal. Finally, we conclude the paper with discussions on the potential impacts of the Chinese FDI in sub-Saharan countries and in Senegal in particular.

Our methodology will be based on the conceptualization of national absorptive capacity, supported by the analysis and the comparison of available secondary data, extracted from official sources. Although information available on direct investment from China to Senegal is not very precise, our analysis will demonstrate that China's FDI in Senegal creates a double inequality of partnership: first, trade relations are imbalanced because the imports from China are more important than the exports to

China, and second, the Chinese FDI does not provide the necessary knowledge for Senegal to build its national innovation capability.

1 Innovation Capacities and Internalization of Foreign Knowledge in Developing Countries

Innovation requires a systemic learning process that starts from identifying problems to be solved and mobilizing people, structures, procedures, and knowledge linked by specific relationships. From this point of view, technological learning, as an inherent process in the absorption and improvement of existing techniques, combines two types of knowledge: codified knowledge (explicit) drawn from previous experience and tacit knowledge (implicit) specific to the firm or the individual. Within each technology, tacit and codified knowledge coexist. According to Polanyi (1966), the tacit character of knowledge refers to undefined, uncodifiable, unarticulable, and hardly transferable elements, which differ from individuals to individuals but can be shared among collaborators with a common experience. Tacit knowledge is embedded within organizations, individuals, and regions (Lundvall 2001), while explicit knowledge is produced through R&D activities by external firms or actors and is expressed through formal language in the form of data, scientific formulas, and manuals.

This knowledge is the key to the innovation capacity building, especially in developing countries where innovation in the narrow sense has only a secondary role due to the specific processes of technological diffusion and the incremental innovation characteristic to these economies (Viotti 2002). In developing countries, the capability to create new products and processes remains less important than the capability to use and adapt the existing technologies to offer cost-competitive products or better quality (Lall and Pietrobelli 2003). Innovation is not only defined by forerunners' technological development but also the technological catch-up strategies implemented by the latecomers. The competitiveness of a latecomer country depends on its technological capability to convert imported technologies into their productive activities. Technological capability highlights the ability of economic actors to use technological knowledge through assimilation, adaptation, and modification of the existing technologies (Kim 1997).

Two aspects are particularly important to technological capabilities: first, the endogenous knowledge and resources accumulated through traditional learning processes (Bell and Pavitt 1997) and, second, the effective capacity to absorb and adapt foreign technology (Kim 1997). The existing basic knowledge is an essential platform for technological learning since it directly influences the learning processes and the creation of new knowledge. Nonaka and Takeuchi (1995) propose a model to describe the production of knowledge within a firm. According to the authors, the organizational knowledge creation, which reflects the importance of institutional learning processes, involves two forms of interaction: between tacit and explicit

knowledge and between individual and organizational knowledge. The interaction between the different forms of knowledge is crucial to generate new knowledge. It implies the implementation of specific learning processes ranging from the outsourcing of knowledge (tacit to explicit) to the internalization of knowledge (explicit to tacit).

The internalization of knowledge is a complex process that requires a prerequisite know-how, often difficult to reproduce, to organize the *learning by doing* to generate operational knowledge. The intensity of efforts is the amount of energy spent by actors to solve the problems linked to the new imported technologies. Knowledge and efforts are complementary because the endogenous learning processes in which foreign technology is assimilated depend on the scope and quality of existing resources and knowledge. Hence, the advancement of foreign technology cannot exclude the development of existing technologies.

On the other hand, the technological learning of a firm is not an isolated process. The learning process is rich in externalities and interrelationships, especially between producers and users (Lundvall 1988). These interactions happen more likely through informal routine learning than through the market. Thus, the *national absorptive capacities* (Narula 2004) or *national technological capacities* (Lall 2000) exceed the sum of the capacities of individual firms in one given country. While learning and knowledge absorption take place at the firms' level, the success or failure of the firms depends on the entire system (Kim 1997). Finding the right technology at the right price is a costly and risky process especially for developing countries. Contrary to the idea that developing countries can simply import technologies from developed countries and use them in the production without specific efforts, the concept of technological capacity highlights that firms may not have the knowledge base needed to transform the imported technologies to new ones in an efficient way. The technological capabilities focus the analysis of the innovation capacities of a developing country to its passive and active learning, which results in the passive national system (Brazil) or the active national system (South Korea) (Viotti 2002). The choice of the learning strategy has an impact on the country's capacity to support growth, which will improve the standard of living and the well-being of individuals.

In other words, the innovation capacity of firms and territories (sectors, countries) is the result of the basic knowledge, the internal efforts undertaken by the economic actors, and especially the intensity of the interactions between these actors.

2 China-Africa Relations and the Difficult Internalization of Knowledge in Sub-Saharan Africa

2.1 A Fragile Technological Dynamic in Sub-Saharan Africa

According to Lee and Mathews (2013), most African countries lack the innovation capabilities, which lead to the "capability failure," a more serious problem than market failure (Cimoli et al. 2009) and system failure (Metcalfe 2005). Sub-Saharan Africa suffers from a considerable technological disadvantage and shows poor signs of modernization. Its structure remains traditional, dominated by the manufacture of consumer goods intended to satisfy the domestic markets. Its ability to import and exploit imported technologies for technological learning is particularly hazardous. With poor productivity, African firms remain below the levels of the best international technological practices and the levels achieved by other developing countries. Moreover, the influence of donors on technological exchanges seems to be more hampering than promoting the technological learning in these countries (Muchie et al. 2003). Sub-Saharan Africa has received heavy technical assistance but yet to use these resources to build local resources. Instead, technical assistance has resulted in capability deterioration rather than actual construction (Easterly 2007). As a result, sub-Saharan Africa has a certain technological gap (Wangwe 2003) compared to the developed countries: the rate of access to higher education in sub-Saharan Africa is 7% in 2010, compared to 73% in developed countries (UNESCO 2015). The share of R&D spending in GDP is 0.8% in 2013 in sub-Saharan countries, compared to 42% in Asia and 28.9% in North America (UNESCO 2015).

If R&D is crucial in terms of the adaptation and knowledge absorption of firms, "the underdevelopment of African states reflects a lack of specific learning capacities to the modern economy (...)" (Johnson and Lundvall 2003, p. 17). In these terms, the innovation gap (Arocena and Sutz 2000), beyond the access to technological knowledge, is perceived through three fundamental problems (Oyelaran-Oyeinka 2004). The first is related to the inability of local institutions to interact with productive partners in order to guarantee sufficient autonomous technological development. The second relates to the difficult construction of local knowledge base through tacit knowledge by the small African organizations that are unable to cope with the new needs in a diverse and competitive environment. The last is the feeling of lock-in that results from the repetitive imitation, creating weak opportunities to renew and modernized firms' knowledge. All in all, and still today, "we recognize the difficulty of the process of technological learning to industrialize in an environment of underdevelopment" (Oyelaran-Oyeinka 2014, p. 493).

Globalization does not spread to all economic activities and markets in a uniform manner. While the industrialized countries benefit from rich *interactive learning spaces* with frequent encounters between those who need knowledge and those who are able to interact with them, the countries of the South have only poor interactive learning spaces because of the rarity of interactions (Arocena and Sutz 2003). This unequal distribution of the costs and benefits of economic development is part of the

"phenomenon of polarization in the distribution of wealth at the global level, the differential distribution of unequal income between countries, the growth of poverty and misery in the world in developed and developing countries" (Castells 1999, p. 82). Furthermore, in the case of Senegal, the country has been fighting since the 1960s for the improvement of living conditions, the suppression of the colonial system as well as its racially biased structure, and the reconquest of dignity and cultural identity (Heitz 2008). This long process of decolonization has been later (since 1984) affected by the regrettable consequences of the structural adjustment policies on the Senegalese economy (Casadella et al. 2015).

While the macroeconomic trends are rather pessimistic, there are nevertheless more positive outlooks at the microeconomic level. Innovation studies show a growing and justified place for new types of innovation in Africa including industrial and informal clusters (McCormick and Oleyaran-Oyeyinka 2002) and frugal innovation (Radjou et al. 2013). These forms of innovation are not entirely new on themselves, but their recognition is new because of the place they are beginning to occupy in the field of innovation (Haudeville and Le Bas 2016). Africa is expected to find new or different ways to use innovation for development due to the rising environmental costs of conventional growth models (Lee et al. 2014). This raises the question on China's assistance in these processes.

2.2   Chinese Aids to Sub-Saharan Africa

Long time criticized for the lack of coherence and clarity of its aid policy, in April 2011, China issued its first "White Paper on China's Foreign Aid" which aimed to outline China's official aid policies, principles, and practices. In the paper, China, by highlighting its difference with Western aids, insists that its foreign aid operation is under the "framework of South-South Cooperation." It can be summarized that the Chinese aid actions in Africa went through three phases since its inception in 1949 until 2010. The first period dated from the 1950s after the founding of the People's Republic of China until the 1970s. Under the "Eight Principles for Economic Aid and Technical Assistance to Other Countries," Chinese government provided technical and material assistance in projects mainly in infrastructure. After the economic reform started in 1978, while consolidating the achievements of existing productive projects, it provided aids in more diversified and flexible ways and conducted multiform technical and managerial cooperation with recipient countries, such as managing aid projects on behalf of recipient countries, leasing management, and operating joint ventures. During the 1990s, as the market reform deepened, China adopted a more market-oriented aid approach and set up specific aid funds, and since 1995 through its Export-Import Bank (EXIM Bank), to provide medium- and long-term low interest loans to developing countries mainly on infrastructure projects

carried out by the state-owned enterprises[1] (SOEs), often accompanied with technical training and support to capacity building of recipient countries. This approach has been reinforced for the China-Africa relation since the 2000s (State Council 2011).

The real size of Chinese financing in Africa is difficult to be assessed due to the lack of data and is heavily biased by the motivation of the Chinese interests in Africa (Gutman et al. 2015). Strange et al. (2015) estimate that from 2000 to 2011, China's total financial commitments to Africa reached 73 billion dollars, significantly higher than the official figure of foreign aids of 15 billion dollars. Meanwhile, the Chinese outbound direct investment[2] (ODI) toward Africa grows rapidly and reaches 3.2 billion dollars in 2014, up from the 75 million dollars in 2000 (MOFCOM 2015).

One of the explanations may lie in the resource-oriented strategy, known as the "Angola model," to secure the supply of natural resources, as Chinese aids and investments are concentrated on the resource-rich countries and the extractive industries (Foster et al. 2009; ICA 2013). Under this model, the aids are mainly directed to the infrastructure projects, which are realized through direct foreign investments of Chinese firms notably through commercial contracts carried out by the SOEs. These commercial activities in the development projects blur the distinction between the traditional categorization of "official aids" and "unofficial aids" (Sun 2011).

The projects are funded through three schemes: grants and interest-free loans (through state finances) and concessional loans administered through the China EXIM Bank (MOFCOM 2011). China classifies its aid activities into eight categories: complete projects, goods and materials, technical cooperation, human resource development cooperation, medical teams sent abroad, emergency humanitarian aid, volunteer programs in foreign countries, and debt relief. Around 70% of total aids are in fact pouring into the infrastructure-related projects, which is in sharp contrast to the United States, of which 70% of the aids are toward health sector. In addition, the Chinese government largely ignored civil rights issues of the recipient countries. These apparent issues raise concerns and critics over the long-term effect of Chinese aids on local development by its unbalanced and uncoordinated actions (Amusa et al. 2016). This practical project-oriented and product-and-service-purchase attached aids approach is somewhat similar to Japan's aids to Africa described by Ranis et al. (2011).

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[1]The Chinese term generally used to refer to public enterprises is translated into English as state-owned enterprises. It designates enterprises governed by Article 82 of the Chinese Civil Code which are enterprises under the so-called "whole people" property regime and are subject to public law for their management.

[2]FDI net outflows or outbound direct investment are the value of outward direct investment made by the residents of the reporting economy to external economies. ODI include assets and liabilities transferred between resident direct investors and their direct investment enterprises. It also covers transfers of assets and liabilities between resident and nonresident fellow enterprises, if the ultimate controlling parent is resident.

Table 1 Inward FDI flows in sub-Saharan Africa in 2014 (USD million)

Countries	Flows (USD million)	Chinese flows (USD million)
South Africa	5712	42
Congo Republic	5502	158
Mozambique	4902	103
Nigeria	4694	200
Ghana	3357	73
Zambia	2484	425
Tanzania	2142	167
Cameroon	501	30
Senegal	343	7

Source: Ministry of Commerce (MOFCOM) (2015)

A new trend has emerged since the 2010s when China shew a growing interest in small African countries with few natural resources but which are Western-oriented (Gehrold and Tietze 2011). The reach of Chinese aids and investment has broadened, and private Chinese firms started investing in Africa. Gutman et al. (2015) show that the cumulative average of Chinese financing to resource-rich countries doubled from 300 million dollars during 2005–2008 to over 622 million dollars during 2009–2012. But over the same period, Chinese commitment to the non-resource-rich countries jumped 563% from 43 million dollars to 285 million dollars. The shift is accompanied by the increasing investments coming from small- and medium-sized private Chinese firms notably investing in manufacturing sectors in sub-Saharan Africa. The emergence of the new model coincides with the efforts of Chinese government to support its national champions to develop their innovation capacity, to compete in international markets, and to develop new markets (Liu 2016).

The FDI flows toward Africa have increased by 2% from 54 billion dollars to 55 billion dollars between 2013 and 2014, including 3.2 billion dollars of Chinese investment. The FDI flows are particularly heterogeneous, as can be seen in the following table (Table 1).

In this perspective of the development of Chinese FDI, the project "One Belt, One Road" ("A belt, a road," better known as "New Silk Roads") aims to provide huge infrastructure to vast areas in Europe, in Asia, and in Africa. This project was drafted in 2013 with the intention of halving transport time between Beijing and Europe to strengthen the Chinese presence in the world but also for its energy interests. Africa, which is directly involved, could be influenced. This ambitious plan (68 countries involved) certainly draws attention to an opportunity of development for the continent. But these partnerships can also lead to an alarming increase in the indebtedness (of the countries taking part), limiting their other expenditures as the costs of debt increase and increasing their dependency on China. For the time being, while Chinese FDI inflows account for more than 3 billion dollars, they represent only 3.8% of total flows toward Africa. The current main African partners of China are South Africa, Algeria, Nigeria, Zambia, Sudan, and Congo.

Chinese FDI is closely linked to the trade and development assistance. It is also dominated by a few resource-rich countries, such as Nigeria, Zambia, Algeria, South Africa, and Sudan. The main beneficiaries of Chinese investment in Africa are mainly African minerals, metals, and fuel exporters. This development emphasizes that the Chinese strategy aims at accessing the techniques that will allow it to progress in the value chains. However, the actual data on Chinese FDI is unknown, and the estimations vary largely according to the sources. In addition, Chinese investments often pass through offshore entities registered in the Cayman Islands or Hong Kong. Increased FDI flows are supported by targeted Chinese policies to promote and assist business investment in the continent. Most Chinese companies that invest in the strategic sectors such as oil or infrastructure are SOEs that receive government subsidies or loans from state-owned banks. These firms often manage large investment projects (Kaplinsky and Morris 2009). China's medium- and large-sized enterprises are mainly active in the manufacturing, telecommunications, and wholesale sectors. Smaller companies are more interested in the light industry and distribution.

2.3 The China-Senegal Partnership

Cooperative relations between China and Senegal are not recent (Colom-Jaen 2013). However, in 1996, Senegal broke off its diplomatic relations with the People's Republic of China to benefit from Taiwan's "checkbook diplomacy." Beijing's "One-China policy" prevents Chinese government from maintaining diplomatic relations with countries recognizing Taiwan. Therefore, the only possibility for Taiwan to gather diplomatic partners among developing countries was to pledge large-scale financial supports. However, the promises made by Taiwan have not met the expectations of Senegalese government. In 2005, no longer able to ignore the potential strength of Beijing's support, Senegal withdrew its recognition of Taiwan and re-established diplomatic ties with the People's Republic of China.

In 2014, President Xi Jinping and President Macky Sall jointly announced the establishment of a long-term partnership and cooperation between the two countries. Under the personal commitments and the active supports of the two leaders, China-Senegal relations have in recent years enjoyed a rapid development marked by a deeper mutual political trust, joint support on issues concerning the key interests of both countries, and cooperation on major international and regional issues, giving a new example of South-South cooperation. In 2016, at the marge of the G20 Summit in Hangzhou, the two leaders made the visionary decision to bring China-Senegal relations to the level of global strategic cooperation partnership, thus making the bilateral cooperation a new stage of development.

Chinese investment in Senegal is mainly marked by strong bilateral cooperation projects on infrastructure, transportation, and health. The difference between the Chinese approach and the traditional framework of Western cooperation lies in the efficiency in the field of infrastructure construction, as well as in a less restrictive

vision concerning issues of political and macroeconomic governance (Colom-Jaen 2013). For example, since 2000, China has canceled a significant amount of African debt, notably for Senegal, without linking these decisions to the macroeconomic conditionality, as do the World Bank and the International Monetary Fund. Furthermore, China is positioned in 2017 as one of Senegal's leading partners in the implementation of its Emerging Plan (PSE), a reference framework for economic policies in the Western African country. Even if China is not Senegal's main trading partner, the results of the mutually beneficial cooperation with China are visible. Here are some examples of projects:

- In terms of infrastructure, the strategic cooperation is mainly led by China's expertise and commitment in the field of energy production, followed by the telecommunication and the land transportation systems. Chinese companies— namely Huawei and ZTE – helped modernize the Senegalese government's communications technology with funding from the EXIM Bank of China. Senegal is making significant progress with the realization of the motorway projects, thanks to the support of the China EXIM Bank. The Chinese company CRBC is building the Ilaa Touba motorway, the largest project under the 115-km-long Senegalese Emerging Plan, the end of which is scheduled for the end of 2018.
- In the field of hydraulics, the Senegalese government launched the multi-village drilling project funded by Chinese preferential loan. This project includes the construction of 181 water supply systems and the rehabilitation of 70 wells, which will enable more than two million Senegalese people in the rural area to access water.
- On the cultural side, China offers scholarships to Senegalese students wishing to take advantage of its technological and scientific expertise. Between 2005 and 2010, 186 scholarships were rewarded (Correia 2011). In addition, activities to discover Chinese culture are developed at the university level. In 2011, Senegalese students began a tour of China under the aegis of Radio China International, now present in four cities in Senegal. There is also a desire from the Chinese side to get involved in local culture as shown by its presence in the Senegalese musical field including dance and folklore or its contribution to the construction of the Grand National Theater of Senegal, inaugurated in April 2011.

The list of projects is still long, but it is difficult to know how the Senegalese are actually involved in these partnerships. The advantage of establishing stable diplomatic relations with Senegal has essentially a possible ripple effect for a large part of African countries. Due to the lack of official data, it is difficult to compare the scope of the cooperation with China to Senegal's historical partners such as France or China's cooperation to other African countries receiving Chinese aids such as Nigeria. From the above listed examples, we can conclude that Chinese aids in Senegal are mainly concentrated in infrastructure, instead of resources extraction-oriented as its actions in Nigeria (Brautigam 2009), although profit-oriented Chinese companies are also highly interested in its fisheries resources and in administration and service sectors (Correia 2011).

3 National Absorptive Capacity in Senegal and the Role of Chinese Cooperation

3.1 Identification of National Knowledge Absorption in Senegal

The knowledge absorption capacity is measured by the technological appropriation. According to Viotti (2002), developing economies have three main formal sources of technology: technology embedded in imported goods from developed economies, technology purchased through foreign direct investment, and direct purchase of technology through foreign technology licenses and other technical assistance. Another element to consider in the measurement of absorptive capacity is relative to the sociocultural processes (Grammig 2002), in other words how sociocultural factors are defined in China-Senegal cooperation and how knowledge is recognized, accumulated, retained, and mobilized. Nevertheless, since the measure is based on the qualitative approach, it will not be developed in this paper. In general, statistics are difficult to be found for less developed countries as in sub-Saharan countries (Viotti 2002) due to the unavailability of certain data.

3.2 Imports of Goods and Services in Senegal

Senegal is importing more and more foreign goods and services. In 2013, 43% of its GDP is devoted to imports of goods and services, which reflects a substantial opening to international trade. Imports have risen sharply over the last decade due to the increase in the international food and energy prices since 2007/2008. The development of imports was largely driven by the oil, food products, and capital goods acquisitions. The main trading partners are France (17%), Nigeria (11%), and China (8%) (Embassy of France in Senegal 2014). The China-Senegal trade relation is highly unbalanced, as exports to China (127 million dollars) are dwarfed by its imports from China (2.19 billion dollars).[3] China ranks 3rd in terms of the origins of Senegal's imports but ranks the 17th in terms of its export destinations (0.8% of the total value of Senegalese exports) (Colom-Jaen 2013).

Senegalese industry is essentially an import substitution industry, which has been in place since the 1950s. At the independence, Guinea's exit from the franc zone, the breakup of the Federation of Mali, and the industrialization projects in Côte d'Ivoire have reduced Senegal's market size. It was therefore left with a small and weak market that industries have had to reassess. This has resulted in a phase of overcapacity, underinvestment, and obsolescence which has deteriorated the competitiveness of Senegal's industry.

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[3]Source: The Observatory of Economic Complexity, https://atlas.media.mit.edu/en/

Table 2 Flows and stocks of
FDI (millions USD)

FDI	2014	2015
Inward FDI flows	403	343
FDI stocks	2.753	2.808
Inward FDI flows from China	7.06	7.01
FDI stocks from China	–	126

Source: CNUCED 2016; Ministry of Commerce (MOFCOM)
(2016)

According to Durufle (1994), Senegalese industry suffered from the same causes
of low competitiveness as the other former French colonies: an industrialization
conceived within the framework of narrow and protected markets under the colonial
pact, the significant additional costs due to expatriation, an overvalued currency, and
numerous slippages in the management of public enterprises in which a logic of
income redistribution has often prevailed over the objectives of economic efficiency.
To these constraints other more specific ones must be added:

- A particularly rigid labor law and a highly developed and politicized union
  combativeness
- The overproducing manufacturers
- The particularly high costs of certain production factors: petroleum products,
  electricity, water, telecommunications, cement, etc.

The consequences have been the high price levels and a lack of export compet-
itiveness. This results in the impossibility of going beyond the narrow domestic
market and having access to economies of scale.

3.3   FDI Flows in Senegal

Inward FDI flows represent only 2.2% of Senegal's GDP, which is below the
average of 2.6% of GDP in sub-Saharan Africa (OECD 2014). Today, Senegal
occupies an intermediate position in the ranking of countries that receive FDI
flows in Africa (Table 2). As reported in Table 1, the country is far behind
South Africa, Nigeria, Ghana, Zambia, and Cameroon. The same is true of Chinese
ODI, which ranks only at the 35th of Chinese ODI in Africa out of 52 African
partners.

Senegal's FDI stocks are mainly from France which represent 40% of total FDI
stocks and 727 million euros in 2012. There are nearly 20,000 jobs created by French
companies, accounting for about 25% of Senegalese GDP and tax receipts (Embassy
of France in Senegal 2014). The historical links between Senegal and France and the
similarities in the institutional environments of these two countries have fostered
their commercial relations and a strong presence of French companies in all eco-
nomic sectors in Senegal, for example, Sonatel in telecommunications, Eiffage in
civil engineering, Necotrans or Bollore in maritime transport and logistics, etc.

The attractiveness has never really developed, despite its efforts to entice foreign investors, and according to the official policy, to promote the Senegalese operators. For example, Senegal has decided since 2014 to adopt a new development model to accelerate its progress toward economic growth. This strategy (the Emerging Senegalese Plan) is the medium- and long-term framework for economic and social policy. In spite of this, several factors indicate the lack of attractiveness of Senegal. First is financial profitability. Senegal remains unattractive in terms of financial return. Profitability is poor due to the lack of modern infrastructure and the weakness of the internal market. The archaic commercial logic of certain groups settled since the colonization did not favor market competition. This archaic logic is based on large companies, often in quasi-monopoly situations, that operate in a closed circuit, without modern equipment and disconnected from research concerns (Carré 2002). Other factors are also directly involved:

- The major privatization and licensing operations of the telecommunication sectors have started lately since 1999.
- Major public-private partnership projects are still in the development stage.
- Traditional sectors (agri-food, industry, finance, tourism) are already largely controlled by foreign interests, and niches of new opportunities with poor visibility are not necessarily conducive to major investments.
- The Senegalese market does not benefit from regional communication infrastructures nor does it benefit from access to electricity and secure land, which is a brake on investors.

Senegal does not yet fully capitalize on its strengths and has not yet embarked on the far-reaching reforms on the business environment. Indeed, since 2008, the country has registered a number of decreases in the international rankings on the business environment. In the latest reports of the Davos Forum on Competitiveness and the Doing Business (2014), Senegal ranks 113th out of 148 countries and 178th out of 189 countries, respectively. As a result, FDI flows remain insufficient to contribute to economic growth and to balance external exchanges.

3.4 Direct Purchase of Technology

No data is currently collected in Senegal in terms of direct technology purchase through the provision of patents, copyright, or technological licenses. Neither is there any information in the latest UNCTAD works on sub-Saharan countries. Considering the lack of data and the analysis presented below, we agree with Lall and Pietrobelli (2003) that technological licenses do not represent the most important flows of foreign technologies in sub-Saharan Africa.

3.5   Chinese Presence in Senegal

As stated, diplomatic relations between the People's Republic of China and Senegal had been broken off in 1996 due to the recognition of the Republic of China (Taiwan). China has resumed its aid projects since the re-establishment of diplomatic relations in 2005. However, even during the period of severed diplomatic ties, China-Senegal trade relations had never been totally cut.

Compiling data available on the website of the Ministry of Commerce of China in particular the "Cross-border Investment Firm List" with 28,542 oversea affiliates and branches of Chinese firms approved during 1970 to 2013, Marukawa et al. (2015) identify 19 Chinese firms invest in Senegal until 2013, of which 4 are SOEs owned by central government and 15 are owned by provincial authorities mainly from eastern provinces. However, although China carried out contracts with a value of 1.590 billion dollars and the Chinese FDI to Senegal reached 74.9 million dollars, Chinese presence in Senegal is relatively small compared to other sub-Saharan African countries (MOFCOM 2016).

Further reading of the statistical data shows that Chinese FDI in Senegal are mainly channeled into manufacturing and trade sectors (11), different from the traditional resource-oriented FDI in sub-Saharan countries. Nevertheless, the concentration on administration and service and construction activities (13) also suggests that despite the recent changes, Chinese interests are still highly motivated by resource control (Table 3).

The general trend confirms that the Chinese investment in Senegal, contrary to other resource-rich African countries, represents the switch of Chinese policies to support its national companies to go global. This may also be explained by the changing Chinese industrial structure and the transferring of production to low-cost countries. African countries with relatively stable social and economic systems provide an attractive environment for Chinese companies that are interested by the low production costs and the access to local and European markets.

Table 3   Chinese FDI in Senegal by sector and activity, 2013

Sector	Number of firms	Activity	Number of firms
Food	2	Manufacturing	2
Textile	2	Sales and marketing	3
Machinery	2	Administration and service	7
Construction	7	Real estate	1
Wholesale and retail	5	Construction	6
Transport, storage	1		
Total	19		19

Source: Marukawa et al. (2015)

3.6 The Potential Impacts of Chinese FDI in Sub-Saharan Countries

The change of Chinese aid model since 2010 coincides with the tentative in African countries to adopt the Chinese model based on the creation of special economic zones and industrial parks to attract foreign investments to overcome the lack of capital and knowledge. The model can be explained by the "new structural economics." By drawing experiences of the Chinese industrialization process, Justine Lin, the former Chinese World Bank chief economist, suggests that the economic development is an evolutionary process involving industries, technologies, infrastructure, and institutional mechanism, with the support of favorable industrial policies and an effective market (Lin 2011). The model emphasizes the importance of the development of structural competitiveness for economic upgrading. By creating favorable condition to attract foreign direct investment, it is hoped, as the Chinese model shows, that the recipient country may benefit from foreign technology and capital, which are scarce locally but essential for the economic development, and realize its industrialization and economic development.

New studies reveal this trend. The investigation on the macro and individual firm level of Chinese investment in Africa carried out by Chen et al. (2015) shows that few private Chinese firms carry out resource-oriented investment. Chinese private ODI in Africa are mainly driven by the profit. They are relatively more concentrated in the skill-intensive sectors in skill-abundant countries than in the capital-intensive sectors in capital-scarce countries. The authors suggest that Chinese investors aim to exploit the local comparative advantage and its importance as a source of external financing to African countries.

On the other hand, an empirical research using the 2011 data of Ethiopian manufacturing survey find positive spillover effects of Chinese ODI on the productivity of local manufacturing firms (Seyoum et al. 2015). The authors also find that the spillover effect is negatively influenced by the technology gap between foreign and local firms. However, the skilled labor of local firms does not enhance their capacity to attract FDI spillovers. This suggests that the local firms must increase their skill intensity to the level that can allow them to absorb and apply the advanced technology of foreign firms.

Chinese private investment in Africa also starts to create the clustering effect. In 2012, the Chinese shoe manufacturer Huajian opened a plant near Addis Ababa and attracted other firms to follow its steps to settle around it. As a result, FDI in the region grew over 300% to reach 1.2 billion dollars by 2014 according to the UN World Investment Report (Peyton 2017). Following the example of Ethiopia, the new Diamniadio industrial park which is due to be operational in 2017 is nudging Chinese investors. Business delegations from Chongqing, Sichuan, Guangdong, and Henan have already visited the site, and it is reported that the same Chinese company planned to settle in as first investor (Chinese Embassy in Senegal 2016).

Since 2005, the China-Senegal cooperation has been guided by the Economic Partnership Agreements (EPAs), which led to the cooperation between Chinese and

Table 4 Conditions of attractiveness and limits of China-Senegal cooperation

Conditions	Description	Limitations
Presence of Chinese ODI	Positive spillover effects on the productivity of local manufacturing firms (Seyoum et al. 2015)	Need to increase local skills to benefit from the positive effects of externalities
Presence of Chinese ODI	Creation of positive externalities through the creation of local innovation systems or clustering effects (knowledge sharing, reduction of unemployment, on-the-job training for employees, quality infrastructure)	Chinese governance Lack of skilled technical and managerial personnel Lack of horizontal linkages (Zeng 2012)
China-Senegal cooperation through EPAs	Sectoral development projects	"Win-win" cooperation not visible: relationship of increased dependency

Source: authors

Senegalese companies to carry out development projects such as the agreements between the National Electricity Company of Senegal (SENELEC) and the Chinese company CMEC for the purchase of gas stations and the partnership between the Chinese company StarTimes and the RTS (first public channel) for its passage to the analogy. At the sectoral level, Chinese investors wish to expand into strategic and profitable activities including the production of peanuts. To satisfy their imports of Senegalese groundnut, Chinese companies have decided to make their expertise and technology available to Senegalese industries and farmers in order to increase their productivity.

The cooperation allows the country to gradually develop its industry and open up opportunities to access Chinese technologies. There is little microeconomic information available on the actual transfer of knowledge related to the various sealed partnerships. The internalization of knowledge at firm level is therefore difficult to verify. It is therefore through macroeconomic data that we will be able to analyze the effect. Table 4 summarizes all the conditions to attract continuous Chinese investments and their limits.

Due to the lack of official data, it is difficult to compare the scope of Chinese cooperation to Senegal's historical partners such as France or to other African countries receiving Chinese aids such as Nigeria. Through several reports (African Development Bank 2016; Embassy of France in Senegal 2014), we can observe a strong commitment of China in Senegal. For the Chinese, the China-Senegal cooperation is helping the sub-Saharan country to harness its demographic dividend. Between 2012 and 2015, China has trained 30,000 Senegalese in all fields, awarded 18,000 government scholarships to Senegalese students, and built 21 vocational and cultural training centers. This information is not scientifically verifiable. Two major problems prevent future partnerships:

1. The narrowness of the internal market that offers advantages only in a few targeted sectors such as fishing or groundnut. Interest in developing other strategic partnerships has yet to be proved.

2. On the creation of innovation capacities, as we do not know the nature of knowledge absorbed and the quality of knowledge transmitted in general, except from the Chinese fellowship programs, the relations between these two countries cannot be verified substantially.

4   Debates, Discussions, and Conclusion

Whether China-Senegal cooperation is positive for Senegal, the answer is nuanced. Technological transfer is hardly verifiable at the microlevel, and a certain number of obstacles restrain the country from internalizing external knowledge properly. The weight of Chinese investment is not apparent compared to other foreign FDI and of French FDI in particular. China is not a major partner of Senegal although it has the ambition to become one according to the Emerging Plan of Senegal, and its motivation is gradually evolving toward profitability-driven. Even if this cooperation is reflected in the creation of infrastructures or various aids on training and higher education, there is no evidence that Senegalese people are benefiting from Chinese know-how.

The adverse effects of structural adjustment policies have also had an impact on the country's capacity to develop its scientific and technological capacities and to integrate them into the new dynamics of growth. As Djeflat (2016) points out, the deterioration of social services, the reduction of purchasing power, the problems of transportation, water and electricity supply, and healthcare systems prevent the technological capacities from developing correctly to improve the local production system and even less from contributing to the mastery of technologies, creativity, and innovation. The same observation can be applied to the innovation policies in the broader sense (with educational and health programs) in Senegal (Casadella and Tahi 2017). There is little social and financial recognition of the status of the researcher, coupled with a lack of equipment, poor working conditions, and an intense competition for the private higher education. The problems of funding and evaluation of the courses delivered are generalized, as well as the under capacity of the higher education system with only two public universities facing too many students. The scientific branch has never developed. We can also add the collapse of industrial employment with the loss of permanent jobs and a chronic underemployment market, which results in weak opportunities of the labor market and a galloping informality.

Another problem on innovation capacities is its weak legal protection for intellectual property right. Software is legally considered as literary works and protected in the same way as the book, the brochure, the film, or the play. If they are not expressly mentioned in the 1973 Senegalese law that governs copyright, it is because at that time, it was not thought that software and computer programs could benefit from protection. But there are other difficulties. Industrial property requires an administrative act (filing, registration with the OAPI), while copyright does not require any deposit, which means that the holder enjoys it solely because of the

creation of the work. The protection of the copyright covers the rest of the holder's life and 50 years after his death for his successors.

Finally, it is difficult to be able to receive technology without reforming the internal structures. If Senegal relies heavily on its new economic plan, it must first develop and modernize its scientific and technical infrastructure and ensure its maintenance effectively to stop the brain drain to the outside. To do so, it must increase its resources to develop its research and development activities. The accumulation of scientific and technical capital and the intensification of R&D efforts are essential prerequisites for the control and the efficient use of new technologies. But above all better education policies would certainly need to reach a critical threshold at which the development of human capital could start influencing the growth of GDP per capita (Diagne et al. 2000).

The conclusions of our work point to a more opportunistic nature of cooperation between the two countries than the sharing and the internalization of knowledge. Although the Senegalese government's objectives are to strengthen bilateral cooperation, Senegal's trade relations with China remain unbalanced, as we specified in 3.2, since its imports from China are largely exceeding its exports to China. Even if Senegal has the potential to integrate into the global value chains through Asian investments, it will cause serious concerns among Senegalese traders who are suffering from the pressure of strong and unfair competition (Correia 2011). The unbalanced cooperation is also caused by the poorly developed, and even nonexistent, Chinese acculturation process in Senegal. This is not the purpose of our study, but we strongly believe that the cultures, traditions, and religions of the two countries are so different that they are a major obstacle for a real rapprochement.

Despite the educational exchanges and the weight of infrastructure projects, the Chinese South-South cooperation strategy as an ambitious plan for a new global cooperation order, for the moment, does not provoke in the context of its relations with Senegal the real technological or structural changes. Although the FDI inflows from China are still too small to measure the consequences, the political will to develop it as a privileged partner is clearly approved. It is the most blatant expression of a new global dynamic that places China at the center of contemporary world politics and leads to the evolution of the actors involved. It is not surprising that resource-rich countries in Africa benefit from Chinese investments. And investor interested in the non-resource sectors is becoming more apparent. Countries such as Kenya and Ethiopia, for example, are not known for their natural resources but have seen Chinese investment in a diverse range of sectors such as energy production or telecommunications.

These developments go hand in hand with the One Belt, One Road (OBOR) initiative, which aims to strengthen Chinese geopolitical influence. As stated previously, China has embarked on dozens of large-scale infrastructure projects, with economic and political interests, in the power generation sector and in transportation. The flagship project on this list is the Standard Gauge Railway in Kenya. But these projects are increasingly being investigated by different countries that fear that the Chinese government will use these programs to buy their political allegiance and to advance its geopolitical interests.

The profitability-oriented investment is not solely to Senegal but to sub-Saharan countries in general. Africa thus appears as an opportunistic continent for Chinese companies in their will to test their technological and industrial capacities to better succeed in their competition against their Western rivals. The technology transfer to sub-Saharan countries is not the priority of Chinese companies. But, we also show that Senegal's technological capacity to absorb Chinese technologies is very limited. Indeed, our study does not allow us to detect everything linked to the externalities of the Chinese technology transfer in the country. The limits of our study undoubtedly lie in the lack of data as no figures or scientific data are available from state agencies or international statistics. The other limit lies in the methodological scope. Macroeconomic data do not always allow us to identify the process of learning and internalization of knowledge. We have measured here the national absorptive capacity via the China-Senegal partnership. For future research, we plan to carry out a microeconomic study on a local cluster (Chinatown district in Dakar) to better understand the nature of the knowledge transmitted and especially the transmission constraints of this knowledge. Cluster effects, as stated, can be positive for local actors.

Finally, governments have an important role to play in improving the technological capacity. First of all, the recognition and implementation of local innovation policies must be rethought to bring appropriate responses to the development issues, which are priorities in Southern countries (Rodrik 2007). The definition of innovation policies is subjected to the challenge of meeting the needs of a productive sector that is sometimes not very dynamic and the needs of creating innovation capacities to capture the rapid progress of globalized scientific knowledge. These innovation policies are not an untenable objective for the least developed countries that aspire to emergence. They are potential levers to provide alternative solutions to reach their objectives to deliver better living conditions to the populations concerned. But most importantly, governments themselves must approach their partnership with China with caution in granting local development plans. Given the fragile infrastructure and low human capital in Senegal, this seems to be crucial.

References

African Development Bank (2016) Document de stratégie pays du groupe de la banque au Sénégal. Juillet

Amusa K, Monkam N, Viegi N (2016) The political and economic dynamics of foreign aid: a case study of United States and Chinese aid to Sub-Sahara Africa. ERSA working paper, 595. https://econrsa.org/system/files/publications/working_papers/working_paper_594.pdf

Arocena R, Sutz J (2000) Interactive learning spaces and development policies in Latin America. DRUID Working Paper, 13/2000

Arocena R, Sutz J (2003) Understanding underdevelopment today: news perspectives on NSI. GLOBAL network for economic of learning, innovation and competence building systems, Brésil

Bell M, Pavitt K (1997) Technological accumulation and industrial growth: contrast between developed and developing countries. In: Archibugie D, Michie J (eds) Technology, globalization and economic performance. Cambridge University Press, Cambridge, pp 83–138

Brautigam D (2009) The dragon's gift. The real story of China in Africa. Oxford University Press, Oxford

Carré H (2002) Innovation et développement dans une économie de rente: le cas du secteur agroalimentaire au Sénégal in Djeflat A., Boidin B., Ajustement et technologie en Afrique, Série Maghtech, Ed. Publisud, pp 168–187

Casadella V, Tahi S (2017) Capacités et politiques d'innovation dans les pays moins avancés: enseignements tirés du cas du Sénégal. Innovations, Revue d'économie et de management de l'innovation 53(2017/2):13–39

Casadella V, Liu Z, Uzunidis D (2015) Innovation capabilities and economic development in open economies. Wiley, London

Castells M (1999) The information age: economy, society and culture. Blackwell, London

Chen W, Dollar D, Tang H (2015) Why is China investing in Africa? Evidence from the firm level. Brookings Working Paper. https://www.brookings.edu/wp-content/uploads/2016/06/Why-is-China-investing-in-Africa.pdf. Accessed 12 August 2015

Chinese Embassy in Senegal (2016) Diamniadio Industrial Park in Senegal (in Chinese). http://senegal.mofcom.gov.cn/article/ztdy/201609/20160901397098.shtml. Accessed 20 September 2016

Cimoli M, Dosi G, Stiglitz JE (2009) Industrial policy and development: the political economy of capabilities accumulation. Oxford University Press, New York

Cohen W, Levinthal D (1989) Innovation and learning: the two faces of R&D. Econ J 99:569–596

Colom-Jaen A (2013) La cooperation sud-sud au Sénégal: de réelles opportunités de développement ? In: Diop MC (ed) Le Sénégal sous Abdoulaye Wade; Le Sopi à l'épreuve du pouvoir, 1st edn. Karthala, Paris, pp 765–792

Correia P (2011) Dakar-Pékin: une réconciliation opportuniste mais problématique. Outre-Terre 30 (2011/4):351–358

Diagne A, Kassoum S, Sall SS (2000) Nature et source de la croissance. In: Diagne A, Daffe G (eds) Le Sénégal en quête d'une croissance durable. Karthala, Paris, pp 13–15

Djeflat A (2016) L'intégration des connaissances et l'innovation dans les pays du Sud, Cas des économies du Maghreb. L'Harmattan, Paris

Durufle G (1994) Le Sénégal peut-il sortir de la crise? Karthala, Paris

Dutrenit G, Sutz J (2014) National innovation systems, social inclusion and development: The Latin American experience. Edward Elgar, Cheltenham

Easterly W (2007) Are aid agencies improving? Econ Policy 22(5):633–678

Edquist C, Hommen L (2008) Small country innovation systems: globalization, change, and policy in Asia and Europe. Edward Elgar, Cheltenham

Embassy of France in Senegal (2014) Les investissements directs étrangers au Sénégal, Juin

Foster V, Butterfield W, Chen C, Pushak N (2009) Building bridges: China's growing role as infrastructure financier for Sub-Saharan Africa. World Bank/PPIAF, Trends and Policy Options 5(1–2).   https://openknowledge.worldbank.org/bitstream/handle/10986/2614/480910PUB0Buil101OFFICIAL0USE0ONLY1.pdf

Gehrold S, Tietze L (2011) Far from altruistic: China's presence in Senegal. KAS International Report. November 2011

Grammig T (2002) Processus socio-culturels, coopération et localisation technologique. Innovations 16(2002/2):163–180

Gutman J, Sy A, Chattopadhyay S (2015) Financing Africa infrastructure: can the world deliver? Global economy and development, Brooking Institute, March 2015

Haudeville B, Le Bas C (2016) L'innovation frugale, paradigme technologique naissant ou nouveau modèle d'innovation ? Innovations 51(2016/3):9–25

Heitz K (2008) Décolonisation et construction nationale au Sénégal. Relations internationales 133 (2008/1):41–52

Infrastructure Consortium for Africa (2013) Infrastructure financing trends in Africa: ICA annual report 2012. http://www.icafrica.org/fileadmin/documents/Annual_Reports/ICA%20_AnnualReport%202012.pdf

Johnson B, Lundvall BA (2003) National system of innovation and economic development. In: Muchie M, Gammerltoft P, Lundvall B (eds) Putting Africa first: the making of african innovation systems. Aalborg University Press, Copenhagen, Denmark, pp 13–29

Kaplinsky R, Morris M (2009) Chinese FDI in Sub-Saharan Africa: engaging with large dragons. Eur J Dev Res 21(4):551–569

Kim L (1997) Imitation to innovation. The dynamics of Korea's technological learning, Boston MA, Harvard University Press

Lall S (1992) Technological capabilities and industrialization. World Dev 20(2):165–186

Lall S (2000) Technological change and industrialization in the Asian newly industrializing economies: achievements and challenges. In: Kim L, Nelson R (eds) Technology, learning and innovation. Cambridge University Press, Cambridge, pp 13–69

Lall S, Pietrobelli C (2003) Manufacturing in Sub-Saharan Africa and the need of a national technology system. In: Muchie M, Gammerltoft P, Lundvall B (eds) Putting Africa first: the making of African innovation systems. Aalborg University Press, Copenhagen, Denmark, pp 267–287

Lee K, Mathews J (2013) STI for sustainable development. UN: Committee for Development Policy, Background Paper, p 16

Lee K, Juma C, Mathews J (2014) Innovation capabilities for sustainable development in Africa. UNU WIDER Working Paper. 2014/062

Lin JY (2011) New structural economics: a framework for rethinking development. World Bank Res Obs 26:193–221

Liu Z (2016) Les politiques industrielles et de l'innovation pour le développement des écotechnologies en Chine. RRI Working Paper 2016/50. http://rrifr.univ-littoral.fr/wp-content/uploads/2016/03/doc50.pdf

Lundvall BA (1988) Innovation as an interactive process: form user-producer interaction to the national system of innovation. In: Dosi G, Freeman C, Nelson R, Silverberg G, Soete L (eds) Technical change and economic theory, 1st edn. Pinter, London, pp 349–369

Lundvall BA (2001) The learning economy: some implications for the knowledge base of health and education systems. In: OECD (ed) Knowledge management in the learning society. OECD, Paris, pp 125–140

Marukawa T, Ito A, Zhang Y (eds) (2015) China's outward foreign direct investment data, ISS contemporary Chinese research series no. 15. Institute of Social Science, University of Tokyo, Tokyo

McCormick D, Oleyaran-Oyeyinka B (2002) Harnessing skills, spurring innovation, Improving lives. IHEID, WP2069

Metcalfe JS (2005) Systems failure and the case for innovation policy. In: Llerena P, Matt M, Avadikyan A (eds) Innovation policy in a knowledge-based economy: theory and practice. Springer, Heidelberg, pp 47–74

Ministry of Commerce (MOFCOM) (2011) The White paper on China's Foreign Aid, 2010–2012

Ministry of Commerce (MOFCOM) (2014, 2015) Statistics bulletin of China's outward foreign Direct investment. Beijing (in Chinese)

Ministry of Commerce (MOFCOM) (2016) Guideline for Foreign outward investment of cooper-ation country (region): Senegal, 2016 edn, Beijing (in Chinese)

Muchie M, Baskaran A (2012) Challenges of African transformation: exploring through innovation approach. African Books Collective, Oxford

Muchie M, Gammertoft P, Lundvall BA (2003) Putting Africa first: the making of African innovation systems. Aalborg University Press, Copenhagen, Denmark

Narula R (2004) Understanding absorptive capacities in an innovation systems context: conse-quences for economic and employment growth. DRUID Working Paper N°04–02. Aalborg School, Denmark

Nonaka I, Takeuchi H (1995) The knowledge-creating company. How Japanese companies create the dynamics of innovation. Oxford University Press, New York, Oxford

OECD (2014) International direct investment statistics. OECD Publishing, Paris

Oyelaran-Oyeyinka B (2004) Learning and local knowledge institutions in African industry. Discussion Paper series. UNU/INTECH, Maastricht

Oyelaran-Oyeyinka B (2014) The state and innovation policy in Africa. Afr J Sci Technol Innov Dev 6(5):481–496

Peyton, N. (2017). Made in Senegal? New industrial park woos Chinese firms. Reuters Business News. http://www.reuters.com/article/us-senegal-china-manufacturing-idUSKBN175145. Accessed 4 April 4 2017

Polanyi K (1966) Dahomey and the slave trade: an analysis of an archaic economy. University of Washington Press, Seattle

Radjou N, Prabhu J, Ahuja S (2013) L'innovation jugaad. Redevenons ingenieux ! Editions Diateino, Paris

Ranis G, Kosack S, Togo K (2011) The new model of foreign aid drawn from the experiences of Japan and the United States. Center discussion paper No. 1003. Yale University, Economic Growth Center

Rodrik D (2007) One economics, many recipes. Princeton University Press, Princeton

Seyoum M, Wu R, Yang L (2015) Technology spillovers from Chinese outward direct investment: the case of Ethiopia. China Econ Rev 33:35–49

State Council Information Office of the People's Republic of China (2011) China's Foreign Aid. Beijing, April 2011

Strange A, Parks B, Tierney M, Fuchs A, Dreher A (2015) Apples and dragon fruits: the determinants of aid and other forms of state financing from China to Africa. AidData Working Paper, p 15

Sun Y (2011) The difference in Chinese and Western aids to Africa (Zhongguo ji xifang dui feizhou yuanzhu de yi yu li). Twenty-first Century. The Chinese University of Hong Kong. 123, 27–37

UNESCO (2015) Education for all: achievements and challenges. UNESCO. http://unesdoc.unesco.org/images/0023/002322/232205e.pdf

Viotti E (2002) National learning systems. A new approach on technological change in late industrializing economies and evidences from the cases of Brazil and, South Korea. Technol Forecast Soc Chang 69(7):653–680

Wangwe M (2003) African systems of innovation: towards an interpretation of the development experience. In: Muchie M, Gammerltoft P, Lundvall BA (eds) Putting Africa first: the making of African innovation systems. Aalborg University Press, Copenhagen, pp 75–93

Zeng DZ (2012) China's special economic zones and industrial clusters: success and challenges. Lincoln Institute of Land Policy working paper. https://www.lincolninst.edu/sites/default/files/pubfiles/2261_1600_Zeng_WP13DZ1.pdf

More Trade, More Wealth? Impact of Trade on the Economic Development of African Developing Countries

Ondřej Dvouletý

Abstract Many scholars have investigated the association between trade openness and the economic development. Does the assumption "more trade, more wealth" as outlined by the World Trade Organization (WTO) actually work? This chapter focuses only on the African developing countries during years 1991–2016, and the impact of international trade on a country's GDP and GNI per capita is analyzed. Empirically, the approach is based on panel regressions and Granger causality tests. A positive impact of international trade on a country's economic situation is found, which is mainly driven by the export activity. However, it fails to statistically prove any impact of the import activity. Finally, the results of the Granger causality tests show that the relationship between international trade and GDP and GNI per capita is unidirectional. These findings lead to believe that scholars should investigate more carefully the role of barriers to trade in the developing countries. Future researchers are also encouraged to conduct individual country analyses with multiple countries and to enrich academia for the cross-country variation in the obtained findings.

1   Introduction

Hundreds of books, plus articles in newspapers, and peer-reviewed journals have been written about the causes and consequences of economic problems of the developing countries that some economists blame on trade and a lack of aid (e.g., Le and Tran-Nam 2018; Keho (2017); Michalopoulos 2017; Baldwin 2016; Moyo 2009; Irwin and Terviö 2002; Edwards 1992; Grossman and Helpman 1990). Those same authors believe that engagement in international trade is a positive-sum game,

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and such a belief has been in place since the times of the classical economists such as Adam Smith (Smith and Nicholson 1887)[1] and David Ricardo (1891).

The mechanism of positive effects of international trade on the wealth of nations originates in the differences in the allocation of resources among countries, making space for specialization (of a relative nature) at the country level and, hence, opportunities for international trade. The increased volume of trade and the international environment lead to an increased competition that puts pressure on the equilibrium prices. As a consequence, producers and traders are motivated to increase their productivity and efficiency, to search for new combinations of inputs, and to introduce new technological solutions to reduce their costs and prices (Krugman 1979, 1980).

Such innovative activities and "learning by doing" efforts might result in the creation of new products and services and may also lead to the diffusion of new technologies and knowledge spillovers. The increased transfer of technologies, innovation, economies of scale, and a larger variety of products and services that are available for customers may, according to models of endogenous economic growth, result in higher levels of national income and higher rates of economic growth (Romer 1990; Rivera-Batiz and Romer 1991; Young 1991; Grossman and Helpman 1994).

Nevertheless, not all scholars share the same opinion regarding the positive impact of trade on the economic development of trading countries. Mireku et al. (2017), Haddad et al. (2013), and Razin et al. (2003) argue that openness for international trade may expose a country to external shocks and to an increase in its macroeconomic instability, which might subsequently lead to economic recession.

Sakyi et al. (2017), Kim (2011), Dowrick and Golley (2004), and Rodrik (1998) discuss the unequal gains from the international trade. They argue that developing countries benefit from the international trade less than developed countries. Banuri (1991) points out that, especially in the case of developing countries, a lack of access to international capital, insufficient global strategy, and a high level of debt might prevent countries from aiming at the important benefits of international trade.

Kali et al. (2007) further note that it is also important to consider the structure of the international trade, period of analysis, and methods used. Therefore, we have decided to contribute to this ongoing debate from the empirical point of view and the perspective of African developing countries, because there are serious concerns that this group of countries might not sufficiently benefit from the international trade. Moreover, we believe that it is better to focus on one particular region, rather working with cross-continental samples of countries. Therefore, we work with a panel dataset of 52 African developing countries over the period of 1991–2016, and

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[1]For example, Adam Smith noted in one of his famous quotes that international trade is beneficial even for developing countries "...A nation that would enrich itself by foreign trade is certainly most likely to do so when its neighbours are all rich, industrious, and commercial nations" (Smith and Nicholson 1887, p. 202).

we estimate multivariate regression models and Granger causality tests to assess the effects of international trade on the wealth of African developing countries. We believe that our study empirically contributes to the discussion on the ambiguous relationship between international trade and economic development.

The structure of the chapter is conventional. First, we briefly review the existing empirical evidence. In the following part, we describe our data and report summary statistics. In the fourth section, we estimate multivariate regressions and Granger causality tests, and we comment on the obtained estimates. Then, we discuss the obtained findings and provide recommendations for future researchers in the final part of the chapter.

2   Literature Review

To gain inspiration for our analysis, we first explored the previously published studies in the body of literature. The empirical evidence on the relationship between the international trade and the country's economic development is quite rich. Early works of scholars such as Edwards (1992) or Harrison (1996) were limited by the data availability, and they were often based on the analysis of time series and even sometimes averaged values of indicators. Both early works, however, report positive impacts of international trade on the economic development of countries. Later, published studies aimed to solve numerous methodological and empirical issues (see, e.g., Rodriguez and Rodrik 2000; Rodrik 2001) to obtain more robust evidence.

Most of the scholars remained on a pathway of conducting analyses of the role of international trade and the openness of the country's economic development (e.g., Sakyi et al. 2015, 2017; Kummer-Noormamode 2014; or Irwin and Terviö 2002); however, some scholars have turned their attention toward the impact of trade and trade openness on the volatility and stability of the economy (e.g., Mireku et al. 2017; Haddad et al. 2013; Giovanni and Levchenko 2009; or Razin et al. 2003). As our main aim is to study the long-term impact of trade on a country's economic development, we do not describe the volatility studies in sufficient detail.

Multiple measures could be used to operationalize the country's level of engagement in international trade. Most often, the scholars (e.g., Zahonogo 2018; Sakyi et al. 2017; Lee et al. 2004; Irwin and Terviö 2002; or Kim 2011) work with the shares of the overall international trade on the country's GDP. There is also an increasing trend to separately study the role of imports and exports (e.g., Awokuse 2008; Cetin and Ackrill 2018; or Aslan and Topcu 2018). However, there are scholars who often calculate their measures of international trade openness with the aid of principal component analysis (PCA) and factor analysis, such as Wacziarg (2001) who constructed a complex index based on measures of tariff and nontariff barriers of international trade and liberalization status. Unfortunately, these measures are often quite dependent on the data availability.

Other scholars (e.g., Sakyi et al. 2017) argue that the relationship should at least be mediated/facilitated by the proxies considering barriers and costs of international

trade, size of the informal economy, and quality of institutional settings. Unfortunately, these instruments are often quite difficult to obtain and apply to the data. Researchers studying the economic growth (e.g., Russ and Jones 2008) also recommend using multiple outcome variables, operationalized both in growth and level forms, including gross domestic product (GDP) and gross national income (GNI). López (2005) reviews the existing evidence and concludes that most of the studies still report positive effects of trade openness on income and growth.

From the methodological point of view, the most prevailing methods are panel multivariate regression models that are estimated through a fixed effects approach or by the generalized methods of moments (GMM). Researchers also quite often expand their studies for Granger causality tests as they can show the bivariate relationships between the variables of interest (e.g., Le and Tran-Nam 2018; Lee et al. 2004).

3 Data

To analyze the impact of trade on economic development, we have built a panel dataset of 52 African developing countries, based on the classification of the trade and development conference of the United Nations (2018). We follow the quantitative research approach, based on the previously published studies and the nature of the research question. The data were collected from the World Bank (2018) database and definitions for all variables can be found in Table 1. We aimed at analyzing the longest possible period (from the 1970s onwards). Nevertheless, the data for some variables (e.g., GNI per capita or the unemployment rate; see Table 2) were available only from 1991 and onward; hence, we ended up with an analysis of years 1991–2016.

Inspired by the previous research (e.g., Sakyi et al. 2015; Herzer 2013; Russ and Jones 2008; Ellis 2010 or Kali et al. 2007), we operationalize a country's economic development (our main variable of interest) by the two measures—gross domestic product per capita (*GDP per capita*) and gross national income (*GNI per capita*). We also use multiple measures for the operationalization of the international trade, as recommended by previous scholars (e.g., Zahonogo 2018; Irwin and Terviö 2002; or Kim 2011). We work with the three variables of interest: total share of international trade on GDP (*international trade (share on GDP)*), share of exports on GDP (*exports of goods and services (share on GDP)*), and share of imports on GDP (*imports of goods and services (share on GDP)*).

As for the control variables, the selection was driven mainly by the data availability. We control for the role of the unemployment rate (*unemployment rate (%)*) that represents from the angle of economic theory, Okun's law (for details, see, e.g., Guisinger et al. 2018; Ogbeide et al. 2016; or Prachowny 1993); we also control for the impact of the economically active population (*15–64 years of age Population (share on total)*) as a proxy for the factor-based approach toward economic growth (for details, see, e.g., Sachs and Warner 1997a, b; Bairoch 2013; or Dellink et al.

Table 1 Definition of variables

Variable	Description
GDP per capita	GDP per capita is gross domestic product divided by midyear population. Data are in constant 2010 US dollars
GNI per capita	GNI is gross national income converted to international dollars using purchasing power parity rates. Data are in constant 2010 US dollars
International trade (share on GDP)	"Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product"
Exports of goods and services (share on GDP)	"Exports of goods and services represent the value of all goods and other market services provided to the rest of the world"
Imports of goods and services (share on GDP)	"Imports of goods and services represent the value of all goods and other market services received from the rest of the world"
15–64 Population (share on total)	"Total population between the ages 15–64 as a percentage of the total population"
FDI (share on GDP)	"Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor"
Unemployment rate (%)	Unemployment, total (% of total labor force, national estimate)

Source: World Bank Database (2018)
Author's own table

Table 2 Summary statistics

Variable	Mean	SE	Min	Max	Observations (N)
GDP per capita	1735.57	2260.83	115.79	19492.80	2162
GNI per capita	1918.57	2363.64	127.35	19358.77	1276
International trade (share on GDP)	68.60	33.84	6.32	311.36	2054
Exports of goods and services (share on GDP)	29.18	17.56	2.52	107.99	2054
Imports of goods and services (share on GDP)	39.41	20.42	2.98	236.39	2054
15–64 years of age population (share on total)	53.20	4.22	46.66	70.78	2439
FDI share on GDP)	3.06	7.11	−82.89	89.48	2013
Unemployment rate (%)	9.58	7.40	0.30	44.16	1326

Source: STATA 14, own calculations
Author's own table

2017) and for the role of foreign direct investments (*FDI (Share on GDP)*) as a proxy for the international activity (for details, see, e.g., Tekin 2012; Belloumi 2014; or Jugurnath et al. 2016). Table 2 reports the summary statistics for all collected variables.

Initially, it might be interesting to see to what extent African developing countries are involved in international trade. Figure 1 shows the average share of international trade on GDP over the years 1991–2016. According to these calculations, Congo,
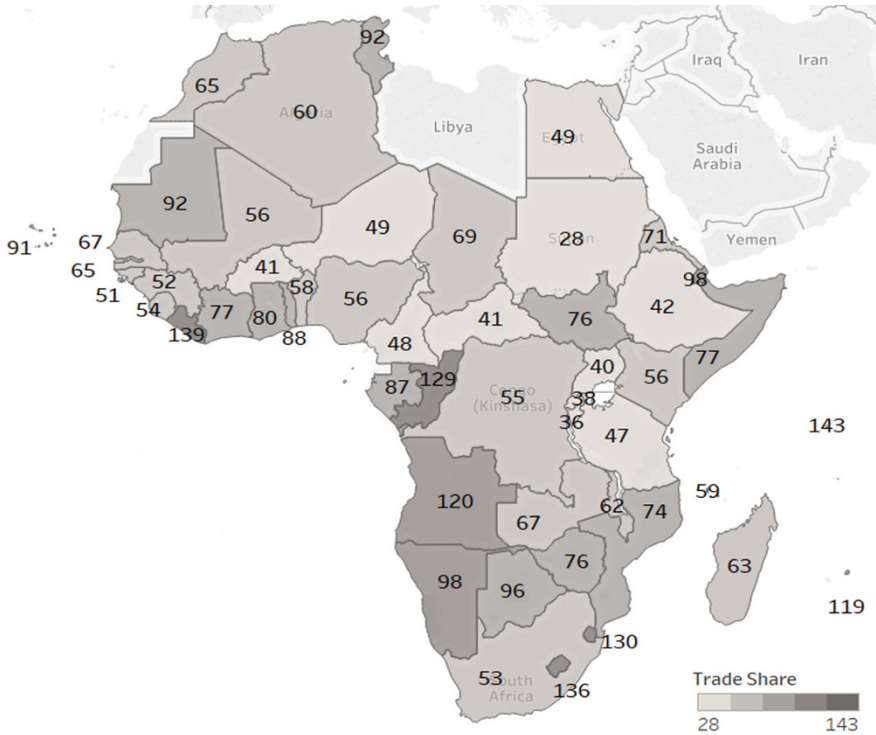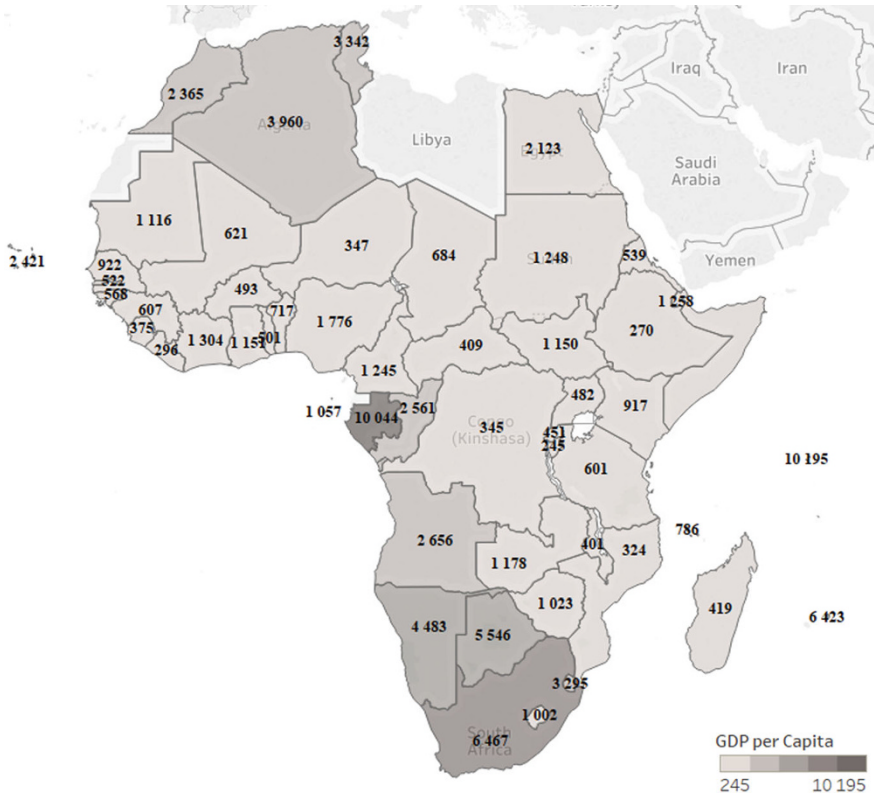
Fig. 1 Average trade share on GDP (in %) in African developing countries over 1991–2016. Source: Own calculations based on World Bank (2018), processed in Tableau software (Author's own figure)

Angola, Seychelles, Swaziland, and Mauritius were among the countries that were mostly engaged in international trade during the analyzed period. On the contrary, the countries with the lowest engagement in international trade were Burundi, Rwanda, Sudan, Ethiopia, and Eritrea.

Following the previous graph, it might be interesting to have a look at the distribution of the national wealth (regarding GDP per capita) among African developing countries. Figure 2 shows that during the years 1991–2016, the richest countries (regarding GDP per capita) were Seychelles, Gabon, and South Africa. Meanwhile, the poorest countries were Burundi, Ethiopia, and Liberia.

Therefore, it is worth studying to what extent the level of engagement in international trade associated with the country's wealth might be. Table 2 shows that the average ratio of international trade on GDP was during the analyzed period of years at 68.6%, the GDP per capita was on average 1736 US dollars, and GNI per capita was a bit higher at 1919 US dollars. If we make simple bivariate correlations, we obtain the size of the correlation coefficient of 0.38 for GDP per capita and 0.34 for GNI per capita, indicating a moderate positive relationship between the overall trade

Fig. 2 Average GDP per capita (in 2010 US dollars) in African developing countries over 1991–2016. Source: Own calculations based on World Bank (2018), processed in Tableau software (Author's own figure)

activity and country's wealth. To see if this positive relationship holds, we incorporate a more robust empirical approach.

4   Empirical Approach and Results

We follow the quantitative research approach to explore the relationship between the international trade and wealth of African developing countries. In line with the previously published studies, *we assume a positive relationship between the international trade and GDP and GNI per capita*. To achieve our goal, we first employ multivariate regression models, and then we use the Granger causality tests to detect Granger-causal relationships between our variables of interest.

4.1 Stationarity

Empirically, we work with the panel data, and thus we need to initially make sure that all variables are stationary (Wooldridge 2010). Therefore, we have tested all variables according to the Levin, Lin, and Chu unit root test for panel data (Levin et al. 2002), and we found our outcome variables of GDP and GNI per capita to be nonstationary. As a remedy, we used logarithmic transformation, and we conclude that after the additional round of testing, all variables were found to be stationary, at least on 10% level of statistical significance.

4.2 Regression Analysis

Having all variables stationary, we may proceed toward the estimation of multivariate regression models on our dataset covering years 1991–2016. To ensure that our results are more reliable, we work with the two outcome variables, operationalized as logarithms of GDP and GNI per capita. We also use three variables to measure the international trade: total share of international trade on GDP, the share of exports on GDP, and share of imports on GDP to better understand different flaws of international trade and their contributions to the country's wealth. To control for the potential endogeneity bias, we also test the impact of international trade with a time lag of 1 year, and we also include other control variables, determining the country's economic situation, such as unemployment rate, the share of economically active population, and foreign direct investments (FDIs).

We conducted our analysis using the STATA 14 software, and we estimate all models with the robust standard errors that are dealing with the consequences of heteroskedasticity and autocorrelation (Wooldridge 2010). We also include country dummies in order to consider other control variables impacting regional economic development. Finally, we have replicated all models by one hundred times to increase the stability of our results (Freedman 1981). The obtained estimates are presented in Table 3. We conclude that all models are statistically significant, and they meet the classical econometric assumptions. Hence, we are able to proceed toward the interpretation of the obtained estimates.

Generally, the obtained coefficients for control variables are stable across the model specification, and they are in line with the economic assumptions. In the first four models (Models 1–4), we have investigated the impact of the whole sum of international trade on the economic development of the African developing countries. The results indicate the statistically significant positive impact of the overall trade on the country's GDP and GNI per capita, both initially and with a lag of 1 year. We observe a similar pattern in the second group of models (Models 5–8), where we find an initial and lagged positive and statistically significant impact of exports on both GDP and GNI per capita. Finally, we are unable to prove any

Table 3 Estimated regression models: the impact of trade on economic development of African developing countries over 1991–2016

Model number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Independent/dependent variable	Log GDP per capita		Log GNI per capita		Log GDP per capita		Log GNI per capita		Log GDP per capita		Log GNI per capita	
International trade (share on GDP)	0.000729*		0.000948*									
	(0.000358)		(0.000453)									
International trade (share on GDP) (−1)		0.000986*		0.00118*								
		(0.000416)		(0.000554)								
Exports of goods and services (share on GDP)					0.00384***		0.00185*					
					(0.000921)		(0.000869)					
Exports of goods and services (share on GDP) (−1)						0.00396***		0.00269**				
						(0.000793)		(0.000956)				
Imports of goods and services (share on GDP)									0.0000574		0.00122	
									(0.000502)		(0.000829)	
Imports of goods and services (Share on GDP) (−1)										0.000510		0.00143
										(0.000481)		(0.000760)
15–64 Population (share on Total)	0.0432***	0.0428***	0.0409***	0.0407***	0.0420***	0.0417***	0.0411***	0.0409***	0.0440***	0.0436***	0.0411***	0.0409***
	(0.00264)	(0.00282)	(0.00215)	(0.00232)	(0.00248)	(0.00256)	(0.00260)	(0.00235)	(0.00269)	(0.00262)	(0.00211)	(0.00220)
FDI (share on GDP)	0.00183	0.00205	0.00416	0.00409	0.00205	0.00215	0.00440	0.00411	0.00212	0.00226	0.00416	0.00424*
	(0.00124)	(0.00130)	(0.00238)	(0.00305)	(0.00130)	(0.00122)	(0.00249)	(0.00265)	(0.00139)	(0.00135)	(0.00226)	(0.00189)
Unemployment rate (%)	−0.0122*	−0.0113***	−0.00209	−0.00177	−0.0126***	−0.0110***	−0.00233	−0.00180	−0.0122***	−0.0116***	−0.00215	−0.00208
	(0.00210)	(0.00286)	(0.00222)	(0.00251)	(0.00234)	(0.00231)	(0.00261)	(0.00247)	(0.00188)	(0.00216)	(0.00219)	(0.00167)
Constant	5.727***	5.724***	5.642***	5.638***	5.721***	5.706***	5.629***	5.603***	5.723***	5.724***	5.659***	5.665***
	(0.184)	(0.190)	(0.164)	(0.178)	(0.175)	(0.182)	(0.196)	(0.168)	(0.192)	(0.178)	(0.161)	(0.153)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1165	1166	863	862	1165	1166	863	862	1165	1166	863	862

(continued)

Table 3 (continued)

Model number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Independent/ dependent variable	Log GDP per capita		Log GNI per capita		Log GDP per capita		Log GNI per capita		Log GDP per capita		Log GNI per capita	
R^2	0.971	0.971	0.977	0.977	0.971	0.971	0.977	0.977	0.971	0.970	0.977	0.977
Adjusted R^2	0.969	0.969	0.976	0.976	0.970	0.970	0.976	0.976	0.969	0.969	0.976	0.976
AIC	−788.2	−790.5	−684.2	−711.9	−815.5	−815.5	−680.6	−699.0	−781.6	−779.7	−697.2	−704.7
BIC	−520.0	−522.3	−474.7	−559.6	−547.3	−547.2	−471.1	−522.9	−513.4	−511.5	−521.0	−542.9

Models were estimated with robust standard errors and are based on 100 replications. Estimated models include fixed effects for countries

Standard errors are reported in parentheses. Statistical significance * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: STATA 14, own calculations

Author's own table

Table 4 Granger causality tests

Tested relationship	F-statistics	p-value	Lags	H_0 reject
International trade (Share on GDP) → Log GDP per capita	2.39	0.00	15	Rejected
Log GDP per capita → International trade (Share on GDP)	0.76	0.72	15	Not rejected
International trade (Share on GDP) → Log GNI per capita	1.99	0.01	15	Rejected
Log GNI per capita → International trade (Share on GDP)	1.40	0.14	15	Not rejected

Source: EViews, own elaboration
Author's own table

statistically significant impact of imports on the country's wealth (Models 9–12), although the coefficients obtained indicate a positive direction of the effect.

To summarize the obtained findings, we find a positive impact of international trade on the country's economic situation, which is mainly driven by the export activity. However, we fail to statistically prove any impact of the import activity.

4.3 Granger Causality Tests

Additionally, we expand the previous analysis using Granger causality tests to address the endogeneity issue better. This tool has been introduced by Granger (1969), and it aims to test whether the previous values of one variable are capable of predicting current and future values of another variable. This tool has also been adapted for the panel data, and nowadays, it is a part of the standard statistical packages (e.g., Lopez and Weber 2017). To estimate Granger causality tests, we have used EViews 9software. Empirically, we have aimed at analyzing whether there is a one-way relationship between the international trade and the country's values of GDP and GNI per capita. To make sure that we were on the right track, we tested a sufficiently long relationship; we have included a maximum of 15-year lags. The results can be found in Table 4. At the 1% level of statistical significance, we may reject the null hypothesis of the nonexistence of Granger-causality relationships between variables, and we accept the alternative hypothesis which states that the previous values of international trade predicted (Granger-caused) the future development of GDP and GNI per capita. On the contrary, given the standardized significance levels, we are unable to prove any reversed relationships. Therefore, we conclude that the relationship between international trade and GDP and GNI per capita is unidirectional.

5   Discussion and Conclusion

Decades ago, scholars started studying the relationship between trade openness and the economic development of countries. Most of the academicians have reached a consensus about the positive impact of trade on a country's wealth. However, there are still researchers who raise serious concerns and who report ambiguous findings. With the increased data availability, we may provide more convincing and more robust empirical evidence, with a focus that is only on continents or a group of countries. Some scholars also argue that the developing countries benefit less (if they benefit at all) from their engagement in the international trade. Having these challenges and questions in mind, we decided to study the impact of international trade in African developing countries.

For our study, we worked with the data from the World Bank covering years 1991–2016, in order to provide the most recent empirical evidence. We have operationalized international trade by the three variables of interest – total share of international trade on GDP, the share of exports on GDP, and the share of imports on GDP in order to better understand different flaws of international trade and their contributions to the country's wealth. We also used two measures of a country's wealth – GDP and GNI per capita. Methodologically, we followed the approach of previous researches, and we employed multivariate regression models and Granger causality tests. Our results show a positive impact of international trade on the country's economic situation, which is mainly driven by the export activity. However, we fail to statistically prove any impact of the import activity. The results of the Granger causality tests show that the relationship between international trade and GDP and GNI per capita is unidirectional. At any point, we are unable to prove any negative effects of engagement in the international trade on the country's economic situation, and, thus, we believe that the call of the World Trade Organization (WTO) for more openness toward the international trade is also justified by the empirical evidence.

Therefore, we further believe that the scholars should look, in a more detailed manner, at the barriers and costs of international trade, particularly with respect to African countries and, together with policymakers, seek ways to remove them. From the methodological point of view, these variables should be taken into account in future empirical studies, as they could serve as a mediator of the relationship. Not taking these variables into account is one limitation of our study. Another limitation of our study is that we present evidence on a pooled sample of countries. Although we consider cross-country variation in our analysis, the true effects of international trade on a country's economic situation might be only obtained through the analysis of individual countries that would require a sufficient number of observations for the time series analysis based on, for example, quarterly data. We encourage future researchers to conduct individual-country analyses with multiple countries and to enrich existing academic knowledge regarding the cross-country variation in the obtained findings. It might be very interesting to see which countries are benefiting more from the trade and which countries are benefiting less from the trade.

References

Aslan A, Topcu E (2018) The relationship between export and growth: panel data evidence from Turkish sectors. Economies 6(2):22

Awokuse TO (2008) Trade openness and economic growth: is growth export-led or import-led? Appl Econ 40(2):161–173

Bairoch P (2013) The economic development of the Third World since 1900. Routledge, London

Baldwin R (2016) The world trade organization and the future of multilateralism. J Econ Perspect 30(1):95–116

Banuri T (1991) Economic liberalization: no panacea. The experiences of Latin America and Asia. Clarendon Press, Oxford

Belloumi M (2014) The relationship between trade, FDI and economic growth in Tunisia: an application of the autoregressive distributed lag model. Econ Syst 38(2):269–287

Cetin R, Ackrill R (2018) Exports, imports, growth and causality: a study of Slovakia. Post-Communist Econ 30(3):395–404

Dellink R, Chateau J, Lanzi E, Magné B (2017) Long-term economic growth projections in the shared socioeconomic pathways. Glob Environ Chang 42:200–214

Dowrick S, Golley J (2004) Trade openness and growth: who benefits? Oxf Rev Econ Policy 20 (1):38–56

Edwards S (1992) Trade orientation, distortions and growth in developing countries. J Dev Econ 39 (1992):31–57

Ellis PD (2010) International trade intermediaries and the transfer of marketing knowledge in transition economies. Int Bus Rev 19(1):16–33

Freedman DA (1981) Bootstrapping regression models. Ann Stat 9(6):1218–1228

Giovanni JD, Levchenko AA (2009) Trade openness and volatility. Rev Econ Stat 91(3):558–585

Granger CW (1969) Investigating causal relations by econometric models and cross-spectral methods. Econometrica 37(3):424–438

Grossman GM, Helpman E (1990) Trade, knowledge spillovers, and growth (No. w3485). National Bureau of Economic Research, Cambridge, MA

Grossman GM, Helpman E (1994) Endogenous innovation in the theory of growth. J Econ Perspect 8(1):23–44

Guisinger AY, Hernandez-Murillo R, Owyang MT, Sinclair TM (2018) A state-level analysis of Okun's Law. Reg Sci Urban Econ 68:239–248

Haddad M, Lim JJ, Pancaro C, Saborowski C (2013) Trade openness reduces growth volatility when countries are well diversified. Can J Econ 46(2):765–790

Harrison A (1996) Openness and growth: a time-series, cross-country analysis for developing countries. J Dev Econ 48(2):419–447

Herzer D (2013) Cross-country heterogeneity and the trade-income relationship. World Dev 44:194–211

Irwin DA, Terviö M (2002) Does trade raise income? Evidence from the twentieth century. J Int Econ 58(1):1–18

Jugurnath B, Chuckun N, Fauzel S (2016) Foreign direct investment and economic growth in Sub-Saharan Africa: an empirical study. Theor Econ Lett 6:798–807

Kali R, Méndez F, Reyes J (2007) Trade structure and economic growth. J Int Trade Econ Dev 16 (2):245–269

Keho Y (2017) The impact of trade openness on economic growth: the case of Cote d'Ivoire. Cogent Econ Financ 5(1):1332820

Kim DH (2011) Trade, growth and income. J Int Trade Econ Dev 20(5):677–709

Krugman PR (1979) Increasing returns, monopolistic competition, and international trade. J Int Econ 9(4):469–479

Krugman P (1980) Scale economies, product differentiation, and the pattern of trade. Am Econ Rev 70(5):950–959

Kummer-Noormamode S (2014) Does trade with China have an impact on African countries' growth? Afr Dev Rev 26(2):397–415

Le TH, Tran-Nam B (2018) Trade liberalization, financial modernization and economic development: an empirical study of selected Asia–Pacific countries. Res Econ 72(2):343–355

Lee HY, Ricci LA, Rigobon R (2004) Once again, is openness good for growth? J Dev Econ 75 (2):451–472

Levin A, Lin CF, Chu CSJ (2002) Unit root tests in panel data: asymptotic and finite-sample properties. J Econ 108(1):1–24

López RA (2005) Trade and growth: reconciling the macroeconomic and microeconomic evidence. J Econ Surv 19(4):623–648

Lopez L, Weber S (2017) Testing for granger causality in panel data. Stata J 17(4):972–984

Michalopoulos C (2017) Aid, trade and development: 50 years of globalization. In: Aid, trade and development. Palgrave Macmillan, Cham, pp 1–7

Mireku K, Animah Agyei E, Domeher D (2017) Trade openness and economic growth volatility: an empirical investigation. Cogent Econ Financ 5(1):1385438

Moyo D (2009) Dead aid: why aid is not working and how there is a better way for Africa. Macmillan, London

Ogbeide FI, Kanwanye H, Kadiri S (2016) Revisiting the determinants of unemployment in Nigeria: do resource dependence and financial development matter? Afr Dev Rev 28 (4):430–443

Prachowny MF (1993) Okun's law: theoretical foundations and revised estimates. Rev Econ Stat 75 (2):331–336

Razin A, Sadka E, Coury T (2003) Trade openness, investment instability and terms-of-trade volatility. J Int Econ 61(2):285–306

Ricardo D (1891) Principles of political economy and taxation. G. Bell, London

Rivera-Batiz LA, Romer PM (1991) Economic integration and endogenous growth. Q J Econ 106 (2):531–555

Rodriguez F, Rodrik D (2000) Trade policy and economic growth: a skeptic's guide to the cross-national evidence. NBER Macroecon Annu 15:261–325

Rodrik D (1998) Trade policy and economic performance in Sub-Saharan Africa (No. w6562). National Bureau of Economic Research, Cambridge, MA

Rodrik D (2001) Trading in illusions. Foreign Policy 123:55–62

Romer PM (1990) Endogenous technological change. J Polit Econ 98(5, Part 2):S71–S102

Russ M, Jones JK (2008) Regional economic development indicators for a knowledge-based economy with knowledge deprivation. J Reg Anal Policy 38(2):189–205

Sachs JD, Warner AM (1997a) Fundamental sources of long-run growth. Am Econ Rev 87 (2):184–188

Sachs JD, Warner AM (1997b) Sources of slow growth in African economies. J Afr Econ 6 (3):335–376

Sakyi D, Villaverde J, Maza A (2015) Trade openness, income levels, and economic growth: the case of developing countries, 1970–2009. J Int Trade Econ Dev 24(6):860–882

Sakyi D, Villaverde J, Maza A, Bonuedi I (2017) The effects of trade and trade facilitation on economic growth in Africa. Afr Dev Rev 29(2):350–361

Smith A, Nicholson JS (1887) An inquiry into the nature and causes of the wealth of nations. T. Nelson and Sons, Edinburgh

Tekin RB (2012) Economic growth, exports and foreign direct investment in least developed countries: a panel Granger causality analysis. Econ Model 29(3):868–878

United Nations (2018) United nations conference on trade and development: classification of countries. http://unctadstat.unctad.org/EN/Classifications.html. Accessed 26 Feb 2018

Wacziarg R (2001) Measuring the dynamic gains from trade. World Bank Econ Rev 15(3):393–429

Wooldridge JM (2010) Econometric analysis of cross section and panel data. MIT press, Cambridge, MA

World Bank Database (2018) Statistical database. https://data.worldbank.org. Accessed 26 Feb 2018

Young A (1991) Learning by doing and the dynamic effects of international trade. Q J Econ 106 (2):369–405

Zahonogo P (2018) Globalization and economic growth in developing countries: evidence from Sub-Saharan Africa. Int Trade J 32(2):189–208

Fostering Egalitarianism Through Globalisation of Africa's Indigenous Knowledge and Technology (IK&T) for Enhanced Industrial Development and Global Competitiveness

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Abstract Globalisation is defined as the process of strengthening economic, political, social and cultural relations across the globe aimed at inspiring homogenisation of political and socio-economic principle worldwide. The belief is that it impacts significantly on Africa through methodical rearrangement of collaboration among its nations, by removing, among several others, cultural, commercial and communication barriers. The problem that arises is the assumption that these African states are equal in status, strength and resources even with industrialised countries in Asia, Europe and America. The answer is affirmatively 'no'. How then do we make the unequal states of Africa equal in the arrangement, in order to benefit from globalisation and ensure stimulation of Africa's industrial development for global competitiveness? This is the focus of this chapter. Relying on secondary and historical data, the chapter employs human factor (HF) theory and posits that capacity and capability building in indigenous technology development is a facilitator for nationwide advancement, in the midst of other factors, its propensity to provide the required backing for growth in the key areas of the economy, mainly in farming and manufacturing. The main argument thus is that development of Africa's indigenous technology, an important and neglected African resource, its innovations and adaptation are unequivocally mandatory for refining production techniques required to drive progress, African empowerment and global competitiveness. This is so in that technology invented based on people's culture, tradition and needs and which is adopted for use in their environment can be easily understood, adopted and adapted for increased productivity and industrial development. This will bring the countries in the continent to be equal participants/partners and beneficiary in the globalisation process.

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1 Introduction

When globalisation is defined as the process of strengthening economic, political, social and cultural relations across the globe, which aims at inspiring homogenisation of political and socio-economic principle worldwide, the belief is that it impacts significantly on African states through methodical rearrangement of collaboration among nations, by removing, among several others, cultural, commercial and communication barriers. The question can be posed: Are these states equal in status, strength and resources with industrialised countries of Asia, Europe and America? The answer is affirmatively 'no'.

Available evidence shows that in sub-Saharan Africa, 38 countries are categorised as low-income countries, 11 are middle-income countries and only 1 is a high-income country; GNP per capita measured in terms of PPP is $1440 in the continent when compared to the world average of $6300; 33 of the 48 countries in Africa are labelled as least developed by the UN; and 34 of the 42 countries covered by the HIPC initiative are African (Hagen 2002). According to Maddison (1995), when per capita income level in the main regions of the world is examined, the average income in Africa has always been below the world average between 1820 and 1992 and specifically below the average income in other regions, Western Europe, Western Offshoots (Canada, the USA, Australia and New Zealand), Southern Europe, Eastern Europe, Latin America and Asia, in every year except 1950. All these obviously illustrate the marginal and unequal position of Africa in the world economy. There is no doubt that there has been a plethora of academic literature containing several excellent reviews by political economists, public policymakers, policy analysts and administrators, academic researchers as well as other social scientists regarding the causes and way out of Africa's economic quagmire for increased industrialisation and global competitiveness. In spite of all these, the situation is getting worse in the continent. This suggests that there is something fundamental to the African condition, which impedes and thwarts all efforts at economic development. In fact, as argued by Hagen (2002), a lot of experimental and pragmatic studies of economic growth have established that after regulating several descriptive variables a replica variable for African countries is undesirable, adverse and statistically substantial and weighty. With all these, can countries of Africa be said to have equal industrial and economic muscles to compete globally with the industrialised countries in the globalisation process? How do we make the unequal states of Africa equal in the arrangement in order to benefit from globalisation and ensure stimulation of Africa's industrial development for global competitiveness, as well as what commodities can Africa offer? These and more are the focus of this chapter.

It has been variously argued that the major determinant of a nation's economic success is not the availability of resource endowment but the use to which such nation can put the resources to advance its development through appropriate technology (Prusak 1996, 1997). However, African countries are lagging behind in the area of the utilisation of their resources and technology. One fundamental challenge

to technological backwardness of most African countries is the adherence to contemporary religions and values to the total neglect of their indigenous/traditional religion, culture and values coupled with the lackadaisical attitude of governments, stakeholders and peoples of the continent to explore indigenous viable options for industrialisation and development. Building capacity and capability in indigenous technology development is a facilitator for nationwide advancement, in the midst of other factors, its propensity to provide the necessary support for growth in the major sectors of the economy, especially in agricultural and industrial sectors (Mathooko 2000; UNESCO 2010). The development of Africa's indigenous technology, an important and neglected African resource, its innovations and adaptation are unequivocally mandatory for refining production techniques required to drive progress, development, African empowerment and global competitiveness. This is so in that technology invented based on people's culture, tradition and needs and which is adopted for use in their environment will prevent their extinction, increase their loyalty and sense of nationalism and ensure their communal continued existence, uniqueness and distinctiveness. Such technology can be easily understood, adopted and adapted for increased productivity and industrial development. This will bring the countries in the continent to be equal participants/partners and beneficiaries in the globalisation process. Against this backdrop, the chapter therefore looks at the concepts of indigenous knowledge and indigenous technologies in Africa and the developmental opportunities they offer for industrialisation. While outlining the challenges, it discusses various ways of enhancing their promotion, utilisation, development and globalisation for Africa's industrial growth for global competitiveness.

2 Theoretical Framework

Against the backdrop of the nature of the postcolonial African states and with respect to the various legacies of colonialism which have distorted African indigenous knowledge, tradition, culture and values and its implication on the promotion and utilisation of these knowledge as it concerns and affects indigenous technology with its accompanying implication on production processes and practices, this paper adopts a tripartite theories of human factor (HF), dependency and cultural revivalism in its explanation of how African continents and their indigenous knowledge and technology were rendered impotent to positively contribute to the people's productive capabilities, production process and economic growth as was experienced before colonialism.

According to Adjibolosoo (1995), the human factor refers to the range of individual's behaviour, character and disposition as well as other aspects of human idiosyncrasy, peculiarity and habit that permit and support social, economic and political institutions to function consistently over time. These human factor characteristics, as listed by Muranda (2005), involve such values as commitment, responsibility, honesty, integrity and accountability in the conduct of activities in the work

place. Integrity means an exhibition of a high degree of adherence and commitment to sound moral principles (Adjibolosoo 2003).

The advocates of the dependency theory are of the opinion that the experienced sociocultural, economic and political challenges facing the continent of Africa can be traced to the Western world's attitude and approach in enforcing Africa's integration and incorporation into participating at the periphery of global capitalist system. The approach, given its parasitic, exploitative and disproportionate nature, did not make or allow the countries in the continent to play equal and partnership role with those of the Western or developed economies in the arrangement. This argument is well espoused by some leading African scholars including Andre Gunder Frank, Frantz Fanon, Claude Ake and Walter Rodney, among others, to explain the reasons for Africa's underdevelopment (Uthman 2016). In fact, Ake's argument becomes relevant when he posited that Africa's present poor state as seen in its lack of modern industries and/or advanced technology is better explained within the agenda of the Western countries to perpetually dominate Africa. This is entrenched in their approach to make African economies a mono-product nation that will continue to provide raw materials needed by foreign industries.

The cultural revivalism on the other hand assigns very substantial and critical influential responsibilities to African traditions and cultural heritage. Specifically, as posited by one of the major proponents of the theory, the major solution to Africa's contemporary challenges is 'to cut-off and detach from Western ideas of doing things and revert to African ways of solving problems through rebirth, reawakening, promoting and utilising African indigenous traditions, knowledge and technical know-how which have remained untapped and unexplored due the colonialists' campaign of calumny' (Gyekye 1997: 233).

Without doubt, what African continent requires now is the technology of self, in the light of growing unemployment, poverty and underdevelopment, explainable in low industrialisation in the African region. It is obvious that colonialism distorted African growth. Many African states have not been able to achieve technological development and independence because colonialism has reshaped the whole structure of the African way of life economically, socially, technologically, philosophically and politically and its legacies are the bane of Africa's industrial backwardness of today. The continent is failing to contend with its realities because the system was designed by the colonial authorities to carpet the black man for the white settler's elevation (Nyoni 2015). Africans have been brainwashed and branded, particularly through Christianity which Pathisa Nyathi (cited in Nyoni 2015) referred to as a proselytising religion, to the extent that they speak unpleasant of their fellows' abilities and most times denied their identity, ancestry and heritage. The situation has made it to be absolutely difficult for African nations to develop and harness their indigenous technologies given the unconducive atmosphere that has subjugated her traditional and indigenous values to the Western values. All these are not to argue that there are no endogenous factors in Africa that play complementary roles of entrenching foreign rule, sociocultural, political and economic domination of Africa. These factors include leadership imperfections, weaknesses and errors demonstrated by African political elites and leaders in institutionalising colonial legacies, which

have resulted in the overwhelming suffocation of Africa's indigenous knowledge system by Western indigenous system with its accompanying warp and negative stories of Africa's development (see Alemazung 2010). This explains the desperate need for the technologies of 'self' by Africans.

3   Africa's Indigenous Knowledge System and Western Indigenous System Compared

The indigenous system and methodology of knowing are built on locally, environmentally and periodically contextualised truths (Hammersmith 2007). Thus, these methods compared to the objectives of many Western scientific traditions for universal truths are explainable in the level of their attachment to natural communities described by Ermine as characterised by complex kinship systems of relationships among people, animals, the earth, the cosmos, etc. from which knowing originates. Given this therefore, indigenous knowledge systems (IKS) will refer to both the content and context of intricate knowledge systems acquired over generations by indigenous communities as they interact with their environment (Hammersmith 2007; Chikaire et al. 2012). To its promoters, IKS goes beyond handicrafts, taboos or folklores, oral histories and oral traditions (Augustine 2008; Howden 2001). It includes indigenous technological knowledge in agriculture, fishing, animal husbandry and ethnic veterinary medicine, forest resource exploitation, atmospheric management techniques, knowledge transmission systems, architecture, medicine, pharmacology, law, spirituality, orientation and navigation on land and sea as well as management of natural resources, among others (Abah et al. 2015).

Western Knowledge Systems, Western culture and Western civilisation, whichever way it is construed, are terms used to refer to the cultures of the people of European origin and their descendants (Hammersmith 2007). By implication, it encompasses the comprehensive and wide-ranging inheritance and legacies exemplified in social norms, ethical values, traditional beliefs and customs including detailed and particular artefacts and technologies which are generally identified with and within the Western world or its sphere of influence. In simple terms, Western Knowledge Systems refer to the framework of knowledge systems driven by the idiosyncrasies and characteristics of Western values, traditions, cultural beliefs and civilisations.

Notwithstanding, as posited by Abah et al. (2015), the two systems consist of multifaceted networks of propositions and interpretations drawn and agreed to be useful by groups of researchers. Specifically, both require some sort of beliefs, trust, convictions or acceptance of a specific model or image of the world, and both are socially negotiated pictures of the universe which inform the ongoing life of the society (Abah et al. 2015). It is also instructive to note that each of the knowledge system has their relative significance, challenges and limitations which make them

complementary rather than seeing one to be barbaric, primitive and inferior (see Kaino 2013).

4   Indigenous Knowledge and Technology (IK&T) in Africa: Its Importance

Indigenous knowledge (IK) suffers from having an all-embracing meaning. This is so in that the concept is an ascribed meaning in relation to the diverse culture and the identity of a people. In other words, the concept is sometimes variously referred to as traditional knowledge and/or local knowledge. For instance, Warren (1991) while explaining IK refers to it as the local knowledge that is peculiar, exclusive and distinctive to a given culture or society. He (Warren) further added that IK is 'the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities' (Warren 1991: 3). To the World Bank Group (n.d.), IK incorporates and embraces the know-how, expertise, practices and intuitions of people that are utilised or made use of in order to manage, sustain or advance their welfare and comfort. This definition is in line with that of Grenier (1998) which described IK as the unique, traditional, local knowledge existing within and developed around specific conditions of men and women indigenous to a particular geographical area. This could be the reason why Siyanbola et al. (2012) argued that the concept is concerned with the developed ancient traditional beliefs and cultural practices of specific regional indigenous and local communities which encompass their knowledge, wisdom and teachings. This is corroborated by Nakata and Langton (2005, cited in Adigun, 2014; Emeagwali and Sefa Dei 2014), when they opined that indigenous knowledge is owned collectively by the community and exists as folklores, stories, proverbs, songs, cultural values, norms, beliefs, rituals, local languages, health care and agricultural practices such as animal husbandry, animal breeds, development of plant species, land cultivation practices and crop propagation methods. It should be noted that although these massive quantity of knowledge cannot be found in a written form or compendium, they form a significant and cherished source of research activities, especially on indigenous technologies of African peoples anywhere in the world.

It should be equally noted that for proper discussion and effective understanding of indigenous technology (IT), the discussion on indigenous knowledge is very germane. This is so in that IT operations are grounded and established on essential indigenous knowledge systems. It is on this note that the discussion of the concept of technology is considered to be essential.

5 What Is Technology?

The question 'what is technology' has remained a puzzle among science and technology experts and researchers over time. The concept has not succeeded at acquiring any specifically limited and practical meaning that is universally acceptable for all times. Understandably, scholars and writers have begun to question the wisdom of dripping so much ink and expending so much time and dissipating energy on arid definitional exercise and exploration of meaning for the concept of technology. This could be the basis for Bijker et al. (1987) conclusion that it is needless dissipating and expending treasured and valued time struggling to reach a universally acceptable definition as it is difficult to ascribe a single meaning to the concept. In fact, it is as a result of this that Lawson (2008) argued that all previous attempts at achieving all-encompassing and all-embracing definition and meaning have over the years been unsuccessful. This notwithstanding, a short definition of the subject under discussion is of essence and crucial.

Scholars, Adams (1991) and Pacey (2001), for instance, have linked the general meaning of technology with achievement, progress and purpose, while Abdulkareem (1992) refers to technology as the practice and application of man's knowledge in his struggle and activities to solve his daily challenges and satisfy his needs. Relatedly, Burkitt (2002: 224) defined technology to mean 'a form of practical action accompanied by practical reason which aims to instil in the body certain habitual actions—either moral virtues. . .or technical skills'. He (Burkitt) further posited that technology is an avenue through which human beings engage in productive activities. The International Technology Education Association (2002: 2 as quoted by Manabete 2014) defined technology as the way 'people modify the natural world to suit their own purposes. . .it refers to the diverse collection of processes and knowledge that people use to extend human abilities to satisfy human needs and wants'. This definition is in line with that of the South African Department of Education (2002: 4) which defined technology as the 'use of knowledge, skills and resources to meet people's needs and wants by developing practical solutions to problems, taking social and environmental factors into consideration'.

Importantly, in order to have a better understanding of the term technology, it is imperative, according to Keirl (2006), to consider the attributes of technology as these are central to people's life and culture (Manabete 2014). On this note, Keirl (2006) posited that all technologies are product of a manufacturing process occasioned by human intention and design. That is, no technology can be well-designed, purposeful and operational in the absence of a reasonable human commitment and involvement. In fact, this is brought into perspectives by the Greek's word 'techne' which refers to 'technology' to mean belonging to the arts, crafts or skill (Vandeleur 2010). From the foregoing, technology can be defined as the application of knowledge, skills and resources to meet and satisfy people's needs and wants.

Consequently and in relation to the focus of this chapter, Foucault's (1988) perspective of four types of technology presents a better understanding of the meaning of technology. According to Foucault (1988 as presented in Manabete

2014), there are four types of technology which are different but must harmoniously function and relate for enhanced system sustainability. These four types of technologies, as maintained by Manabete (2014), are technologies of production, technologies of sign systems, technologies of power and technologies of the self. While technologies of production ensure production, transformation or manipulation of materials and resources, technologies of sign systems allow the use of symbols, signs or meaning and technologies of power to determine individual attitude and conduct (Manabete 2014). Given the objective of this chapter, the discussion centres on the technologies of production which deal with production, transformation and manipulation of human and material resources rooted in the technologies of self for increased industrialisation.

Consequent on the above, how do we refer to indigenous technology (IT)? Like IK and the concept of technology, IT has been variously explained. The concept, in the view of Aliyu (2003), refers to a harmonised system of technologies developed by indigenes for their use based on available raw materials and designed to meet local needs and conditions. Given this, IT can be regarded as any technology invented, developed, embraced and utilised in a society in order to better or improve the life of the people in that society. Indigenous technology is a product of IK at its discovery, founded and grounded on valuable societal IK. Thus, IT exists or comes about when societal traditional/indigenous knowledge of simple instrument, devices, skills, knowledge and know-how are put to use in a way that they ease or enhance the resolution of societal challenges or problems. To identify IT, certain features which are distinctively unique can be deciphered. These include the facts that IT:

1. Is practical, realistic, receptive and accountable to the environmental and ecosystem in which it exists.
2. Appeals and entices the motivation for knowledge acquisition; it offers and ensures a learning environment that guarantees the renewal and change of consciousness and understanding.
3. Strives or endeavours to employ and induce substantial understanding, know-how, skills and practices reminiscent of the indigenous world as a result of significant interface and networking.
4. Has the responsibility to exist, to survive, to be utilised and to change within a morally principled environment that is accountable to forms of human existence.
5. Is logical, rational and intelligible with the natural order. In other words, the ability or capacity to make something does not constitute a valid reason for its existence.
6. Has inherent worth in that its history and ancestral origin are known as well as its global position (Native American Academy Silver Buffalo n.d.; Thesaurus 2012).

Although IK was regarded before as 'backward, uncivilized, not scientific, and anti-development' (World Bank 1993: 4), the opinion is significantly transformed in the recent time. For instance, many stakeholders, as observed by the World Bank, have begun greater focus on the functions of IK and its accompanying IT in supporting sustainable development (World Bank 1993: 4). Importantly, one of the attentions, as argued by Alayasa (2012), arose from the acknowledged

significance of culture in growth process and vice versa as affirmed by related global treaties as well as the necessity to consider the underprivileged in growth decision-making (Cooper and Vargas 2004 cited in Alayasa 2012). To corroborate this, the United Nations Development Program Arab Human Development Report (2002) posited that:

> Culture and values are the soul of development. They provide its impetus, facilitate the means needed to further it, and substantially define people's vision of its purposes and ends. Culture and values are instrumental in the sense that they help to shape people's daily hopes, fears, ambitions, attitudes and actions, but they are also formative because they mould people's ideals and inspire their dreams for a fulfilling life for themselves and future generations. There is some debate in Arab countries about whether culture and values promote or retard development. Ultimately, however, values are not the servants of development; they are its wellspring. (United Nations Development Program and the Arab Fund for Economic and Social Development 2002: 8).

The World Bank Forum about native skill and intelligence, and enduring growth in (1993) emphasised native/local skills as critical to the process of institutionalising successful sustainable development outcomes. This is identifiable in wealth creation and employment generation which guarantee increased industrialisation. In spite of this, IK and particularly IT are yet to be sufficiently considered in the sustainable development even in spite of the acknowledgement of its critical utility in this regard by a plethora of literature (World Bank 1993) as few researches have really been conducted with respect to IT's propensity and integration to stimulate industrial development for competitiveness in Africa. This is in spite of the core concern that sustainable development is much better facilitated by the support and creativity of the local and indigenous people. However, some efforts in the collected writings (World Commission on Environment and Development 1983; United Nations 1995, 2002, 2010) underscored the incorporation process. This is still not enough and necessitates further and additional intervention (United Nations 2011: 5, 2012).

Another major worry about the extant writings concerns the penchant to address decision/programme execution or disappointments regarding IK and IT against or instead of their capabilities and accomplishments. Understanding decision failures and/or disappointments is a germane discourse on successful efforts and lessons that could be learned from focusing on the society's cultural and indigenous knowledge's strengths for sustainable development which is equally critically essential (see Alayasa 2012). The next section is dedicated to this discussion.

6 Indigenous Knowledge and Technology (IK&T) Across Africa: Selected Success Stories and Propensity for Industrialisation and Global Competitiveness

The continent of Africa is blessed with varieties of enormous indigenous technologies (ITs). These indigenous technologies, as opined by Ibeanu and Okonkwo (2014), form the significant part of people's culture. They signify the means, through

which African people respond, cope and endure with the environmental challenges confronting them.

If technology and its development involve any activity designed to mobilise the society's traditional wealth, sociocultural and cooperative combination of contemporary and old-fashioned technologies structured and tailored towards viable tasks intended to achieve a particular goal, it then means that in Africa and elsewhere, indigenous people have used indigenous tools and implements, weapons and some others to make life easy for themselves. One of these indigenous technologies, as pointed out by Abdulkareem (1992), was the scratching of stones against each other to produce fire which was used for cooking, lighting and keeping houses warm and comfortable. There is also the use of stone as a tool to do many things, including making other tools, tilling the ground to get food, preparing food, chopping wood, preparing animals, using spears as weapons for hunting, fishing and fighting (Manabete 2014).

Before the colonial occupation in Africa, a number of indigenous technologies existed in many communities. In precolonial Africa, several studies have been conducted on African traditional skills with proof of their progressive inputs mainly to the growth and development of different groups of people. Some of which have assisted in wealth creation and employment generation. What is crucial is the need to develop and globalise them for enhancing global competition.

In Nigeria, for instance, there are many technological breakthroughs and discoveries earlier recorded which preceded European and Asian civilisations. Typical of these was the iron technology of the Nok culture around Jos, Bauchi, Daima, Kano and Zaria which existed around 500 BC (Olaoye 1992). In fact, archaeologists have exhumed iron spears and axes at Nok ever since the Ajaokuta Steel Rolling Milling was established in Nigeria and iron smelting furnaces had been discovered in Taruga. Besides, other communities in Nigeria where traditional iron was discovered include Benin's famous wax casting, Ife art and Igbo-Ukwu's iron smelting and metal casting centre as shown by archaeological evidences (Inuwa 1995). There has also been sufficient proof of evidence of iron utilisation around Kainji Dam in Niger State of Nigeria around the second century BC and its role in the construction of canoe and other farm tools around the area (Obayemi 1980).

In 1904, it was recorded that there were specialised iron mining and smelting villages containing about 100–120 people in the Old Oyo kingdom. Affirming the contribution of these manufacturing talents to the growth of Old Oyo Empire, Stride and Ifeka (1975) asserted that:

> the growth of Oyo's prosperity and power were the industrial skills of the people. Their early knowledge of iron working and the existence of iron ore locally meant early possession of efficient tools and weapon, their skill and dexterity in weaving and dyeing in carving and decorative arts.

Tin smelting can also be found around Jos in North-Central Nigeria, artistic bronze works in Benin Empire and Ife in Southern Nigeria. There was also the local manufacture of Dane guns, cutlasses, hoes and axes by local blacksmiths (Aliyu 2003). In some societies in Adamawa State, North-Eastern Nigeria, notably

the Chamba, Longuda and Higgi peoples, just like the Aboriginal people of Australia, there exist similar tools and implements such as knives, spears, head-axe(s) hoes, bows and arrows, drinking vessels and catapults (L'kama et al. 2008).

As revealed by the work of Amuda et al. (2012), very many years ago, indigenous technologies and science practices were common among women in Borno State, North-Eastern Nigeria. The practices encompassed using glass mirrors; washing plates and clothes; splitting of firewood using the head-axe; treating fever, diarrhoea and cough by steaming leaves and other herbs; and applying natural products like ash, ground pepper and animal dung to protect crops against pests and diseases.

Indigenous capacity for management of natural resources was equally noticed in other empires at different locations such as Songhai, Oyo, Benin, Dahomey and Zulu (Folke et al. 2011, cited Akinwale 2012; Olaopa et al. 2014, 2016). These capabilities have been utilised in the existing indigenous industries in several parts of West Africa. These IT industries include the production of pots from clay, especially the wonder clay pot and stove from Sierra Leone (shown on Gotel TV in Adamawa State, Nigeria) (Manabete 2014). Others are textile making, cloth weaving/dyeing, gold/blacksmithing, wood/calabash carving, traditional medicine, traditional soap making, fishing, subsistence agriculture, leather tanning, brewing/distilling, glass and bead, pottery production of aluminium metal scraps and pots, leather tanning and bronze casting (Essien 2011). The methods of knowledge acquisition of these technologies are mostly through apprenticeship, oral transmission and observation (Siyanbola et al. 2012).

In 2500 BC, Egyptians discovered papyrus and ink for writing and built the first libraries (Essien 2011). They also used irrigation to control Nile floods, spoke wheel invented in ancient Near East and horse used to pull vehicles, while in Babylon mathematicians had already understood cube and square root (Bruce 1988 as cited by Essien 2011). In agricultural practice, in Columbia and Rwanda, the knowledge of indigenous women farmers in bean cultivation assisted in the process of adaptation of modern cultivation techniques (Olaopa et al. 2016).

In science, engineering and technology, indigenous people have distinguished themselves by using simple technological knowledge to make life easy and comfortable in their environment. For example, in Sudan it was suggested by Gibbons (1999) that reliance on local informants and drawing on their technical knowledge have assisted in undertaking a perfectly satisfactory soil survey and mapping in a very short period compared to a formal scientific approach. In the same vein, pastoralists in Mali have equally help in the research that led to the discovery of the cause of nervousness and irritation in the country (Domfeh 2007; Chambers 1983), while in Ghana, the Ghanaian farmers are able to identify antecedents of climatic and weather conditions (Olaopa et al. 2016).

Currently, there are lots of fast and indigenous technical developments evolving and receiving wider currency in contemporary Africa which are capable of awakening and bringing the continent to a level where her products can withstand and compete with those of the advanced industrialised economies of the world. The route of these unparalleled and speedy technological transformations can easily be deciphered from the African youths' enthusiasm about technology and the rapidity

at which training and knowledge centres for developing technological initiatives capable of propelling the continent's technological growth are springing up (Kizza 2013). All these have resulted in the development of many Africa's indigenous technological products capable of global competition (see FORBES 2011, 2012a, b as cited in Kizza 2013).[1] In medicine, indigenous African people have made use of significant portions of plant species for preparing medicines for health benefits (Melchias 2001). For instance, in Central Africa, the richly endowed Mount Cameroon with varieties of medicinal plant species has been found, even by the World Health Organization, to be as efficient as the imported 'Western' prescription medicine (Nkuinkeu 1999). Interestingly, efforts at protecting, managing and conserving these natural resources have been in existence many centuries before the intrusion of the colonialists in the African continent. Specific efforts in this regard can be traced to the village of Zaïpobly in La Côte d'Ivoire, Ile-Ife and some other communities in Yorubaland of Southwest, Nigeria and Ghana where the ancient tradition of community forest management seems to hold the ancient keys for a meaningful model of forest conservation (Domfeh 2007). Also, in East and Central Africa, there are also the community forests (CF) in Cameroon, rangelands in Kenya and Tanzania, village forests of Tanzania and Busaga and Buhanga forests in Rwanda which encompass a very rich biological population, thus offering an opportunity for local people to engage in the participatory management of natural resources by acquiring a CF (Olaopa et al. 2016).

In Swaziland, the application and use of indigenous knowledge for disaster management are used to predict occurrence of floods through the sign shown from the height of birds' nests near the rivers (Olaopa et al. 2016). The position of the sun and the cry of a specific bird on trees near the rivers may predict onset of the rainy season for farming (Domfeh 2007). It should be noted at this juncture that there exist the theoretical and empirical studies that validate IK and IT in Africa. These have been well documented (see Warren 1992; Warren et al. 1995; Forsyth 1996; Khor 2002; Leveque and Mounolou 2003; Ogundiran 2016).

The above notwithstanding, regrettably none of these prehistoric breakthroughs in technical knowledge and institutions in African countries is immortalised. Their developments were stultified and retarded with the advent of colonialism and the introduction of capitalism. This led to the monetisation of African states' economies caused by alterations in African people's old style of living with the replacement of simple and family-based production arrangement with export commodities/crops. This is worsened by the slave trade that had originally taken away from African states their productive human resource and capital expected to dominate the continent's major work force as critical and essential tool and catalyst of industrial revolution. These situations, however, have delayed the renewal and transformation of various forms of IT in Africa. This is so in that rather than improving the local

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[1]FORBES in different works listed in detail different Africa's indigenous technological products developed across various countries of Africa which have contributed significantly to economic development.

skills of production, they were complacently substituted by foreign trade in goods like palm oil, ivory, guns and pepper, cocoa, coffee, groundnuts and rubber without any strong financial muscle to contribute to national product and global competition. This made African economies suppliers of raw materials without industrial base, while at the same time human resources were reduced as a result of slave trade. The implication of this is that foreign rule provided the basis of Africa's industrial underdevelopment, while Westernisation and globalisation are capable of sending to extinction Africa's distinctive and multifarious societal cultural norms that function as the basis for various indigenous and local practices and further weaken the ability of the states of Africa (Li 2000; Sundar 2000; Baviskar 2000). If efforts are not directed at radically transforming the continent through the development of the indigenous technology, the aim of improving its production capacity and capability for industrial growth and global competitiveness for enhanced equal participation in the globalisation process may be an ordinary dream.

The above is against the fact that European and Asian countries have leveraged on their indigenous technology to build modern nations. The United States of America has established a development founded on the state-of-the-art innovative improvement in science and information technology and unequalled development in all areas of human activities. China and Japan's ability to capture modern technology especially in the electronics industry was founded on the adoption of their society's local tools based on their indigenous know-how. Chinese accomplishments are a testimony that the basics of an industrial foundation were erected on unaltered principles, beliefs and old engagements which opportunities are still being made use of. In fact, China in 1200 BC invented the first Chinese dictionary and in 1250 BC produced silk fabric. The importance of IK and culture and their potential to fast-track industrial development can be found in the former USSR. The country, as argued by Essien (2011), had established a contemporary nation in two generations by engaging peoples with a wandering and rural/local experience to operate an industrialised economy based on developed machines.

7 Indigenous Knowledge and Technology (IK&T) for Africa's Industrial Development and Global Competition: Strengths and Opportunities

The weaknesses and threats of IK&T have been variously analysed and documented elsewhere (see Eyong n.d.; World Bank Group n.d., cited in Mabete 2014 the African Ministerial Council on Science and Technology, AMCST n.d. in Mabete 2014; Adelaga 1997; Manabete et al. 2006; Gakuru 2006; John et al. 2009; Zambwa et al. 2009; Abioye et al. 2011; Innomantra Consulting Private Limited 2011; Kizza 2013; Olaopa et al. 2016). The attempt and major concern in this chapter is to examine and analyse the strengths of IK&T and the opportunities it offers for

stimulating wealth creation and employment generation for industrial development and global competition.

Indigenous technologies empower the local people, thereby enhancing local economy. In Africa, local industries/technologies create wealth and generate employment through which the indigenous people generate revenue. This therefore encourages community and regional interactions as well as economic development. The improvement in the local technologies and industries enhances the people's welfare and social life and ability to pay tax/other levies which at the same time act as a facilitator to other investments. These enhance industrialisation and catalyse industrial development, domestic capacity building (Innomantra Consulting Private Limited 2011) and intergroup relations within the country, the region and the entire continent.

Indigenous technologies and industries encourage the sustainable use of natural resources and the preservation of cultural values of the indigenous people. In fact, some of their products, if properly harnessed and developed, serve other purposes such as fertiliser or as source of food, which can be exported and used to reduce balance of payment problem. For instance, through the use of indigenous technology, the ashes produced from the indigenous cashew processing industry are used as manure in the farms, and the burnt shells serve as firewood, while the nut itself is a source of food which can be packaged and sold abroad (Ibeanu and Okonkwo 2014). Besides, the use of IT provides both the people and government numerous opportunities for innovation, modernisation and technological competitiveness, thereby reducing costs and implications associated with importation and transfer of technology. For instance, the application of indigenous technology in the palm wine processing to local gins and products of black/goldsmiths local industries, their proceeds and further development are capable of sustaining those engaging in the business and increase industrialisation, foreign exchange and earnings. This further creates awareness and demand for indigenous processing methods in the global market (Innomantra Consulting Private Limited 2011).

The IT used in the local industries has continued to leave archaeological imprints in the cultural landscape of many communities in the African continent. These technologies and materials remain as such communities' valuable archaeological information useful for the explanation, understanding, rebuilding and restoration of the past activities of the ancestors in the area. Besides, archaeologists can make meaningful interpretations about these material remains through their physical examination, description and/or classification in addition to the attraction that such places/communities will serve for cultural tourism if given proper attention. There are two benefits to be derived here. First, the development of the tourism industry will improve the economic activities of the indigenous people since their local and other products are sold not only to tourists as souvenir but also to the general public in popular local markets. Second, such places provide an avenue for employment and revenue-generating outlets for the government. This is capable of enhancing the countries of Africa's ability to effectively participate in the globalisation process.

Indeed, the development of cultural tourism in Africa will stimulate improvement in local infrastructures, motivate local and international investors and bring further

benefits to the host community. It will improve intercultural understanding and encourage the production of cultural products for local consumption and exportation if well harnessed.

Thus, IT, when pursued enthusiastically and dedicatedly, helps a nation to attain self-reliance in technological development which increases its opportunities to grow and develop every segment of its economy, specifically the agrarian sector where a preponderant majority of African population engages (Corpor 2013), for global competitiveness. Not only this, as argued in the African Ministerial Council on Science and Technology (AMCOST) document and as supported by the World Bank (cited in Manabete 2014), indigenous knowledge and technologies play vital roles in biodiversity, conservation and sustainable development, contributing to increased food production, fighting against the dreaded disease HIV/AIDS and related diseases as well as considerably stemming environmental degradation.

8 Globalising Africa's Indigenous Knowledge and Technology (IK&T) to Stimulate Industrial Development for Enhanced Global Competitiveness: Policy Issues and Facts

It is true that globalisation is the new language which refers to the process of amplification of economic, political, social and cultural relations across international boundaries (Shaka 2013). With the trend of thing, globalisation has gripped Africa and the rest of the world. Specifically, its effects have been seen in the rise in democracy through multiparty elections in various countries like Kenya, Ghana and South Africa as their citizens now had the power to elect the people of their choice through the ballot without the fear of being punished or suffering act of vengeance as experienced in Liberia, Nigeria and Sudan. In the area of economy, integration of African economies into the world capitalist system has been argued to produce insightful effects on African societies. This include improved quality of life and high standard of living, close and better networking/collaboration among countries, improved information accessibility and world culture observation enhanced by the development of Internet. All these, as argued, have resulted in improvements in information and transportation know-how and free market beliefs in relation to availability of goods, services and unparalleled capital mobility, among other benefits (Ohiorhenuan 1998; Mowlana 1998; Oyejide 1998; Grieco and Holmes 1999).

The above notwithstanding, the propositions of globalisation can be seen to assume a phoney equality for countries of Africa compared to the developed world. In this sense, globalisation affects developmental philosophy, strategies and policy actions of these countries; reduces the values of equity, justice and fairness regarding market consideration, financial muscles, resource development and technical know-how; and decreases the self-sufficiency of African sovereign states (Akindele et al. 2002). By implication, it affects innovativeness of states and

encourages "decreasing national control and increasing control over the (Internal) economy (of the state) by outside players" (Tandon 1998: 2). The manifestation of this is obvious in the collapsed industrial sector of most African countries.

Specifically, the globalisation of politics of free mobility of factors of production and reduced tariffs have made production cost and commodity prices exorbitant in Africa due to labour emigration, enhanced by lack of incentives and motivation, and to development of economies which can now produce and sell at cheaper prices. The legacies of colonialism explainable in the attitude of African political elites to disparage and describe local goods as being inferior and of low quality have resorted to government's lackadaisical attitude towards the development, promotion and improvement of IK&T to encourage local production. The end result is therefore the sabotage of local products through high importation, currency devaluation and its impacts on foreign reserves (Akindele et al. 2002). This clearly raises the need for African countries to design and implement a new development paradigm to free the continent from the storming threat and danger of cultural imperialism and socio-economic and political dominations entrenched in the politics of globalisation in order to solve all its developmental challenges. If this is not done, Africa may remain in perpetual, cultural and intellectual slavery, thereby becoming the continent of a cultureless or culturally disoriented people (Akindele et al. 2002). This will be so in that, as argued by Nsibambi (2001), as cultures interrelate, some cultures are being adulterated, weakened and/or destroyed at the expense of others and destructive values are being spread globally with relative ease.

There is no doubt that Africa has significantly rich technological heritage spread across different communities and which is obvious in different areas of their lives. Notwithstanding, the continent should not just be overwhelmed by these naturally endowed resources but rather make maximum use of them. Siyanbola et al. (2012) buttressed this fact when they argued that for any nation to survive competition in this era of globalisation, it is imperative for such nation to identify its areas of competence and comparative advantage and then build on it using scientific approaches and techniques towards harnessing, improving and utilising its indigenous technologies. In this regard, research and development (R&D) become very critical. It will be a worthwhile endeavour to commit time and resources to R&D by all stakeholders coupled with the building of network, collaboration and strategic alliance between government and technology developers, rewards for innovation and invention and well-structured intellectual property regime and laws. This will ensure higher economic value of IK&T; mutual technological, managerial and financial strengths; and reduction in time for development, production and induction of products that meet the service requirements and provide encouragement for exportation of indigenous products which would create a pull for those products in the domestic market (Innomantra Consulting Private Limited 2011).

History has never shown that Africa's productive practices have been wasteful but conducted with due regard to the inhabitants' environmental dictates, beliefs, culture and values (Akpomuvie 2013). Nevertheless, African idea of development was thwarted, and local industries and practices were condemned. The situation reduced the confidence of local technologists, craftsmen and experts steadily.

European styles and ways of life became the societal ethics and moral standard. As asserted by Akpomuvie (2013), the situation became worsened by the attitude of European industrialists and government agencies in robbing the locals of their patents and designs. It is interesting to note that, in the face of humiliating efforts at discouraging native ingenuities, inventiveness and resourcefulness in the areas of science and technology, native innovation, inventions and customs endured the persecution.

For appropriate utilisation of Africa's indigenous skills and technologies in the development of their ability to be equal partner in the globalisation process, lots of efforts are essential. A number of countries in Africa through their ministries of science and technology, international organisations, non-governmental organisations, universities and individuals with other stakeholders need to take stock of existing indigenous skills and technologies and properly document them. It is when these are known the implication of the skills and techniques on individuals and their accessibility, the effect of contemporary societal changes on the indigenous value systems and the influence of ethnicity on maintenance, survival and the stability or transformation of these systems that effective quantification and proper action for industrialisation can be taken for enhanced development. To ensure and prevent the loss of this knowledge, Africa can adapt the system of the Indian Digital Library of Traditional Knowledge by establishing the digital libraries—library that contains databases of indigenous knowledge, in various fields, and follow the guidelines of the World Intellectual Property Organization (Adigun 2014; Emeagwali and Sefa Dei 2014).

Also germane and critical is the need to overhaul courses and disciplines by way of curriculum reorganisation in African universities (Vandeleur 2010). This will ensure effective integration of the constructive rudimentary and essential components of African indigenous skills and technical practices. To further institutionalise this, engineering and medical students as well as students in many other related fields of applied science and art should be required to undergo direct internship/traineeship of 1 or 2 years in related local sectors in the rural communities. This will improve their knowledge by learning the general basics and fundamental challenges of local professionals and where possible enthusiastically engaging them to achieve an enhanced acknowledgment and advancement of these systems (Akpomuvie 2013). In the circumstance where African traditional values and knowledge, especially in medicine, are not recognised, in spite of its significant contribution, in the curriculum will do no good to Africa's health-care system.

The Centres of African Studies and other related agencies, the Nigeria Natural Medicine Development Agency (NNMDA) and the Centre for Black African Arts and Culture (CBAAC) in Nigeria, for instance, should take a lead in this effort. They should provide enabling environment and opportunities in terms of motivation and the amenities to scientifically train and learn African cultures and traditions. All African universities and specialised institutions of science and technology should include courses in African studies to motivate and encourage the students to develop interests in the study of their society's traditions and culture. Encouragement in terms of scholarship, aids, grants and tuition free study should be given to interested

students who prefer to study in the Institutes of African Studies, Centres of African Studies and Departments of Sociology, Anthropology, Archaeology, History, Agriculture, Theatre Arts, Creative Arts, Linguistics and Geography which deal directly with the problems of knowledge in Africa but now on the verge of extinction.

Closely related to the above is the necessity to make the body of knowledge gained in the research available to the public and practising contemporary scientists by these universities and Centres of African Studies in collaboration with the appropriate ministries, departments and agencies in Africa in order to ensure their better effectiveness and acceptability. Such platform will guarantee public loyalty and acceptability of the traditional African skills and technologies for the development of industrialisation required for global competitiveness. This will be better facilitated and achieved if the policymakers and professional administrators support local inventors and innovators through policies that help in the institutionalisation of Africa's traditional practices. This will make a change in paradigm from unrepentant wanton importation of foreign technologies and the accompanying feelings of inferiority associated with indigenous ideas and technologies to encourage the growth of local industries, using traditional skills and technologies.

Indigenous technology will be indispensable in the process of industrialisation in a society in which most of the rural inhabitants are involved and engaged in decision-making and execution. Specifically, in the continent, this process of a policy plan for honest community-oriented and people-centred technology is fundamental to the development of indigenous skill and technology that will catalyse industrialisation.

9   Conclusion

Indigenous knowledge, skills and technologies are great resources and possessions of a nation. Their appreciation, growth, promotion and utilisation, according to Emovon (1989, cited in Akpomuvie 2013), provide the major foundation for technological specialisation, development and superiority of many countries in the area of production of industrial goods and services. What remains for Africa is how to make indigenous technology (IT) relevant to people, especially in this era of globalisation. This is against the limitation of imported technologies to adequately meet the dictates of African environment which then call for the emergent need for harnessing and developing the indigenous tools, devices, articles and items which the continent has in abundance to meet global standards. Researchers and other technical experts in Africa must therefore strive to develop research proposals that seek to upgrade African indigenous knowledge and technical skills. This will encourage interest and stimulate growth in these area, increasing industrialisation and global competitiveness.

References

Abah J, Mashebe P, Denuga DD (2015) Prospect of integrating African indigenous knowledge systems into the teaching of sciences in Africa. Am J Educ Res 3(6):668–673

Abdulkareem YA (1992) Indigenous technology: past, present and future. Paper presented at the raw materials research and development council workshop for the processing of raw materials, Kwara State Library Complex, October 6. http://www.unilorin.edu.ng/publications/PAST-PRE SENT-AND- FUTURE. Accessed 31 Mar 2013

Abioye A, Zaid Y, Egberongbe HS (2011) Documenting and disseminating agricultural indigenous knowledge for sustainable food security: the efforts of agricultural research libraries in Nigeria. IFLA. Puerto Rico, August 11–13, San Juan

Adams JL (1991) Flying buttresses, entropy, and o-rings: the world of an engineer. Harvard University Press, Cambridge

Adelaga AG (1997) Maintenance of fully imported electronic equipment. In: Proceedings of 4th national engineering conference, vol 4(1), pp 122–126

Adjibolosoo S (1995) The human factor in developing Africa. Praeger, Westport

Adjibolosoo SBSK (2003) Pillars of economic growth and sustained human-centred development. In: Muzvidziwa VN, Gundani P (eds) Management and the human factor: lessons for Africa. University of Harare Publication, Harare

African Ministerial Council on Science on Technology (n.d.) Securing and using Africa's indigenous knowledge base. http://www.nepadst.org/platforms/ik.shtml. Accessed 3 Apr 2013

Akindele ST, Gidado TO, Olaopo OR (2002) Globalization, its implications and consequences for Africa. Globalization 2(1)

Akpomuvie OB (2013) The role of traditional skills and techniques in the development of modern science and technology in Africa. Int J Humanit Soc Sci 113 (Special Issue)

Alayasa JY (2012) Building on the strengths of indigenous knowledge to promote sustainable development in crisis conditions from the community level: the case of palestine. Dissertations and theses. Paper 121. Portland State University PDX Scholar

Alemazung JA (2010) Post-colonial colonialism: an analysis of international factors and actors marring African socio-economic and political development. J Pan Afr Stud 3(10). Available from https://www.researchgate.net/publication/228429413_PostColonial_Colonialism_An_ Analysis_of_International_Factors_and_Actors_Marring_African_Socio-Economic_and_Politi cal_Development. Accessed 26 Apr 2018

Aliyu G (2003) Application of indigenous technology for national development. In: Proceedings of the 3rd ASUP conference, vol 1(1), pp 134–137

Amuda MY, Amuda BG, Waziri B (2012) Indigenous science practices among women in Borno State: implications for classroom learning. A case study of some selected secondary schools in Gwoza L.G.A. Ramat J Manage Sci Technol 1:1–10

Augustine SJ (2008) Oral histories and oral traditions. In: Hulan R, Eigenbrod R (eds) Aboriginal oral traditions: theory, practice, ethics. Fernwood, Halifax, pp 2–3

Baviskar A (2000) Claims to knowledge, claims to control: environmental conflict in the great Himalayan National Park, India. In: Ellen R, Parkes P, Bicker A (eds) Indigenous environmental knowledge and its transformations. Harwood Academic, Reading, pp 101–119

Bijker W, Hughes TP, Pinch T (1987) General introduction. In: Bijker W, Hughes TP, Pinch T (eds) The social construction of technological systems: new directions in the sociology and history of technology. MIT Press, Cambridge

Bruce BB (1988) Life application study Bible (Cited in Essien CF (2011) Empowering indigenous industries for national development: a review. JORIND 9(1). ISSN: 1596–8308). www. transcampus.org./journals, www.ajol.info/journals/jorind

Burkitt I (2002) Technologies of the self: habitus and capacities. J Theory Soc Behav 32 (2):219–237

Chambers R (1983) Rural development: putting the last first. Longman, London

Chikaire J, Osuagwu CO, Ihenacho RA, Oguegbuchulam MN, Ejiogu-Okereke N, Obi KU (2012) Indigenous knowledge system: the need for reform and the way forward. Global Adv Res J Agric Sci 1(8):201–209

Cooper PJ, Vargas CM (2004) Implementing sustainable development: from global policy to local actions. Rowman and Littlefield, Lanham

Corpor A (2013) What are the advantages and disadvantages of indigenous technology? http://wiki. answers.com/Q/What_are_the_advantages_and_disadvantages. Accessed 3 Apr 2013

Domfeh KA (2007) Indigenous knowledge systems and the need for policy and institutional reforms. Tribes Tribals 1:41–52

Emeagwali G, Sefa Dei GJ (eds) (2014) African indigenous knowledge and the discipline. Sense, Rotterdam

Essien CF (2011) Empowering indigenous industries for national development: a review. JORIND 9(1). ISSN: 1596 – 8308. www.transcampus.org./journals, www.ajol.info/journals/jorind

Eyong CT (n.d.) Indigenous knowledge and sustainable development in Africa: case study on Central Africa. Downloaded 22 Feb 2016

Folke et al (2011) Digitisation of indigenous knowledge for resources management. In: Proceedings of the 2012 summit of the African educational research network, 18–20 May, North Carolina State University and DoubleTree Hilton, Raleigh Brownstone University Hotel (cited in Akinwale AA 2012)

FORBES (2011) Meet Nigeria's tablet computer pioneer. http://www.forbes.com/sites/ mfonobongnsehe/2011/10/18/meetnigerias-tablet-computer-pioneer/

FORBES (2012a) Ugandan students win award for pregnancy scan machine. http://www.forbes. com/sites/mfonobongnsehe/2012/05/14/ugandan-students-invent-pregnancy-scanmachine/

FORBES (2012b) Young African invents touch screen medical tablet. http://www.forbes.com/sites/ mfonobongnsehe/2012/02/09/young-african-invents-touch-screen-medicaltablet/

Forsyth T (1996) Science, myth and knowledge: testing Himalayan environmental degradation in Thailand. Geoforum 27(3):375–392

Foucault M (1988) Technologies of the self. In: Martin LH, Gutman H, Hutton PH (eds) Technologies of the self: a seminar with Michael Foucault. MIT Press, Cambridge

Gakuru CC (2006) Remodelling traditional and indigenous knowledge. http://knowledge.cta.int/en/ content/view/full/3006

Gibbons (1999) Indigenous economic institutions and ecological knowledge: a Ghanaian case study. Environment 19(3):217–227 (cited in Appiah-Opoku S)

Grenier L (1998) Working with indigenous knowledge: a guide for researchers. IDRC, Ottawa

Grieco M, Holmes L (1999) Tele options for community business: an opportunity for economic growth in Africa. Africa Notes 1–3, October

Gyekye K (1997) Tradition and modernity. Oxford University Press, New York

Hagen RJ (2002) Marginalisation in the context of globalization: why is Africa so poor? Nordic J Polit Econ 28:147–179

Hammersmith JA (2007) Converging indigenous and western knowledge systems: implications for tertiary education. Thesis submitted in accordance with the requirements for the degree of Doctor of Education. University of South Africa

Howden K (2001) Indigenous traditional knowledge and native title. UNSW Law J 24(1):60–84. http://siverbuffalo.org/SilverBuffaloITCharacteristics2.html

Ibeanu AM, Okonkwo EE (2014) Indigenous technology and cultural practices in Umundu, Nigeria. ResearchGate. http://www.researchgate.net/publication/280603460

Innomantra Consulting Private Limited (2011) Indigenous technology: a neglected blessing. http:// innomatra.com/resources/training/90-indigenous-tech. Accessed 31 Mar 2013

International Technology Education Association (2002) Standards for technological literacy: content for the study of technology. ITEA, Reston

Inuwa IK (1995) Foundries subsystem a critical linkage for the successful operation of other industries: basic technical experience. Niger Eng 33

John AC, Manabete SS, Zambwa J, Abba AT, Abdullahi Y (2009) Nigeria's technological development efforts: issues, problems and solutions. Knowl Rev 18(1):107–115

Kaino LM (2013) Traditional knowledge in curricula designs: embracing indigenous mathematics in classroom instruction. Stud Tribes Tribals 11(1):83–88

Keirl S (2006) Ethical technological literacy as democratic curriculum keystone. In: Khan RH (ed) Metal casting technology in Nigeria present status and future prospects. Kings Plaza Commercial Press, Minna

Khor M (2002) Intellectual property, biodiversity and sustainable development: resolving the difficult issues. Third World Network, Penang

Kizza JM (2013) Africa's indigenous technologies making footprint on the world stage. Int J Comput ICT Res 7(1):6–11

L'kama JD, Manabete SS, Kamaunji BZ, Ahmed HM (2008) Investigation into indigenous technologies and their relevance to a people's way of life: a case study of three communities in Adamawa State. J Sci Ind Stud 6(3):90–96

Lawson C (2008) An ontology of technology: artefacts, relations and functions. Dent Tech 12 (1):48–64

Leveque C, Mounolou JC (2003) Biodiversity. Wiley, West Sussex

Li TM (2000) Location of indigenous environmental knowledge in Indonesia. In: Ellen R, Parkes P, Bicker A (eds) Indigenous environmental knowledge and its transformations. Harwood Academic, Reading, pp 121–149

Maddison A (1995) Monitoring the world economy: 1820–1992. OECD, Washington, DC

Manabete SS (2014) Indigenous technology for sustainable development in West Africa. J Educ Pract. www.iiste.org ISSN 2222–1735 (Paper) ISSN 2222-288X (Online) 5(37)

Manabete SS, Zambwa J, Mallum UM (2006) Assessment of the performance of the dual tube four-in-one rechargeable lantern in Adamawa State. Scietech J 1(1):102–108

Mathooko JM (2000) The status and future of African traditional ecological knowledge in the sustainability of aquatic resources. In: 2nd Pan African symposium on the sustainable use of natural resources in Africa Ouagadougou, Burkina Faso

Melchias G (2001) Biodiversity and conservation. Science Publishers, Enfield

Mowlana H (1998) Globalization of mass media: opportunities and challenges for the societies. Coop South 2:22–39

Muranda Z (2005) The intervening influence of the human factor on management decisions, perceptions and attitudes to exporting. In: Muzvidziwa VN, Nakata P, Langton (eds) (2005 cited in Adigun TA (2014) Application of competitive intelligence in indigenous knowledge: the role of the library professionals in Nigeria. J Res Educ Soc 5(2))

Native American Academy Silver Buffalo (n.d.) What are the characteristics of technology that are distinct to indigenous technology? Accessed 31 Mar 2013

Nkuinkeu R (1999) Medicinal plants and forest exploitation, in non-wood forest products of Central Africa: current research issues and prospects for conservation and development. FAO Forestry Department, Rome

Nsibambi A (2001) The effects of globalization on the State in Africa: harnessing the benefits and minimizing the costs. United Nations General Assembly, Second Committee Panel Discussion on Globalization and the State, November 2. Accessed 28 Apr 2018

Nyoni PA (2015) What Africa had before colonisation, March 26. Downloaded in February 24, 2018

Obayemi A (1980) States and peoples of the Niger-Benue confluence area. In: Ikime O (ed) Groundwork of Nigeria history. Heinemann, Ibadan, pp 144–164

Ogundiran A (2016) Crises of culture and consciousness in the post-colony: what is the future for Nigeria? Paper presented at the 6th Africa unity for renaissance. South Africa, May 22–25

Ohiorhenuan JFE (1998) The south in an era of globalization. Coop South 2:6–15

Olaopa OR, Ayodele O, Akinwale YO, Ogundari IO (2014) Security and securitization in Plateau State: the significance of indigenous knowledge and practices. In: A paper accepted for

presentation at the international conference organised by the department of history and international studies, University of Jos, Nigeria, June 30–July 2

Olaopa OR, Ojakorotu V, Ayodele O (2016) Developing, utilising and promoting African indigenous knowledge practices in strategic sectors: issues, challenges and policy options. A paper presented at 6th international conference on African unity for renaissance on the knowledge, spiritual and struggle heritage for re-imagining innovative Africa. Organised by UNISA CAMPUS, Pretoria, South Africa at Saint George Hotel, May 22–25

Olaoye RA (1992) Indigenous technology in Nigeria. Chronicler J Stud Hist Univ Ilorin 7:2–4

Oyejide TA (1998) African trade prospects in a globalizing era. Coop South 2:107–117

Pacey A (2001) Meaning in technology. MIT Press, Cambridge

Prusak L (1996) The knowledge advantage. Strateg Leadersh, March–April

Prusak L (1997) Knowledge in organizations. Butterworth-Heinemann, Boston

Shaka J (2013) Africa: impact of globalization in Africa, August 24. Accessed 28 Apr 2018

Siyanbola WO, Egbetokun AA, Oluseyi I, Olamade OO, Aderemi HO, Sanni M (2012) Indigenous technologies and innovation in Nigeria. In: Opportunities for SMEs. http://www.SciRP.org/journal/ajibm

South African Department of Education (2002) Revised national curriculum statements grades R-9: technology. Government Gazette No. 443 of 23406, Pretoria

Stride GT, Ifeka C (1975) People and empires of West Africa; 1000-800AD. Lagos. Nigeria. Nelson, London

Sundar N (2000) The construction and destruction of 'indigenous' knowledge in India's joint forest management programme. In: Ellen R, Parkes P, Bicker A (eds) Indigenous environmental knowledge and its transformations. Harwood Academic, Amsterdam, pp 79–100

Tandon Y (1998) Globalization and Africa options (part one) in AAPS NEWSLETTER, Harare. Afr Assoc Polit Sci 3(1):12–21

Thesaurus EG (2012) Indigenous technology. http://www.eionet.europa.eu/gemet/concept?ns=1&cR-4205. Accessed 31 Mar 2013

UNESCO (2010) Indigenous knowledge and sustainability. www.unesco.org/education/tlsf/mods/theme_c/mod11.html. Accessed 28 Apr 2018

United Nations (1995) Copenhagen declarations and program of action. New York: United Nations. http://www.un.org/esa/earthsummit/. Accessed 13 Apr 2011

United Nations (2010) The millennium goals progress report. http://www.un.org/millenniumgoals/reports.shtml. Accessed 20 May 2011

United Nations (2012) Millennium goals reports website. Annual reports. http://www.un.org/millenniumgoals/reports.shtml. Accessed 20 May 2011

United Nations Development Program and the Arab Fund for Economic and Social Development (2002) 8

United Nations Document Gathering: A Body of Global Agreements (2011) Nairobi declaration 1982. http://www.un-documents.net/nairdec.htm. Accessed 8 Dec 2011

Uthman AA (2016) Traditional rulers and security administration in Nigeria: challenges for the 21st century. IOSR-JHSS 21(8), Ver.6 (Aug. 2016) PP 01-11 e-ISSN: 2279-0837, p-ISSN: 2279-0845

Vandeleur S (2010) Indigenous technology and culture in the technology curriculum-starting the conversation: a case study. Unpublished Doctoral thesis, Rhodes University

Warren DM (1991) Using indigenous knowledge in agricultural development. World Bank discussion paper no. 127. The World Bank, Washington, DC

Warren DM (1992) Indigenous knowledge, biodiversity conservation and development. In: Keynote address at the international conference on conservation of biodiversity in Africa: local initiatives and institutional roles, 30 August–3 September 1992, Nairobi

Warren DM, Slikkerveer LJ, Brokensha D (1995) The cultural dimensions of development: indigenous knowledge system. Intermediate Technology, London

World Bank (1993) Traditional knowledge and sustainable development conference. Washington, DC. http://collections.infocollections.org/ukedu/uk/d/Jwb43te/4.1.html. Accessed 14 Dec 2011

World Bank Group (n.d.) What is indigenous technology? http://www.worldbank.org/afn/ik/basic.
     thm. Accessed 3 Apr 2013
World Commission on Environment and Development (1983)
Zambwa J, Manabete SS, Thuku I (2009) An investigation into the marketability of some selected
     electrical/electronic spare parts for repair work in Adamawa State. Int J Gender Contemp Issues
     1:77–96

Economic Globalization and Nigeria's Development: Letting the Facts Speak

Naomi Onyeje Doki

Abstract The rationale for globalization was that opening up of economies to each other through world trade, financial and technological diffusion would ultimately make all the nations better off. Nigeria has been committed to globalization in very elaborate contexts, and one evidence of this is her signing of the General Agreements on Tariffs and Trade (GATT) and the World Trade Organization (WTO) agreements to engage in trade according to their standards. This chapter examines trade liberalization statistics and Nigeria's key economic indicators after decades of embracing globalization. The chapter has obtained data from WTO and World Bank (WB) databases and Central Bank of Nigeria Statistical Bulletin. Descriptive tools and stylized facts were employed on the data. Applying the Auto-Regressive Distributive Lag (ARDL) technique, the chapter examines the relationship between globalization and development. The results show that globalization has not led to economic development in Nigeria in spite of the evidence that tariffs have been lower, the economy has become more open, and the volume of trade has increased. The stylized facts show that Nigerians have not been made better off by the opening up of the economy; indexes have worsened in some cases. The chapter recommends that the dynamics of globalization as embraced in the country be re-examined and deliberately refocused so that future engagements proceed in a manner that will target improvements in the development indicators.

1 Introduction

Countries and regions of the world have pursued different paths to attain development, and one of the paths which have gained prominence in the past three decades is globalization. Discussions on globalization usually culminate with an understanding that it is about an increasing integration of economies through the channels of international trade and finance. Note the reference to "increasing" which suggests that economies of the world have always been open to each other but the increasing

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magnitude is where the significance lies. This was also the view of Ardnt (1998) when he stated about globalization that:

Certainly the world is one market in the sense that goods and services produced in one country can be sold in all other countries subject to government-imposed trade barriers, transport and transaction costs, but this was also true in 1900 and 1800. What has changed is the ease and speed with which goods and services and capital can move from one country to another (p. 73)

Similarly Todaro and Smith (2015) state that the current wave of globalization is not new. They assert that previous waves were associated with conquests and subordinations via colonialization. Critics of the globalization paradigm contend that today's globalization is only superficially different as the evidence to justify the difference between the two waves will be the effectiveness of rules and whether benefits will accrue to all this time. It is easy to accept these opinions that what is called globalization today is a process that has evolved—one that makes the whole world one market in spite of national boundaries of the individual nations of the world through trade.

According to Obadan (2003), countries with successful entrepreneurs operating in a supportive and cooperative environment in different social and economic endeavors grow and develop faster and can account for improvements in living standards of its people, and it can participate more effectively in the global economy. This opinion subtly implies that there are certain criteria which countries of the North have met and which have allowed them to benefit maximally from globalization. It follows logically that where benefits have limited (in the South), the problem might be with the operating environment. Generally, the rules of engagement in international trade have been drawn and organized by the World Trade Organization.

The institution that develops and organizes the rules of engagement in international trade is the World Trade Organization (WTO). It was established on January 1, 1995, as the successor to the General Agreements on Tariffs and Trade (GATT) as an outcome of the Uruguay Round (1986–1994). Nigeria signed the GATT Agreements in 1960 and joined the WTO in 1995. The objectives of the WTO are to set and enforce rules of international trade; provide a forum for negotiating and monitoring further trade liberalization; handle disputes that arise as a result of trade engagements; increase transparency of decision-making processes; and cooperate with other major international organizations in the process of creating a borderless world with the aim of driving growth and development among member nations.

As a signatory to the GATT agreement, the government of Nigeria agreed to abide by the rules governing international trade in a manner that enabled trade flows while it retained the responsibility to protect its national economic space. The enablers of trade as prescribed by GATT and WTO were tariff and nontariff barrier reductions.

One of the underlying justifications for trade liberalization was that it held the potential to ensure growth and development. In more recent debates, there are disagreements about whether nations that have been members of the WTO have experienced improvements in their economic development indicators. This chapter

examines the dynamics of globalization proxied by the tariffs, openness, volume of trade, and exchange rate and how it has impacted on economic development in Nigeria also proxied by real GDP per capita (RGDPPC). It also assesses the relevant development indicators related to trade liberalization in Nigeria's own case and discusses some challenges. The chapter applies descriptive statistical tools as well as econometric techniques to achieve these objectives. The intention is to contribute to literature about the benefits of globalization as experienced by WTO member countries.

2 Conceptual and Theoretical Perspectives of Globalization and Development

Todaro and Smith (2015) define globalization as a process by which the economies of the world become more integrated leading to a global economy and to global economic policymaking through international agencies. They also submit that it refers to an increasingly global culture in which people consume similar goods and services and use a common language of business. It refers to the increased openness of national economies to international trade, financial flows, and foreign direct investment (FDI). Also, Tisdell (2000) states that globalization is the liberalization of international trade and investments. To Ohmae (1990) in Ardnt (1998), globalization is the process of creating a borderless world. Similarly, Prawiro (1998) describes globalization as making "the whole world one market," while Mazilu (2010) describes it as a historic and inevitable geo-economic, geopolitical, and geo-cultural process of change. These definitions justify the use of tariffs, trade openness, and the volume of trade as proxies for globalization.

Mazilu (2010) states that globalization unites and divides at the same time. Summarizing the opinions of scholars, he asserts that "globalization must be understood and embraced in order for some nations to be happy and at the same time the source of unhappiness for other nations resides in globalization." Also, Todaro and Smith contribute to this narrative by stating that while globalization suggests exciting business opportunities, efficiency gains from trade, and more rapid growth of knowledge and innovation among other virtues for some, it raises troubling concerns for another group. Concerns that inequalities are accentuated across and within countries, environmental degradation may be accelerated and the international dominance of the richest countries may be accelerated and locked in. Low-income nations and regions are threatened by the prospects of being left further behind. Ojo (2003) posits that increased liberalization of capital and trade flows has defined the structure of globalization and has been a premise for further integration of developing countries and economies into the global economy in the last three decades. The implication here is that barriers to cross-border transactions have progressively been removed and the market mechanism is increasingly given a free hand to regulate labor and financial markets and set the tone for some

institutional reforms in related sectors. This definition by Ojo (2003) captures succinctly the multilateral efforts of the various GATT and WTO rounds and is the basis for this chapter focusing on the tariff structure as a proxy for globalization.

What is clear is that trade liberalization and globalization have benefits and opportunities as well as costs and risks. While this is true for all players in the space according to Todaro and Smith, the risks are especially higher for poor families in low-income countries. Equally, the potential upsides to it are also most likely for developing countries by providing new possibilities for broad-based economic development via multiple interactions with different nations and cultures directly and indirectly. These scholars mean that globalization holds the potential to close the "catchup gap," especially for the African continent if it can maximize the advantages of being a late industrializer (Oqubay 2015). Equally, the potential downsides are more devastating for the same developing countries playing by one rule when the grounds are unequal in so many ways.

The theoretical arguments for and against globalization have been led by the neoclassical and the North-South trade models, respectively. One of the leading classical theories of international trade, the Comparative Advantage Paradigm by David Ricardo, J. S Mill states that people and nations trade because it is profitable to do so. It is even more profitable to trade in goods and services for which they are best suited or have a comparative advantage in terms of natural abilities and resource endowments. This trade gives rise to specialization and production at the lowest relative costs and gaining an absolute advantage as a result. Similarly, the Heckscher-Ohlin factor endowment trade theory refined the nineteenth-century opinion about this impact by introducing the narratives about the rewards and returns to factors engaged in the production processes. This theory makes the process of production as important as the product that is traded. Further, both trade theories propose that because countries trade at a common international price ratio, factor prices among trading partners will tend to equalize. In the long run, as a result, such engagements are expected to expand the overall capacity of the economy to produce. The rewards to factors imply that there is a transmission effect that leads to growth and development.

The North-South school basically critiques the Traditional Trade Paradigm especially in the context of the experiences of the developing countries. The first critique is that the assumption about the static nature of international exchange based on a fixed, fully utilized and a similar production function is flawed and so the postulations of comparative advantage are weak. In reality to these thinkers, the world economy changes rapidly, and factors of production are neither fixed in quantity or quality. The North-South trade models expose the resulting unequal exchanges between the North (developed countries) and the South (developing countries) in explaining why the South gains less from trade than the North. The argument in this model is that the initial higher endowments of capital and labor in developed economies of the North generate external economies in manufacturing output and higher profit rates. As a result, the North grows rapidly and develops a cumulative competitive advantage over the slower-growing South which is endowed with abundant supplies of unskilled labor and for which world demand prospects and

terms of trade are more unfavorable and unstable thus inhibiting the domestic growth of needed capital, entrepreneurship, and technical skills.

Secondly, the assumption of a fixed, freely available technology and consumer sovereignty is debunked. The evidence of this is seen in the development of synthetic substitutes for many of the primary products which the counties of the South produced such as rubber, wool, wood, etc., which have seen the market share of these primary products falls because the synthetic alternatives become preferred to the detriment of those supplied by the South. Consequently, prices of primary products have been volatile and more on a downward trend. Thirdly, the assumption of perfect competition is blind to all the economic and market risks and uncertainties that are experienced in reality. Returns to scale and market restrictions in the trade space constantly affect countries of the South more. Markets have not been able to readjust automatically, and distortions continually exist. The transmission effect to growth and development, therefore, eludes countries of the South. The argument is that globalization is not an end in itself but a means to an end—economic growth and development.

Development in its multidimensional nature with its evolving definitions is about the process of improving the quality of all human lives and capabilities by raising people's levels of living, self-esteem, and freedom. In strictly economic terms, development traditionally meant achieving sustained rates of growth of income per capita to enable countries to expand output at a faster rate than the rate of population growth. Another traditional perspective was about a structural alteration in production and employment such that agriculture's share reduces and the share of manufacturing and services industries increases. These definitions based on growth and structural change have direct bearings on trade liberalization. For instance, economic growth accounting is denoted by

$Y = C + I + G + (X - M)$, where Y is the national income (also called GDP) and C, I, and G are consumption, investments, and government expenditure, respectively. $(X - M)$ is the trade balance from exports and imports. What happens to this balance directly affects income. It is within this component that effects of trade liberalization will affect growth and development.

The contemporary views on development were born out of the experiences of the post-World War II and postcolonial development of the 1950s, 1960s, and parts of 1970s where many developing nations reached their economic growth targets but the living standards of the masses remained largely unchanged and worsened in some cases. The view of defining development in terms of GDP and GDP per capita was then prescribed as being narrow.

The new rhetoric is to question inequality, poverty, and unemployment in the midst of a growing economy. Dudley Seers perspective on development in Todaro and Smith (2015) is that traditional economics asked the wrong questions about GDP and the questions to ask about a country's development are, therefore:

> What has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have declined from high levels, then beyond doubt, this has been a period of development for the country concerned. If one or two

of these central problems have been growing worse, especially if all three have, it would be strange to call the result "development" even if per capita income doubled.

Defining development based on capabilities is an important contribution of Sen to the development narrative, and that perspective is quite relevant to globalization. He argues that what matters for well-being is not the things a person has or the feelings they provide but what a person is, or can be, or does or can do. His opinion is that more important than the basket of commodities consumed are the "functionings," i.e., what they can do with the commodities of given characteristics that they learn to control. It is more likely that the more one knows, the more he should be able to do. By relevance to the debate on globalization, capabilities are reflected in what commodities a nation is able to put on the market in terms of the quality of labor, capital, and techniques employed in the production process. Ojo (2003) defines development in a related sense as the welfare gains from economic growth which are reflected in improved living standards, higher life expectancy and improved infrastructure, education, health, and environmental protection.

In a broader sense, development would incorporate other attributes such as more equal economic and political opportunities and civil liberties. The World Bank states that the overall goal of development is to increase the economic, political, and civil rights of people across races, regions, and countries. This is usually referred to as the welfare and the quality of life of a group of people. It is in this light that the Human Development Index (HDI) is computed by the World Bank. The RGDPPC, HDI, literacy rates, income inequality, and unemployment rates are adopted as measures of development in this chapter.

3 Globalization and Economic Growth and Development

The inference drawn from the traditional trade theories is that globalization is an important economic growth stimulus. When nations enlarge consumption and production capacities, world output increases. The access to worldwide markets for products from developing countries grows, and receipts from trade increase revenue. International trade promotes international equality by equalizing factor prices, and the rewards to productive resources raise incomes of trading countries and enhance the efficient use of a nation's resource endowment. Globalization helps countries achieve development by promoting and rewarding production in the sectors of the economy in which individual countries possess a comparative advantage in resources or quality of labor.

On the other hand, the North-South trade theories imply that the South gains less from globalization than the North. The assertion is that the initial higher endowments of capital and labor in developed economies of the North generate external economies in manufacturing output and higher profit rates. As a result, the North grows rapidly and develops a cumulative competitive advantage over the slower-growing South which is endowed with abundant supplies of unskilled labor and for which

world demand prospects and terms of trade are more unfavorable. This inhibits the domestic growth of needed capital, entrepreneurship, and technical skills. This makes them highly uncompetitive and worse off and hampers their development potentials. Consequently, modeling this relationship can produce two possibilities, that is, development is either an increasing or decreasing function of globalization.

These thoughts are similar to Uwatt (2003) who affirms that globalization and economic growth are related theoretically. He asserts that the less restrictive trade regimes result in more openness and increasing volumes of trade. He refers to the static allocative gains theory and the new growth theory which suggest that greater openness leads to better economic performance directly or indirectly, respectively. He states that the impact of globalization could be very strong, negligible, or even negative, as it is experienced differently in different countries.

4 The World Trade Organization (WTO): Rounds and Agreements

According to www.wto.org, the World Trade Organization was established to supervise and liberalize world trade. It ensures global trade openings and provides a forum for governments to negotiate trade agreements and to settle trade disputes. It is a structure that operates a system of trade rules governing the trading dynamics of member countries.

WTO was established on January 1, 1995, following the conclusion of the Uruguay Round (1986–1994) of GATT. The WTO replaced GATT as an international organization, but the General Agreement still exists as the WTO's umbrella treaty for trade in goods, updated as such during the Uruguay Round negotiations. Its office is located in Geneva, Switzerland. As of July 2016, 164 countries are members of the WTO. It is currently headed by Roberto Azevedo, the Director General. Its highest institutional body is the Ministerial Committee, and it meets every 2 years. The functions of the WTO are to:

- Administer WTO agreements.
- Create a forum for trade negotiations.
- Handle trade disputes.
- Monitor national trade policies of member countries.
- Provide technical assistance and training for developing countries.
- Cooperate with other international organizations.

WTO was born out of negotiation and all its activities are results of negotiations. Its work is recorded in rounds of negotiations. Under the GATT, several rounds of negotiations took place. Table 1 is a list of the activities under GATT. The earlier rounds before Uruguay focused on rules for liberalizing trade in industrial goods among industrial nations.

Table 1 GATT activities (1947–1994)

Year	Place/name	Subjects covered	Countries
1947	Geneva	Tariffs	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960–1961	Geneva (Dillon Round)	Tariffs	26
1964–1967	Geneva (Kennedy Round)	Tariffs and anti-dumping measures	62
1973–1979	Geneva (Tokyo Round)	Tariffs, non-tariff measures, "framework" agreements	102
1986–1994	Geneva (Uruguay Round)	Tariffs, non-tariff measures, rules, services, intellectual property, dispute settlement, textiles, agriculture, creation of WTO, etc.	123

Source: www.wto.org

The focus was on tariff concessions, but these did not have strong implications for developing countries mainly because they did not bring much of manufactures to the trade space. The Uruguay Round (1986–1994) was a strategic round in the sense that it was the most elaborate under the GATT, expanding interests to intellectual property and patents, investment regimes, and trade facilitation. This round also led to the creation of the WTO. It was the biggest negotiating mandate on trade ever agreed. Despite the initial difficulties, a package of early results was agreed upon by the ministers. These included some concessions on market access for tropical products (aimed at assisting developing countries), as well as a streamlined dispute settlement system, and the Trade Policy Review Mechanism which provided for the first comprehensive, systematic, and regular reviews of national trade policies and practices of GATT members. The round was scheduled to end in Brussels, in December 1990, but there were still lingering disagreements on how to reform agricultural trade and decide to extend the talks.

In spite of the poor political outlook, a considerable amount of technical work continued, leading to the first draft of a final legal agreement. This draft "Final Act" was compiled by the then GATT Director General, Arthur Dunkel, who chaired the negotiations at officials' level. It was put on the table in Geneva in December 1991. In November 1992, the United States and EU settled most of their differences on agriculture in a deal known informally as the "Blair House accord." By July 1993 the "Quad" (United States, EU, Japan, and Canada) announced significant progress in negotiations on tariffs and related subjects ("market access"). It took until December 15, 1993, for every issue to be finally resolved and for negotiations on market access for goods and services to be concluded (although some final touches were completed in talks on market access a few weeks later). On April 15, 1994, the deal was signed by ministers from most of the 123 participating governments at a meeting in Marrakesh, Morocco. The round also included negotiations about some aspects of services and intellectual property and the creation of the WTO itself. This round gave

birth to the Trade-Related Aspects of Intellectual Property Rights (TRIPS). The response was mixed, but the Marrakesh agreement already included commitments to reopen negotiations on agriculture and services at the turn of the century. These began in early 2000 and were incorporated into the Doha Development Agenda in late 2001 (www.wto.org).

The Uruguay Round left the emerging economies—the BRICS and lower-income countries unsatisfied with the outcomes. While there are so many narratives on these rounds, one remarkable is presented by Prof Peter Drahos in an interview with Lynn Fries on The Real News Network. The focus of his narrative was the TRIPS agreement. According to him, the fundamental problem was that by TRIPS, knowledge which is supposedly a public good is made a private commodity. Patents and intellectual property rights are set up to generate private taxes for private multinationals especially from the United States as well as limit the ability of any other producers to copy the processes without proper compensation. Note that this ability to mimic technology is one of the strongest drivers of economic progress in China. The globalization of intellectual property was directed at medicine, telecommunications, and entertainment—in areas where the United States had gained most of its comparative advantage. It looks like patent profits became more important than public health and development generally. The motive was to control building blocks of knowledge and determine to impose monopoly privileges in a free trade arrangement, howbeit contradictory in a supposedly free trade/one world mechanism. The argument in favor of patents, however, was that it would encourage innovation.

According to Drahos, while that is true, patents had always existed, but globalizing it was fraudulent, and all innovations were built on knowledge building blocks, and businessmen in the United States and EU did not develop all the blocks by themselves. They stood on the shoulders of other giants, and, today, they have kicked away the platform for other nations to stand upon. In response to why developing countries signed the agreement, his thought was that they had hoped for a better deal on agriculture and textiles which are the areas where they could dominate and, in his opinion, they did not fully understand at the time the implications of globalizing patents and intellectual property as the negotiations were done secretly. The developing countries simply lacked the expertise and the opportunity to negotiate, and the United States and the EU gained disproportionately. The implications of the agreement became clearer with time, and it had devastating implications for agricultural development as well as health for the developing world. This led to the agitations for a seat in the Green Room which hitherto was occupied by the Quad—United States, EU, Japan, and Canada. These agitations were sustained by some nongovernmental organizations such as Oxfam, Save the Children, and the International Media. Eventually, the right to negotiate and vote in the Green Room was given to the emerging economies (BRICS), the African Group, African Caribbean Pacific countries, as well as the G-33 (whose agenda is food security and rural livelihoods) as major stakeholders. The Doha Round was supposed to address the reasons for the agitations by the developing countries and give them a better deal in areas that mattered to them.

The first and most recent round of the WTO is the Doha Round which was themed the "Doha Development Agenda." It was launched in 2001, and the Doha Development Agenda has a fundamental objective of improving the trading prospects of developing countries in response to the concerns raised and the sustained agitations. Another priority of the round is the development of global value chains to drive trade and development.

Negotiations in the round were geared toward further lowering of trade barriers and the opening of markets, but it was also in support of maintaining trade restrictions where consumer protection and spread of disease were a threat.

The main negotiations in the Doha Round were to:

(a) Eliminate agricultural export subsidies, and set disciplines on export measures with equivalent effect.
(b) Further, liberalize trade on agricultural and nonagricultural manufactured (NAMA) goods by eliminating tariff and nontariff barriers on products of export interest to developing countries comprehensively and without a priori exclusion. This is to also recognize that these countries, i.e., less/least developed countries do not need to match or reciprocate in full tariff—reduction commitments by other participants.
(c) Progressively liberalize trade in services (bilateral/plurilateral) by improving specific commitments on market access and national treatment and more equal treatment among WTO members with special provisions for developing countries to give them a fighting chance.
(d) Review the provisions of special and differential treatment with a view to strengthening them and making them more precise, effective, and operational especially in favor of the least and less developing countries. The provisions include longer time periods for implementing agreements and commitments as well as increasing trading opportunities deliberately among others. The mandate also requires that less developed countries be assisted to maximize the opportunity to drive their development processes. A mechanism to analyze the implementation was established in 2013. The committee was expected to make recommendations aimed at improving the process and reviewing the provisions through renegotiation based on the realities they document in the monitoring processes for the next round.

One of the most contentious issues of the round has been about the non-elimination of agricultural subsidies for farmers in countries of the North as this has resulted in trade distortions to the disadvantage of less competitive farmers of the South. Related to this is that the recommendation to enforce the special and differential treatment for the less developed countries in recognition of the prevailing inequalities and lower production capabilities has also not been respected.

Secondly, the issues about the use and characteristics of the so-called Swiss Formula (under which higher tariffs are subjected to deeper cuts) would be that the central tariff-cutting mechanism for nonagriculture manufactures (NAMA) is not consistent for developing nations. Developing countries would be expected to use a less ambitious coefficient which would result in smaller tariff cuts. In the July 2004

agreement on the framework for establishing modalities for the negotiations, members recognized that a sectoral tariff component aimed at the elimination or harmonization of tariffs in certain sectors was a key element for achieving the objectives of the mandate.

The negotiations in the Doha Round have generated debates and criticisms among stakeholders. While developed nations protest that there is "not enough on the trade" to appease their export interests, the developing nations have also argued that outcomes (in agriculture and nonagricultural market access) were unbalanced against them. As a result of the high levels of dissatisfaction, some analysts have termed the round dead (Financial Times April 18, 2011).

The US Trade Representative Ron Kirk according to Ismail (2015) offered a consistent narrative for the Doha impasses. In his opinion, the text for negotiations did not offer any real gains of trade to the US stakeholders, and so the United States required the developing countries to provide more market access. Their argument was that emerging markets in developing counties were growing faster than the United States and increasing their share of global growth. The emerging economies that are the BRICS have emerged out of poverty and should have been seen to be making more substantial contributions to the round but are not. President Obama as President in promoting the campaign was quoted to have stated that "as President of the US, I make no apologies for doing what I can to bring these jobs and industries to America." The debates on the round portray the United States as a very aggressive liberalizer while portraying the developing countries as being defensive.

Ujah Bhaha (the former ambassador of India to the WTO) has argued that the US seeming aggressive position is a masked defensive position. He accused the United States of having high defensive red lines across a range of negotiations, demanding the BRICS make concessions without being able to reciprocate, and this was unacceptable. Ismail (2015) reported that the World Bank analysis shows that while growth rates are increasing in these emerging economies, gross domestic product per capita income (GDPPCI) has remained relatively low as a result of higher population growth rates. According to the report, GDPPC of high OECD countries was about nine times higher than average PCI of BRICS in 1970, but in the 2000s, it is 11 times higher. This means that emerging countries need to grow even faster to attain levels of development close to that in the United States, and so he considers their defensive posture valid.

The developing country narrative as summarized by Ismail (2015) is that the increasing demands of the United States for additional market access beyond levels reached in 2007 negate the development mandate of the Doha Round. Also, the obligation of the United States and EU in the LDC package which includes duty-free quota and free market access for four less develop country cotton producers that have continued to suffer employment and production losses from trade has not been met by them. To him, since the United States and the EU have not delivered on promises made to enable a conclusion of the round as it affects improving the lots of developing nations, the developing countries need not oblige them. In Wilkinson words, "for the first time in the entire history of the GATT/WTO since 1947, the US has been unable to drive the negotiating process towards its own interests."

Developing countries have risen up in the G-20, NAMA-II, G-33, and G-90 and have blocked unfair demands and proposals of the United States and EU, and Nigeria belongs to some of these groups.

The narratives around the importance of the Doha and the Uruguay Rounds are interesting. Incidentally, the developed nations ensured a conclusion of the Uruguay Round that favored them, but the Doha Round is yet to be concluded—the round that should favor the development of the majority of nations. It has been wrought with so much controversy that Drahos states emphatically that it has cost the WTO its legitimacy.

5 Nigeria's Trade Volume, Structure, and Revenue

Nigeria's documented experience of international trade in goods dates back to the precolonial era. The process of this evolution is recorded remarkably by Ekundare (1973). He records that between 1915 and 1965, Nigeria had begun mining and exporting coal, tin ore, and columbite amounting to 95% of total world supply and the exploration of crude oil dates back to 1956. Infrastructures to support these activities were established after the World War II through the 1960s and 1970s. Seaports were established first (Apapa, Burutu, Warri, Sapele, Port Harcourt, Bonny, Calabar, Okrika), railways second (2178 miles as at 1969) with increased road mileage alongside (between 1950 and 1966 increased from 28,042 to 55,256), and finally air transport (total cargo carried international air routes increased from 373 tons in 1950 to 2965 tons in 1965).

Industrial production also expanded in the period as a result of incentives given to foreign private investment and increased government expenditure on infrastructure. This output fed the international trade activities at the time. According to Ekundare, the total value of external trade increased from £152.1million in 1950 to £385.6 million in 1960 and £571.9 million in 1969 and records that the increases in domestic exports were consistently higher than merchandise exports. He also reports that world prices for traditional agricultural export crops fluctuated in between 1955 and 1965 resulting in consistently adverse trade balances. The entry of petroleum into the trade space reversed the trend from 1966. Currently, trade balances in the period from 2011 to 2015 are £2101.32 million (non-oil balance) and £694.5 million (oil balance). In the past six decades, there is some evidence from the numbers that the value and volume of international trade in Nigeria have increased.

Nigeria joined the WTO on January 1, 1995, and was a member of GATT from November 18, 1960. In 1996, based on total volume of trade, Nigeria was the 34th largest exporter and the 43rd largest importer worldwide. At the time, it was the third largest trading nation in Africa. The long-term decline (since 1980), in its share of Africa's exports, continued during the period 1991–1996. Crude oil was the only significant recorded export, shipped mostly to the Americas and Western Europe. Among other exports only cocoa, beans, rubber, and cotton exceeded US$10 million in 1996. According to WTO database, Nigeria's import structure changed

significantly between 1990 and 1996, with the share of food and petroleum products returning to their levels of the early 1980s. Petroleum products constituted major imports. The greatest falls in imports have been recorded in machinery, notably transport equipment and clothing. The United States, the United Kingdom, and Germany remained the three most important recorded sources of imports. Currently the WTO data (www.wto.org) about Nigeria in her trade arrangements is that GDP in 2016 was $ 405,952 million and GDP per capita (2014–2016) is $2738 and trade per capita (2014–2016) is $351 and trade to GDP ratio (2014–2016) 12.8%. Her rank in world merchandise trade is 56th. For commercial imports and exports, Nigeria ranks 88th and 32nd, respectively. Her share in world total exports in 2016 is 0.21% and 0.24% in imports. The structure of Nigeria's trade is summarized in Table 2.

The table shows that fuels/mining currently dominate our exports, while agriculture constitutes the least proportion. Manufactures dominate our imports, while agricultural products are the least. The EU is Nigeria's most strategic trading partner currently, followed by China and the United States, respectively. Total change in trade balances has been negative since 2010. By sectors, agricultural balances have worsened since 2010. Nonagricultural and commerce export balances have improved since 2014, while their import balances have worsened in the same period.

It is interesting that the data shows that the growth rates in all the foreign trade statistics rose significantly after 1995 which coincides with the period of transition from GATT to the WTO as presented in Table 3.

The values of oil imports rose from 42.3 million to 155.8 million between 1994 and 1995 and non-oil from 120.4 million to 599.3 million in the same period. The values of oil and non-oil exports in the same period rose from 243.1 to 1083.4 and 125.8 to 622.4, respectively. The oil/non-oil balance of trade rose from 158.4 million to 771.7 million and 115.1 million to 576.2 million. When we examine the data across board between 1995 and 2011, the trend steadily rose except for 1998 where oil exports experienced a shock as a result of the collapse of oil prices in the early parts of the year as a result of OPEC decreasing the country's production quota. From 2012, however, the value of these foreign trade balances has been on a decline to date. The complexities of falling commodity prices and internal security crisis have reduced the revenues earned especially from crude oil. Figure 1 depicts this scenario of the structure of Nigeria's trade balances. Though not captured, between 2014 and 2016, the trade balances have remained negative.

The revenue from customs duties (CUD) is captured in the chapter as incomes on imports, i.e., import duties. More data from www.wto.org reveals that Nigeria imposes the highest import tariffs on agricultural products currently, followed by wood and textiles, then chemicals, and manufactures, and least on electrical and non-electrical machinery. The highest receipts (the strongest trade partners) in Nigerian agricultural products are from the EU, Turkey, Japan, and India. For nonagricultural products, receipts are highest from the EU, India, Brazil, South Africa, and Japan, respectively.

Examined in the pre- and post-WTO periods, it is clear that there have been significant improvements even if nominally. It means that generally more

Table 2 Nigeria's trade structure (2016)

	Exports (%)		Imports (%)
Agricultural products	4		11.8
Fuels/mining products	76.4		12.9
Manufactures	12.3		56.7
Others	7.3		18.6
By origins			
EU	41.1	33.5	EU
Brazil	8.1	10.4	United States
Indonesia	3.9	3.7	Korea
India	14.6	21.9	China
SA	5	6	India
Other	27.4	24.5	Other
The annual percentage change in trade balances (%)			
	2010–2016		2015	2016
Merchandise exports	15		45	36
Merchandise imports	2		20	19
	Agriculture			
	2010–2014		**2013**	**2014**
Exports	10		39	55
Imports	16		1	1
	Nonagricultural product			
Exports	5		37	17
Imports	0		30	5
	Commerce			
	2010–2016			
Exports	3		83	17
Imports	8		19	36
Application for patents by Nigerians as at 2013			
NR	Residents	NR	Totals
Patents	50	869	919
Trademarks	19,332	–	19,332
Industrial designs	829	124	953

Source: Author's own compilation based on data from www.wto.org

commodities are being imported and the revenue from them is rising. In 1994, CUD was N12, 275 million and as at 2016, it was N1, 595,599 million. Table 4 holds the details.

In spite of the increase in nominal values, the growth rate in over 30 years has been falling indicative of compliance with WTO standards. This might be indicative of falling barriers and tariffs. Ideally, as the number of exports increased in quantity,

**Table 3** Structure of Nigeria's trade revenue (1981–2013)

Year	OIM	NOIM	OEX	NOEX	OT	NOT	OTB	NOTB
1981	0.1	12.7	10.1	0.3	10.8	13.1	10.6	(12.4)
1982	0.2	10.5	8.0	0.2	8.2	10.7	7.8	(10.3)
1983	0.2	8.7	7.2	0.3	7.4	9.0	7.0	(8.4)
1984	0.3	6.9	8.8	0.2	9.1	7.1	8.6	(6.6)
1985	0.1	7.0	11.2	0.5	11.3	7.5	11.2	(6.5)
1986	0.9	5.1	8.4	0.6	9.3	5.6	7.5	(4.5)
1987	3.2	14.7	28.2	2.2	31.4	16.8	25.0	(12.5)
1988	3.8	17.6	28.4	2.8	32.2	20.4	24.6	(14.9)
1989	4.7	26.2	55.0	3.0	59.7	29.1	50.3	(23.2)
1990	6.1	39.6	106.6	3.3	112.7	42.9	100.6	(36.4)
1991	7.8	81.7	116.9	4.7	124.6	86.4	109.1	(77.0)
1992	19.6	123.6	201.4	4.2	220.9	127.8	181.8	(119.4)
1993	41.1	124.5	213.8	5.0	254.9	129.5	172.6	(119.5)
1994	42.3	120.4	200.7	5.3	243.1	125.8	158.4	(115.1)
1995	155.8	599.3	927.6	23.1	1083.4	622.4	771.7	(576.2)
1996	162.2	400.4	1286.2	23.3	1448.4	423.8	1124.0	(377.1)
1997	166.9	978.8	1212.5	29.2	1379.4	708.0	1045.6	(649.7)
1998	175.9	661.6	717.8	34.1	893.6	695.6	541.9	(627.5)
1999	211.7	650.9	1169.5	19.5	1381.1	670.3	957.8	(631.4)
2000	220.8	764.2	1920.9	24.8	2141.7	789.0	1700.1	(739.4)
2001	237.1	1121.1	1839.9	28.0	2077.1	1149.1	1602.8	(1093.1)
2002	361.7	1151.0	1649.4	94.7	2011.2	1245.7	1287.7	(1056.3)
2003	398.9	1681.3	2993.1	94.8	3392.2	1776.1	2594.2	(1586.5)
2004	318.1	1668.9	4489.5	113.3	4807.6	1782.2	4171.4	(1555.6)
2005	797.3	2003.6	7140.6	106.0	7937.9	2109.5	6343.3	(1897.6)
2006	710.7	2397.8	7191.1	133.6	7901.8	2531.4	6480.4	(2264.2)
2007	768.2	3143.7	8110.5	199.3	8878.7	3343.0	7342.3	(2944.5)
2008	1315.5	3922.7	9861.8	252.9	11177.4	4175.6	8546.3	(3669.8)
2009	1068.7	4047.7	8105.5	296.7	9174.2	4344.4	7036.7	(3751.0)
2010	1757.1	5857.5	11300.5	406.2	13057.7	6263.7	9543.4	(5451.3)
2011	3043.6	7191.6	14323.2	499.5	17366.8	7691.0	11279.6	(6692.1)
2012	3064.3	6020.2	14260.0	476.1	17324.2	6496.3	11195.7	(5544.1)
2013	2429.4	6378.7	14131.8	708.9	16561.2	7087.6	11702.5	(5669.9)

Source: CBN Statistical Bulletin 2015
Note: All units are in N'billion
OIM oil imports; *NOIM* non-oil imports; *OEX* oil exports; *NOEX* non-oil exports; *OT* oil trade; *NOT* non-oil trade; *OTB* oil trade balance; *NOTB* non-oil trade balance

import duties are expected to rise much faster than the data shows. Figure 2 clearly shows that the country has not been able to achieve the same rates of growth in import duties recorded in the mid-1970s. Currently, the rates are the same as those achieved around the early 1980s in spite of the nominal increases.
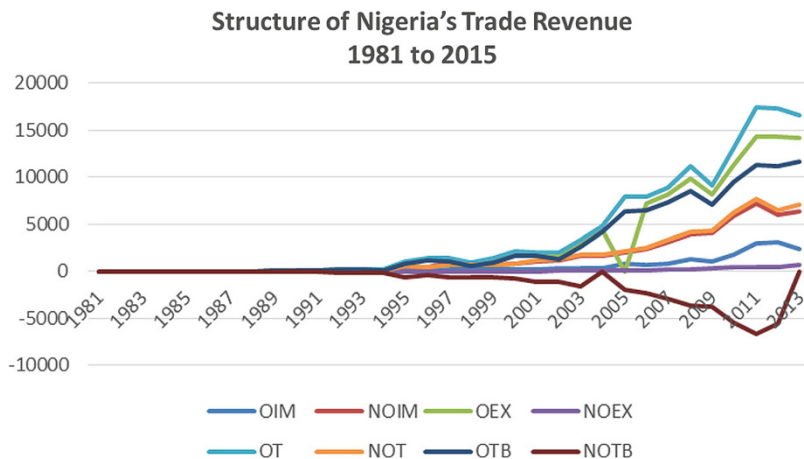
Fig. 1 Nigeria's trade revenue. Source: Author's own based on data from CBN Statistical Bulletin (2015)

To further examine the impacts of opening the economy through trade, data on the number of import and export partners, number of products, market penetration index (for imports), and market concentration (for exports), as well as the volume of imports and exports index, is presented as Table 5.

This data was compiled from the World Integrated Trade Solution (WITS) database at www.wits.worldbank.org. The number of trading partners signals the level of international acceptability for a country and its commodities. More partners indicate an increasing level of integration. The number of products imported and exported reflects the level of diversity in goods available in and for the market. The market penetration and concentration indexes are a reflection of how the market structure affects trade. It measures the extent of domination of sales by one or more countries/firms in a particular market. The market concentration ratio is the Herfindahl-Hirschman Index (HHI). The index may rise as high as 10,000 if the market is a monopoly. The lower the index is, the more competitive the market is. The indicator could become zero for the perfect competition. The export concentration index reflects the size of the world market that is captured by a particular commodity, and the concentration index also shows the strength of presence of a country's commodities in the international market. Import/export volume indexes are derived from United Nations Conference on Trade and Development's (UNCTAD) volume index series and are the ratio of the import/export value indexes to the corresponding unit value (in monetary terms).

The number of Nigeria's import partners has been consistently higher than her export partners, but over the period, the number of trading partners has generally increased. The volume of import/export indexes has increased significantly over the period, but the import index on average has also been higher than exports. Interestingly, the volume of export index was higher than imports in 1996, 1998, and 1999, and the indexes were equal in 2000. Since 2003 the volume of imports index has

Table 4 Customs duties in Nigeria (1981–2016)

Year	Customs duties	Growth rate of customs duties
1975	42.26	
1976	138.78	69.55
1977	235.3	41.02
1978	333.1	29.09
1979	428.34	22.53
1980	524.86	18.39
1981	621.38	15.53
1982	717.9	13.44
1983	814.42	11.85
1984	910.94	10.60
1985	1007.46	9.58
1986	1103.98	8.74
1987	1200.50	8.04
1988	1534.34	21.76
1989	1988.00	22.82
1990	2997.00	33.67
1991	3828.00	21.71
1992	5417.00	29.33
1993	9554.00	43.30
1994	12,275.00	22.17
1995	21,878.00	43.89
1996	22,000.00	0.55
1997	26,000.00	15.38
1998	33,300.00	21.92
1999	46,200.00	27.92
2000	51,100.00	9.59
2001	68,700.00	25.62
2002	89,100.00	22.90
2003	114,800.00	22.39
2004	113,000.00	−1.59
2005	162,200.00	30.33
2006	244,900.00	33.77
2007	327,000.00	25.11
2008	416,800.00	21.55
2009	568,100.00	26.63
2010	612,781.00	7.29
2011	715,400.00	14.34
2012	847,519.00	15.59
2013	1,034,789.00	18.10
2014	1,222,059.00	15.32
2015	1,409,329.00	13.29
2016	1,596,599.00	11.73

Source: CBN Statistical Bulletin, 2016
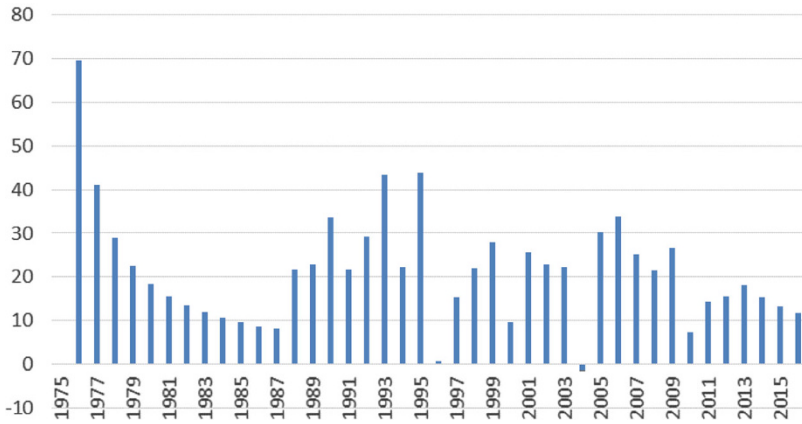
Fig. 2 Growth rate of customs duties. Source: Author's own based on data from CBN Statistical Bulletin (2016)

remained consistently higher. The number of products imported and exported has also increased over the period, but the number of products imported has remained higher. This corroborates the evidence about the structure of trade that the Nigerian trade structure is dominated by imports; its volume index is currently more than twice that of imports. The penetration and concentration indexes also show that in a competitive space, Nigeria is a stronger market space receiving imports than it is able to capture with its exports in spite of the fact that in both ways, the number of products involved/traded have increased numerically. It is important to note especially that the export concentration index has become smaller falling from 0.15 in 1996 to 0.06 in 2014. Nigerian goods are not doing very well in a highly competitive and specialized international market as the volume of trade index has risen by only an average of 20 unit points in over two decades, while imports have risen over 300 unit points in the same period. This difficulty might be the result of the nature of the marketplace, the nature of commodities that Nigeria puts in the market, and their inability to compete with products of industrialized economies. It might also be a reflection of the lack of fair play which the WTO engagements have not been successful at addressing disparities and encouraging developing countries from the Doha and other rounds.

The data from the WDI database about the volume of trade (TOT), tariffs (TAR), and the level of trade openness are presented in Table 6 for the pre-WTO (1973 to 95) and post-WTO periods (1996 to 2016). In the pre-WTO period as shown in the table, the minimum and maximum volume of trade (84.99 and 384.4 billion naira, respectively) were recorded in 1973 and 1994, respectively, and the period average was 84.99 billion naira. In this same period, the average tariff was 18.66%, and the minimum and maximum were 15.29 and 22.18%, respectively. The average index of trade openness in the period was 0.28, and 0.07 and 0.46 were the minimum and maximum values, respectively.

Table 5 Some other features of international trade in Nigeria, 1996–2014

Year	Imports				Exports				
	No. of partners	No. of products	Mkt penetration index	Vol. of imports index	No. of partners	No. of products	Mrkt concentration index	Vol. of export index	
1996	135	3511	2.22	87.88	92	366	0.15	104.43
1997	140	3830	2.17	102.78	54	187	0.16	113.11
1998	132	3803	2.19	107.77	62	245	0.17	124.62
1999	158	3885	2.25	99.47	94	587	0.15	105.88
2000	182	3801	2.2	100	64	289	0.24	100
2001	195	3683	2.38	136.31	49	203	0.21	97.26
2002	179	3791	2.4	89.26	54	235	0.15	95.77
2003	192	3819	2.35	121.73	69	317	0.21	110.06
2004	NA	NA	NA	NA	NA	NA	NA	NA
2005	NA	NA	NA	NA	NA	NA	NA	NA
2006	203	3338	2.56	235.23	81	356	0.24	123.22
2007	196	3387	2.75	282.52	124	813	0.26	127.18
2008	198	3508	2.69	360.69	147	938	0.21	119.53
2009	171	3425	2.73	265.5	138	808	0.16	119.78
2010	161	3479	2.74	331.84	145	873	0.18	142.53
2011	160	3696	2.79	372.13	135	1510	0.13	146.23
2012	173	3809	2.94	341.68	148	972	0.07	142.12
2013	188	3890	2.96	383.58	148	1228	0.06	130.78
2014	195	4036	2.75	417.53	151	990	0.06	129.43

Source: www.worldbank.org
World Integrated Trade Solution

Table 6 Selected descriptive statistics

	GDPPC	TAR	TOT	TOP	EXR
	Pre-WTO				
Mean	3467.29	18.66	84.99	0.28	4.81
Maximum	16,669.11	22.18	384.40	0.46	22.05
Minimum	182.30	15.29	3.45	0.07	0.55
Jarque-Bera	20.26	1.39	10.36	2.17	11.20
Probability	0.00004	0.4994	0.0056	0.3385	0.0037
Sum	76,280.31	410.41	1869.80	6.08	105.74
Observations	22	22	22	22	22
	Post-WTO				
Mean	221,614.2	8.72	11,409.10	0.37	120.75
Maximum	524,785.0	17.86	26,232.60	0.59	253.49
Minimum	26,702.37	6.07	1589.300	0.18	21.89
Jarque-Bera	2.26	10.97	2.23	0.10	0.25
Probability	0.3232	0.0041	0.3287	0.9511	0.88
Sum	487,5513	191.89	251,000.1	8.21	2656.49
Observations	22	22	22	22	22

Source: E-Views Extract

In the post-WTO era, the minimum and maximum values for the volume of trade were 1589.3 and 26,323.60, respectively, with an average value of 11,409.10. Tariffs recorded 6.07 and 17.86 as lowest and highest values in the post-WTO era and a period average of 8.72%. The index of trade openness was highest at 0.59 in 1995 and lowest in 2016 at 0.18. The period mean is 0.37. Examining the changes between both periods, average volume of trade and average trade openness improved by 53.2 and 39.3 percentage points, while average tariffs fell by 39.2 percentage points. These figures are further pointers to the fact that Nigeria has tried to abide by the conventions of the WTO by keeping her economy open. The increased volume of trade is also a witness to her increasing participation in the international trade space.

As earlier stated, globalization is not an end in itself but a means to an end which is development. The chapter had also constrained its measurement of development to the GDPPC, HDI, literacy rates, income inequality, and poverty and unemployment rates. The justification for the selection is that these variables are among those which would reflect on some of the expected outcomes of globalization as discussed earlier.

6   Nigeria's Development Indicators

Still, from Table 6, the average GDPPC in the pre-WTO era was 3467.29 naira, and the minimum and maximum values recorded in 1973 and 1994, respectively, were 182.30 and 16,669 naira. In the post-WTO period, the average GDPPC rose to 221,614.2 naira, and the period minimum and maximum are 26, 702.37 and 524,785
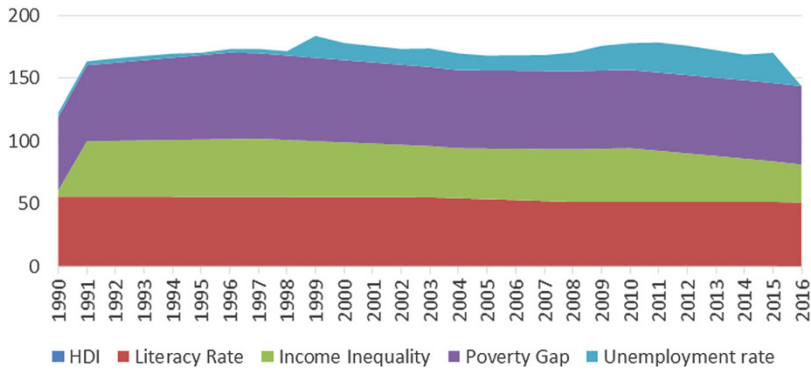
Table 7 Some development indicators for Nigeria from 1990 to 2016

Year	HDI	Literacy rate	Income inequality	Poverty gap	Unemployment rate
1990	0.438	55.51	4.79	58.52	3.5
1991	0.422	55.45	44.18	60.21	3.1
1992	0.406	55.39	44.56	61.90	3.5
1993	0.421	55.34	44.95	63.59	3.4
1994	0.435	55.28	45.34	65.28	3.2
1995	0.45	55.22	45.73	66.96	1.9
1996	0.452	55.17	46.11	68.65	2.8
1997	0.455	55.11	46.50	67.80	3.4
1998	0.457	55.05	45.57	66.95	3.5
1999	0.452	55.00	44.64	66.10	17.5
2000	0.462	54.94	43.71	65.25	13.6
2001	0.463	54.88	42.79	64.39	13.1
2002	0.466	54.83	41.86	63.54	12.6
2003	0.453	54.77	40.93	62.69	14.8
2004	0.448	54.03	40.00	61.84	13.4
2005	0.434	53.29	40.49	61.87	11.9
2006	0.506	52.55	40.98	61.90	12.3
2007	0.448	51.81	41.48	61.94	12.7
2008	0.483	51.07	41.97	61.97	14.9
2009	0.486	51.08	42.46	62.00	19.7
2010	0.462	51.08	42.95	62.03	21.4
2011	0.467	51.09	40.84	62.06	23.9
2012	0.471	51.09	38.73	62.09	23.5
2013	0.504	51.10	36.61	62.13	22
2014	0.502	51.10	34.50	62.16	20.5
2015	0.48	51.11	32.39	62.19	24
2016	–	51.11	30.28	62.22	–

Source: World Development Indicators, WB database

naira, respectively. The average increase between both periods is over 700 percentage points. This is a monumental and positive change which should transform the other development indexes positively as well.

In this regard, the records show that the value of HDI in 1994 before the WTO established was 0.435. As of 2015, Nigeria's HDI stood at 0.48. Literacy rate currently is 51.1 for 2016 against 1994 levels of 55.28. Unemployment rate as at 2015 is 24% against the 1994 levels of 3.2%. Interestingly (though not convincing), poverty incidence has fallen from its 1994 level of 31.64 to 24.82; income inequality is said to be 30.28 in 2016 against 45.34 in 1994. Table 7 presents the data. Charting the data (Fig. 3) shows that the level of development has not been altered significantly in the WTO era. This is worrisome because the GDPPC values have improved monumentally. Also, unemployment has worsened; that is why it is ironic that inequality and poverty have reduced.

Fig. 3 Some development indicators for Nigeria 1990 to 2016. Source: Author's own based on data from CBN Statistical Bulletin (2016)

In order to confirm the significance or otherwise of the changes recorded in the variables as discussed, the chapter further employs the Auto-Regressive Distributed Lag (ARDL) econometric technique to estimate the model setup for the study. The Traditional Trade Paradigm and the Heckscher-Ohlin Factor Endowment Theory provide a foundation as they imply that

$$\text{Development} = f \, (\text{Globalization}) \tag{1}$$

Development is proxied by GDP per capita which is one of its standard measures.

Globalization by the definitions and as related to WTO engagements is proxied by tariffs, volume of trade, and trade openness.

Exchange rate is included in the model because of its importance to international trade dynamics.

The stochastic model estimated is

$$\text{GDPPC} = \propto + \beta_1 \, \text{TAR} + \beta_2 \, \text{TOT} + \beta_3 \, \text{TOP} + \beta_4 \, \text{EXR} + U \tag{2}$$

where GDPPC is gross domestic product er capita, TAR is tariffs, TOT is volume of trade, TOP is trade openness, and EXR is exchange rate.

The same model is estimated in the pre- and post-WTO periods, and the signs and significance of the beta coefficients are examined. The E-Views 8.0 package is used for estimation.

Diagnostic tests on the data revealed mixed levels of stationarity, i.e., $I(0)$s and $I(1)$s, and this makes the ARDL technique the most suitable for analysis. The Bounds test analysis established long-run relationships for all the variables at 5% significance level. Table 8 holds this result. With the F-statistic value greater than the upper Bound $I(1)$ in both cases, the null hypothesis of no cointegration cannot be accepted.

The long-run ARDL model is presented in Table 9 to show the values of the coefficients in both periods.

Table 8 ARDL bounds test

Test statistic	Value	k	Value	k
	Pre-WTO		Post-WTO	
F-statistic	20.61	4	5.71	4
Significance	**I(0) Bound**	**I(1) Bound**	**I(0) Bound**	**I(1) Bound**
10%	2.45	3.52	2.45	3.52
5%	2.86	4.01	2.86	4.01
2.5%	3.25	4.49	3.25	4.49
1%	3.74	5.06	3.74	5.06

Source: E-Views Extract

Table 9 ARDL long-run model

Variables	Coefficient	Standard error	*t*-statistic	Prob.
	Pre-WTO			
LOG(TAR)	−1.35	0.08	−16.10	0.0000
LOG(TOT)	0.99	0.007	132.31	0.0000
LOG(TOP)	−1.01	0.007	−138.68	0.0000
LOG(EXR)	0.007	0.003	1.87	0.0857
C	6.46	0.21	30.78	0.0000
CointEq(−1)	−0.78	0.007	−120.02	0.0000
	Post-WTO			
LOG(TAR)	−0.48	1.63	−0.30	0.7706
LOG(TOT)	0.98	0.40	2.42	0.0307
LOG(TOP)	−1.20	1.69	−0.71	0.4913
LOG(EXR)	−0.30	1.05	−0.28	0.7821
C	5.76	8.20	0.70	0.4948
CointEq(−1)	−0.22	0.08	2.84	0.0045

Source: E-Views Extract

The coefficient of TAR is negative in the pre and post eras but significant only in the pre-WTO period. This sign conforms to a priori because a reduction in tariffs is an incentive to globalization and development (confirming the earlier narratives). The total volume of trade is positive and significant in both periods, conforms to a priori expectations, and confirms that Nigeria's engagements in the trade have a positive impact on development. The index of trade openness is negative in both periods and is significant in only the pre-WTO era. The implication of the negative relationship is that openness has not supported development.

This could be explained by the fact that the average level of openness is still small at 0.37 and the factors that account for low levels of openness are related to lower export volumes compared to imports. The searchlight is thrown on the nature and the structure of exports in Nigeria in spite of increasing volumes of trade.

To confirm that the model has been specified correctly and that it is free from heteroscedasticity and serial correlation, the relevant tests were conducted, and the results are satisfactory as shown in Table 10.

Table 10 Tests for model mis-specification, heteroscedasticity, and serial correlation

Tests statistic	Pre-WTO	Post-WTO
Ramsey reset test	0.0916	0.1833
Serial correlation	0.9695	0.8700
Heteroscedasticity test	0.8873	0.6872

Source: E-Views Extract

While it might be difficult to isolate the effects of engagements in the WTO from environmental and policy constraints, the point the chapter makes is that trade liberalization promised development and the development indicators are not doing well in spite of significant increases in nominal values. It might be a hydra-headed issue, but one of the heads is related to the international trade engagements. The summary is that while the indexes of trade liberalization have improved since WTO engagements (trade revenue, concentration indexes, number of partners and volume of trade), the indexes of development might have worsened in the same period in spite of revenues that have expanded significantly.

How is it then that the gains from trade have not been able to translate to development in Nigeria? There is an obvious disconnect in the transmission of these financial gains in the lives of Nigerians. The challenges are many, but the chapter will focus on four which it considers as vital.

7 Challenges of Globalization and Development

7.1 Nigeria's Economic Development Policy

One of the activities of the WTO is the Trade Policy Review. Periodically, countries review their trade policy, and the WTO compiles its own case notes about a member nation's trade policy. The first trade policy review of Nigeria was in 1991–1995 when WTO was still operating as GATT. The secretariats major observation about the Nigerian economy in 1995 was that:

- Macroeconomic and trade policies had evolved in a generally positive manner in spite of an uneven implementation process.
- There was a growing international confidence in Nigeria's economy. Attempts to use the country's large oil revenue to expand the economic base had been most unsuccessful, and the economy was highly vulnerable to fluctuations in oil prices, and large segments of the population had not seen improvements in living standards.
- The GATT policy to liberalize foreign exchange and investment has re-launched long-term, predictable tariff structure efforts (her tariffs were still generally unpredictable).
- A dual economy existed with oil dominating via JVCs which are multinationals. Exports were subject to increase in OPEC quotas. The downstream sector is subjected to state trade, administered pricing and restrictions on foreign

commercial presence, and producer/consumer subsidies as a result, serious shortages result.

- Relatively little direct government assistance is provided to agricultural production and exports. Export ban was in place for some essential commodities to stimulate domestic production.

The judgment about Nigeria for 1991–1995 is still correct today. This is an indication that economic policy implementation has not been able to achieve the desired goals. This chapter posits that the right policies are not scarce; what is scarce is the ability to achieve results.

7.2   The Inability to Leverage Our Competitive Advantage

Ash (2013) clearly stated that international trade has the capacity to propel long-term growth and that OECD research has shown that countries that are developed today have a history of opening their economies through trade. However, he states that there is also evidence of exactly opposite results about trade and development. What then is the correct rhetoric? This chapter posits that while international trade holds lots of potentials for development, it is not automatic. The potentials can only be harnessed by producing items that leverage our comparative advantage. Nigeria's reality is that she has abundant and unskilled labor and the commodities that her labor can best produce have not been focal to international trade so the rewards of trade have clearly eluded her. The reliance on oil trade whose activities are dominated by foreigners clearly accounts for the inability of Nigerians to benefit from oil trade.

7.3   Premature Load Bearing of Trade Liberalization

The globalization paradigm is "pro-no protection," and it argues that the benefits of openness far outweigh that of protectionism. Until the Doha Round, developed nations in the G-5 wrote the rules and set the pace for trade. The emerging and developing nations resisted this veto in Seattle and the round relocated to Doha. The reason was that the benefits of openness had eluded them and they fought for a right to negotiate in the Green Room. Ha, Joong Chang, a re-known Cambridge Scholar, criticizes the European Union and the US openness policy for developing countries on the basis of the fact that the first 100 years or so of their industrialization were highly protective. He states clearly that the clamor for openness by the North was a follow-up to a more mature industrial economy at the time. For the unindustrialized South (Nigeria inclusive), the high levels of openness were premature. The seeming breakdown of the Doha Round negotiations is also a testament to the "knowing" by emerging countries that increased liberalization was hurting their economies and some restriction was necessary to protect them. From the evidence for Nigeria, it has

been open to liberalization since independence without first setting up proper internal structures to maximize the advantages of world-class inputs and increased productivity from free trade. This might be an indictment on the quality of thinking that has gone with regard to this matter especially because the benefits have eluded the nation.

7.4   Human Capital Development

All the challenges around globalization and WTO are about activities of stakeholders in the sector. The inability to identify and tackle very fundamental issues of development, to organize activities consistently around set goals and objectives, and to focus on the reality in the Nigerian economy is the failure of the individuals responsible for those activities. This failure is an indictment of the quality of labor in terms of the capacity it has. From the capacity to negotiate at the WTO and elsewhere and to interpret policy and disseminate as well as implement, the methods and standards of appointing officers to strategic offices are questioned.

8   Concluding Remarks and Recommendations

Globalization has the potentials to drive development. Achieving development through globalization is not automatic. Globalization creates opportunities, but it does not guarantee sales. What will guarantee sales and revenue is good-quality products that can compete internationally, and the rewards to productive factors will enhance welfare. This requires **deliberate and consistent** policy and structural interventions. For Nigeria, it also requires the skills to leverage our comparative advantages more effectively.

There is no sufficient evidence to say that being a member of the WTO has hurt the economy financially, but being a member of the WTO has not driven economic development in Nigeria howbeit ironic. It has led to the loss of jobs as Nigerian firms have been very unsuccessful competitors in the international trade space. Our inability to compete has made it difficult to translate whatever financial gains recorded to development. I dare say the limitation is by internal forces more than external ones. The capacity to leverage on openness or determine adequate levels of protection has been low. Unfortunately, in the current era of no/slow growth and with the dwindling resources from crude oil, we might not be able to completely protect our economy because we have signed elaborate agreements and the resources required to drive the process might not be readily available.

The nature of our engagements going forward has to be deliberated. We need to reconsider our economic ideology again and redefine the focus to begin from where we are and structure diversification to benefit our wealth in labor first (by focusing on

agriculture and textiles) and then preparing to consider other areas of engagements in the more medium to long term.

The main recommendations are that:

1. The place to begin the change is diversification. More than lip service again, clear targets for agriculture (per crop, per farmer, per land yield) should be stated. Deliverable and measurable outcomes especially on quality of output and the welfare of citizens are vital. There must be a commitment to monitoring and evaluating on a regular and continuous basis so that jobs can be created and sustained.

2. Education and relevant retraining and skills development should be the focus to support diversification, not just as an initial investment but as an ongoing project for key players in the judiciary, executive, and the legislative arms of the government. It is important to remind every stakeholder from time to time about the Nigerian Development Project and the roles they have to play to avoid the setback that comes with a change of governments.

3. The government could consider establishing an institute for lawmakers, the political class, and other stakeholders which will provide a good foundation for pro-development thinking and consider restricting appointments to those that have been exposed to the ideology.

4. It might not be effective or realistic to turn again and be completely protectionist in the light of 50+ years of the agreements, but the plan to industrialize must stimulate activities around the export promotion of non-primary products to reduce the import component in the long run.

References

Ardnt H (1998) Globalization. BNL Q Rev March:73–89

Ash K (2013) WTO debate: better jobs through trade. (K. Rockwell, Interviewer), April 16

Drahos P (n.d.) (L. Fries, Interviewer)

Drahos P (2016) TRIPS: the story of how intellectual property became linked to trade. (L. Fries, Interviewer), October 27

Ekundare RO (1973) An economic history of Nigeria. Methuen and Co Ltd, London

Ismail F (2015). The changing global trade architecture: implications for Sub-Sahara's Development? Trade Hot Topics

Mazilu M (2010) Globalization, where? Eur Res Stud XIII(1):189–200

Todaro MP, Smith SC (2015) Economic development, 12th edn. Pearson, London

Obadan MI (2003) Globalization and economic management in Africa. In: Globalization and Africa's economic development. Selected papers for the 2003 annual conference of the Nigerian Economic Society, pp 3–34

Ojo MO (2003) Globalization and economic development: international experiences. In: Globalization and Africa's Economic Development. Selected papers for the 2003 annual conference of the Nigerian Economic Society. pp 69–104

Oqubay A (2015) Made in Africa, industrial policy in Ethiopia. Oxford University Press, London

Prawiro R (1998) Indonesias struggle for economic development. Oxford University Press, Kuala Lumpur

Tisdell C (2000) Globalization, WTO and sustainable development. Economics, Ecology and The
    Environment, pp 1–24
Uwatt BU (2003) Globalization and economic growth: the African experience. In: Globalization
    and Africa's Economic Development. Selected Papers for the 2003 annual conference of the
    Nigerian Economic Society, pp 129–158

Part III
Middle East and North Africa (MENA)

The Islamic State's Theoretical Challenge in a Globalized World

Massimo Campanini

Abstract Not surprisingly, globalization produced resistance and conflicts. In the Arab-Muslim world, the globalization process appears at odds with the ideological roots of Islamic universalism and cosmopolitanism. In the last decades, in front of challenges like the transformation of societies and radicalism, Islamic political thought sought for new paths of reform, trying to revise modern concepts like democracy through classical concepts like consultation (*shūrā*) and more updated paradigms like that of "civil state" (*dawla madaniyya*). In the broader context of the present international Western-shaped global system, these endeavors are potentially discovering the pristine universal dimension of the believers' charismatic *Umma*.

1 Introduction

Globalization is today perhaps the most striking phenomenon involving our planet in its entirety. Markets are global. Communications are global. Human rights are (allegedly) global, recognized as universal and universally valid for all human beings. Around the United Nations table at New York, the representatives of all nations are sitting and claiming to control the international relations' global destiny. Yet, globalization produced the strange (or perhaps not so surprisingly strange) paradox of fostering and strengthening local and parochial identities, very often characterized by xenophobia and conservative populism. If we consider only Europe, the Brexit; the separatism of Catalonia; the exasperate autonomy movements of the Basque region (terroristic at the origin, but now dissolved), of Corsica, and of Scotland; the growth of more and more vociferous right (or even fascist) parties in Hungary, in Poland, in France, and in Italy; and the growing dissatisfaction of European peoples toward European Union, all these dynamics are seemingly cries of protest (sometimes violent) against globalization and planetary homogeneity.

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The Muslim world is no exception, although too many political observers consider the Muslim world as an exception in itself. For Islam would be refractory to democracy, a number of Islamic countries are considered dangerous enemies of the democratic "end of history"—another nihilistic name for globalization—terrorist violence would be eminently an "Islamic" phenomenon, and so on. These prejudices often obscure a correct perception of reality. Therefore, this article will try to suggest a number of interpretative keys in order to connect globalization with Islamic political thought and to demonstrate that new ways are possible notwithstanding the difficulties.

2   Islamic Predicament in Front of Globalization

When I published in Italian the book *L'alternativa islamica* (*The Islamic Alternative*, Campanini 2012), I argued that political Islam had had a great chance to challenge global Western supremacy in the troubled last decades of the twentieth century. Political Islam was in a sense the answer from within the Islamic outlook to globalization, and it assumed a number of constructive forms—from the *Wasatiyya* to the Islamic theology of liberation. The objective to challenge the West and its model of globalization was missed because the progressive forces were overpowered by three main elements: the ongoing neocolonialist interference of Europe and the USA, terrorist extremism, and the failure of the so-called Arab springs.

Western (American, Russian, French, and British alike) interferences in the area's domestic affairs and mad policies like George W. Bush's "war on terror" in 2001–2003 or Donald Trump's reckless decisions (e.g., the opening of US embassy in Jerusalem) contributed and potentially will contribute in the future to the region's instability. Al-Qaeda and Dāʿish, whose origin and aims remain in my opinion obscure and still impossible to be understood in scientific historical way, actually realized in practice the nightmare of the clash of civilization. Terrorist groups, masked in Islamic dresses, instigate a *fitna* among Muslims instead of uniting them. It is a dramatic contradiction that the would-be Islamic State of Dāʿish Caliphate preached the unity of Muslims while exciting them one against the other, massacring Muslim women and children, and killing more Muslims than Westerners. Finally, the "Arab springs" were not "revolutions" but simply uprisings whose ultimate effect has been the disintegration of Syria, Libya, and Yemen and the instauration of a new oppressive military regime in Egypt and a flawed path toward a weak democracy in Tunisia (for a bibliography see Bunton 2015).

If these are the contingent causes of the Islamic alternative's shortcomings, it is important to understand more remote causes which prepared the present predicament. Starting from the same worldly globalization processes, we could suggest first of all that in the twentieth century's Arab-Islamic history, nationalism broke rather than unite state structures and international organizations (see Dawisha 2002; Campanini 2017). Actually, nationalism represented a factor of weakness in the reformist processes. At the end of the nineteenth century, many centripetal trends

were alive or in train to be constituted. Ottoman Sultan 'Abdül Ḥamīd II
(r. 1876–1909) was spurring a pan-Islamic feeling in order to unite the heteroge-
neous peoples of the Empire. In the very Empire's heart, pan-Ottomanism and
pan-Turkism were two divergent ideals pursuing the same goal: strengthening and
centralizing the Ottoman-Turkish state. In the Arab lands, pan-Arab consciousness
was growing faster and faster, and the pan-Arab movement would soon be born in
the same Ottoman territories. After the First World War and later after the Second
World War, a great number of Arab nations formed out of the collapsed Ottoman
Empire and the resulting anti-colonialist struggles, but they were still "colonial"
states, heavily burdened with the past colonial heritage's shortcomings, poor eco-
nomic development, corrupt dominant élites, backwardness of civil society, and
harsh ideological contradictions. These burdens were not relieved by substantial
following progresses. Politically, the ruling élites succeeded to keep intact their
privileges, irrespective of the fact that their resilience would have produced failed
states. Moreover, it is important to remember that the decolonization process was
carried out mainly by armies and by military vanguards: the militarization of society
did not assure democratic evolution to Algeria, Libya, Egypt, Sudan, Syria, Iraq,
Turkey, etc. rather a closure of spaces of independent expression and aggregation
under the domination of elephantine bureaucracies. Civil society was suffocated
everywhere and repressed; and this immaturity emerged dramatically when the
so-called Arab Springs burst out provoking a perhaps even deeper break in the
civil society. At the end of flawed long-standing processes of independence, state-
building, and distorted growth of economy systems and civil societies (Owen 2004),
today, in 2018, although countries like Indonesia or Malaysia seem stable (but
Pakistan and Afghanistan absolutely are not), the Middle Eastern Arab-Islamic
world appears disrupted and in full disarray. In the second decade of the twenty-
first century, nationalism represents more than ever a danger rather than a centripetal
force and represents a potential obstacle in the developmental process of Arab and
Muslim countries against globalization.

From an ideological point of view, the religious factor is still determining in the
Arab world. Many observers charged, for example, Islam of not being able to come
to terms with modernity. It is a thorny issue but worth discussing. Modernity is a
category, a concept, and indeed a whole system of ideas, institutions, and paradigms
that challenged the return of Islam in global history.[1] Over a number of centuries,
Islam remained at the edge of world history. While the Ottoman, Safavid, and
Mughal Empires were strong, rich, and powerful, Islamic creativity was in huge
decline. Marshall Hodgson (1974)[2] argued that the zenith of Ottoman, Safavid, and

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[1]There are multifarious ways of modernity, but the Islamic thinkers of the twentieth century
considered modernity as a paradigm describing the *West*. As Gudrun Kraemer wrote quite recently:
"Even authors expressing themselves strictly in Islamic terms, condemning the adoption of
un-Islamic concepts, do so against the backdrop of a challenge posed by the West and modernity
as defined by the West" (see Kraemer 2015, p. 170).

[2]More recently, Stephen Dale (2010) outlined a similar bright picture of the Ottoman, Safavid, and
Mughal empires.

Mughal Empires (sixteenth to seventeenth centuries CE) witnessed an expansion of Islam especially in the Far East and sub-Saharan Africa exhibiting a hegemonic potential. I continue to believe, however, that Islamic *creativity* was on retreat.[3] It is true that thinkers like Mullā Sadrā Shirāzī (d. 1640) in Safavid Iran, magnificent buildings like the Taj Mahal in Agra, great sultans like Sulaymān al-Qanūnī in Istanbul (r. 1526–1566 AD) illustrated Islamic culture and civilization after Ibn Khaldūn (d. 1406 AD) and before Shāh Walīullāh Dihlawī (d. 1762 AD)—the Islamic "Middle Ages" as it were. But while Ottoman, Safavid, and Mughal Empires flourished, Europe witnessed the three major revolutions (the scientific, the French, and the industrial) which opened such a deep gulf between the West and the Islamic world that it has not been filled up until today.

Consequently, by the second half of the nineteenth century, the Islamic world discovered with great disappointment to be backward and to be subjected to the encroachment of Western colonialism and imperialism. Very few Islamic countries remained free from direct or indirect European control. The Western overwhelming superiority in science, technology, and military power conveyed also new ideas and concepts like secularism (separation between religion and society), democracy, nationalism, freedom of expression and belief, liberation of women, and so on. Islamic outlook and thought were struck by novelty. As Paul Heck put it recently, "To be credible, knowledge from God [in Islam God is the source of knowledge] had to hold up to human verification. The irrelevancy of such knowledge in the face of European power meant not only the loss of a way of life but also new standards for determining truth" (Heck 2015, p. 106). Developing a knowledge, no more grounded on religion (coming from God), would have needed a new method, but methodology was out-of-date, traditional outlook hampering openness of thought, fear of novelty paralyzing. It was an epistemological, psychological, anthropological problem, involving the whole Islamic social and political *Weltanschauung*.

The reaction of Muslim intellectuals was either modernizing Islam or Islamizing modernity. This dichotomy is well-known and by and large accepted by historians, but it is perhaps useful to clarify the terms in question. Modernizing Islam means to believe that traditional Islam is no more able and fitted to face and solve the problems of contemporary society; thus, it must be "modernized" (especially denying its public, social, and political dimension) and subordinated to secularism, technology, and "progress." Islamizing modernity consists in believing that Islam is in itself fully rational and modern; it is able to govern and orient society and history upon the very basis of the Islamic traditions. It is necessary to underline that both modernization of Islam and Islamization of modernity suffered of extremism and excess. Modernization of Islam led someone to believe Islam "dead" and worthy to be thrown away. Islamization of modernity led someone to refuse the "West" and fight Western world also by arms up to terrorism. However, both modernization of Islam and

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[3]For the Ottoman Empire, this stalemate emerges clearly from the reading of the recent Douglas Howard's book (2017): Ottoman literature, Ottoman spirituality, Ottoman political thought were alive, but repeating the previous (mostly Arab) models.

Islamization of modernity involved an idea of change and revival and expressed themselves in renaissance, *nahda*, and reform, *islāh*.

A thinker whose thought is perhaps exemplar of this dialectics is the Moroccan Abdallah Laroui. Since his very first—and perhaps major—book, *L'idéologie arabe contemporaine*, published in 1967, Laroui acquired the clear awareness of Arab intellectuals' crisis and predicament. According to Laroui, Arab-Islamic thought reacted to Western modernity in three ways: refusing it wholeheartedly (the position of the so-called cleric, in Laroui's terms, and of the contemporary jihadists, I add), accepting it uncritically (the position of the so-called technophile and of the contemporary hyper-secularists like Sādiq Jālal al-'Azm, I add), and seeking for a middle conciliatory way (the position of the so-called political always in Laroui's terms and perhaps of the majority of people and contemporary intellectuals). Unfortunately, "*l'incapacité de l'intellectuel arabe à choisir la logique de la modernité*" (Laroui 1987, p. 95) compelled the intellectuals to retire into themselves. Laroui singled out in the discovery of the self and of the other and in their interaction the central issue of the Arab mind. The "other" is obviously the West, and the interaction with the West led the Arabs (and the Muslims) to discover and revaluate their past and their history. There is the unavoidable necessity to read correctly Arab-Islamic past. The past is a "weight" weighing on Arab-Islamic consciousness (Laroui 1999), what I have called above counter-utopia. In order to lighten this weight, Laroui underlined the necessity to criticize "Orientalist" or better "colonialist" historiography of North Africa. Western (mainly French) historians read Maghribi history as predestinated to colonial submission because of the many faults and contradictions of the Arab self. Laroui wrote a counter-history of the Maghreb to demonstrate that the *colonisabilité*[4] was not inscribed into destiny (Laroui 1975).

I believe that the crucial issue in order to carry on a factual reform in Islamic thought is that of utopia. Utopian thought dreams a perfect state mainly looking at the future, while Islamic political thought has been and is often inclined toward a retrospective utopia. In the classical age of Islam (the so-called Middle Ages), two trends developed: one utopian and one counter-utopian. The former was theorized mainly by the *falāsifa*, that is, the philosophers inspired by Greek thought, and among them mainly by al-Fārābī (850–930 AD). The latter was theorized mainly by those thinkers formed in the traditional milieu of Islamic culture, marked by jurisprudence (the "*ulamā*"). Utopia is a difficult term to define. Here I mean (in agreement with Ernst Bloch's definition) utopia as the planning of the future world and society—a new system never existed before. Utopia does mean leaning toward the *future* in order to build a better society and a better world and improve present situation. On the contrary, retrospective or counter-utopia considers the *past* as the model to repeat and conform thereto, as the insuperable embodiment of the ideal. This is the case with Prophet's exceptional experience, which did not happen

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[4]I am obviously referring to the famous paradigm of Mālek Bennabī: the Arabs (the *Maghrebins* he says properly) have been colonized because they were prepared to be colonized (*colonisable*), having lost the mainly intellectual and spiritual sense of their civilization (Bennabi 1954).

in a "non-place" (*u-topos*) but in a well-contextualized place and time, the city of Medina between 622 and 632 AD. Later, thanks to the action of prestigious "*ulamā*" from Ibn Hanbal to the Ash'arite and other theologians, the idea took shape, having become common among the Sunnis that also the period of the Rightly Guided Caliphs (632–661 AD) had been an extension of the exceptional era of the Prophet (Afsaruddin 2002). The idea was formulated that the "Islamic state" was not incarnated only in Medina, when the Prophet ruled in the name of God, but also in the troubled era of the internal power struggles between the first caliphs (especially 'Othmān and 'Alī). Hence the era of the *Salaf*, the Prophet's Companions, must be enacted also today, in the twenty-first century, rebuilding even past and by now out-of-date forms of political and social organization. It is a very dangerous attitude indeed, involving the impossibility or the extreme difficulty of theorizing a philosophy of history, for it reverses backward the straightforward line of time: exactly the contrary of Wilhelm Friedrich Hegel's *Phenomenology of Spirit* and Ernst Bloch's *Principle of Hope* (Campanini 2018).

Which is then the solution of the predicament? I believe that there are at least three forms of modernity (there are many more obviously) which constitute potential starting points for further elaboration and transformation in Islamic perspective. Each one of them has a thinker of reference. The first is the independence and critical use of reason that Immanuel Kant claimed to be the real meaning of Enlightenment in his famous pamphlet *Was ist Aufklärung?*. No doubt that Ibn Rushd/Averroes (d. 1198 AD) has been a champion of autonomy of reason in Arab-Islamic history of philosophy, also without arriving at Muhammad al-Jābirī's over-statements.[5] The second form of modernity consists in the understanding of history as a dialectics of social and political forces. No doubt that Ibn Khaldūn has been the founder of sociology and philosophy of history in Arab-Islamic civilization, and his thought is today a reference for all reformist trends. The third form of modernity consists in the will and capacity of contesting institutions and values. Many classical Muslim thinkers were contesters of the status quo, before and after Ibn Taymiyya (d. 1328 AD), but no one of them was really reformist, that is, "modernist," rather, most of them looked at the past. Contestation must be performed in the heaven of utopia, and al-Fārābī is perhaps the most obvious reference. Also, the so-called freethinkers of classical Islam, like Zakariyyā' Rāzī or a few Mu'tazilites, could be evoked for this need.

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[5]Al-Jābirī argued that "Oriental" Islamic philosophy—that of Avicenna and al-Ghazālī—was a "philosophy of darkness," clearly an ideological not historical statement (see al-Jabri 1992).

3 The Role of Islam in the Era of Globalization

In this framework of thought, the role of Islam in regard to globalization must be correctly evaluated. Being a holistic and universal ideology, Islam is potentially in contrast with nationalism and particularity, and, rather, it is in itself global. The classical Caliphate was characteristically universalist and cosmopolitan and then global. The idea of charismatic *Umma* encompassed Blacks and Whites, Arabs and Persians, and slaves and masters under the banner of faith.

After the abolition of the Caliphate by Mustafā Kemāl Ataturk in 1922–1924, and later after the crumbling down of the secular, pan-Arab, socialist regimes of the 1950s and 1960s, among which Nasserism has been the model, Arabs-Muslims lost their globalizing ideals. As I have said, corruption and disruption triumphed, and, for a while, an Islamic alternative appeared impossible or even ruinous. Nowadays, the Islamic alternative seems defeated, but it is impossible to foresee whether it will resurge again. Islamic political thought suffered a predicament making evidently clear that outstanding "*ulamā*" like Muhammad al-Ghazālī or Yūsuf al-Qaradāwī or Sālim al-'Awwa or Hasan al-Turābī (in Sunnism) or 'Allāma Tabatabā'ī (in Shiism), were unable to guarantee a real *tajdīd* (renewal) of thought (Campanini 2015). Saudi Arabia is still a stronghold of religious conservatism, despite the recent reforms of the crowned prince. The predicament was not limited only to Arab-Islamic countries, but involved also Muslims in Europe, potential actors of a globalization of Islam in countries that not long ago were still considered *dār al-harb* (abode of war, that is territories war was compulsory therein according to Medieval jurisprudence). All Tariq Ramadan's work is a demonstration *surtout* of the importance of the European Muslims' role in re-shaping future Muslim overall identity (see at least Ramadan 1998, 2008). Apart from strictly political problems like radicalism and Western neocolonialism, burning issues like bioethical or gender questions, growing social exploitation and normative inequalities between citizens, spreading of poverty and marginality, etc. all these elements represent a seemingly inaccessible mountain to climb upon starting from classical, traditional principles like *maslaha* (public welfare), *shūrā* (consultation), and *ijmā'* (consensus).

For example, Muhammad Sālim al-'Awwa, a well-known figure of the moderate trend of Islamization, identifies six pillars in the Islamic state (al-Awa 2006):

1. Consultation (*shūrā*), involving the issue of the people's political representation
2. Justice (*'adl*), involving the problem of social balance
3. Freedom (*hurriyya*), meaning the protection of individual and Community rights
4. Equality (*musāwāt*), meaning the struggle against social inequalities and their abolition
5. Accountability of the rulers and obedience of the ruled (if the rulers obey God's will and legislation), involving the problem of consensus of the ruled to the ruler
6. The ethical foundation of the state in the prescription of good and the suppression of evil (*al-amr bi'l-ma'rūf wa al-nahy 'an al-munkar*)

Although we can find all these six points in Islamic classical political thought and although, obviously, they are all sharable, the proposal by Sālim al-ʿAwwa, good synthesis of the attitude of contemporary moderate Muslims (*Wasatiyya*) toward the principles of politics, could be easily accused of vagueness insofar as it does not clearly indicate *which working institutions* should be created to produce an effectively functioning Islamic state and *how* they should work. On the other hand, however, it is sufficiently vague to allow any type of constitutional and institutional experience—including democracy in the Western sense of the term—to be able to lay down the *ethical* bases for a reconstruction of politics.

In opposition to these classical concepts, the issue of democracy—a characteristic theory of modernity and of globalization—is continuously evoked in order to demonstrate that Arab-Muslim countries are exceptions, irreducible to the global world wherein, as it is well-known, democracy is the *mantra* of the hoped end of history. Democracy, though, is a false problem, if it is true (as it is) that in Arab-Muslim countries democracy cannot be merely the reproduction of Western paradigms and systems of governance. For it is necessary to avoid ideological alienation and to respect Arab-Muslim own path of historical development, as Hasan Hanafī put it:

> Democracy is a tool not an end. It is a means to implement something else, namely national objectives. [. . .]
>
> Democracy, no doubt, is a universal value as such and in itself, based on mutual consultation and against monopoly of opinion. The truth, even a relative one, can be reached more soundly by a consensus rather than by a simple individual opinion [. . .]
>
> Democracy as a concept may differ from a culture to another. In the West, it is a quantitative concept based on majority-minority criteria. The truth is with the majority against the minority. [. . .]
>
> Islamic concept of democracy is something else. It is not a quantitative concept, majority-minority, power and opposition, but a qualitative concept based on the right of every person to express himself freely. No one has the right to monopolize the truth and impose his views on others. The right to differ is a legitimate right, a religious duty. The good advice, to order the good to be done and the evil not to be done, is a religious duty surmounting to an article of faith. The truth is the outcome of consensus, ijmaʿ. (Hanafi 2007)

On the other hand, I consider democracy more as a container of hopes and modernity's theoretical paradigms than as a type of government (see Galli 2015, p. 76). Democracy is an ambiguous term, referring to very different historical experiences, from liberalism to communism, from the right to the left. The same could be said of a generic label as "Islam," of course, insofar as there are many variants to be Muslims: as the Prophet said, "My community will be divided in seventy-three sects. . . ." Islam is a very plural phenomenon although many conservative Islamists are inclined to become essentialist in regard to their own religion arguing that there is only *one* Islam out of history and historical change.

In regard to modernity's challenge, then, wondering whether an Islamic way to democracy and modernity and, consequently, an Islamic policy alternative to globalization exist will not sound a heresy. In order to cope with this particular perspective, it is necessary to deal more thoroughly with the developments of Islamic

political thought and their new (if they are new) theoretical proposals. The possibility of an Islamic alternative involves the exclusion of *power sharing* tantamount to the present democratic Western pattern. The new landscape (if there is a new landscape) must be "Islamic," emerging as such in the uniformity of globalization.

This is the reason why the debate about the *maqāsid al-sharī'a* (aims of the Law) is today so much hot and interesting. Renegotiating and reformulating the meaning of *sharī'a* in the direction of emphasizing its character of *path*, of ethical orientation, instead of normative codex, as many conservative Muslims do, is an unavoidable task for the present and the future.[6]

In the framework of the renewed *maqāsid al-sharī'a*, emphasizing common welfare and the "interest" of the Community and the individuals, the Islamic state's model cannot be but a Community's "democracy," if we really want to continue to use this paradigmatic term, that is, a collective democracy (*dīmuqrātiyya al-jamā'a*) going beyond the (by now largely failed) paradigm of representative democracy. The classical concept of *shūrā* could be used to define the idea of a collective and participative democracy. In general, Islamic political-juridical concepts as holism (*shumuliyya*), *maqāsid al-sharī'a*, *shūrā*, and *ijmā'* acquire a natural global dimension fitted for the universalism of the pristine Islamic political outlook, i.e., the implementation of that civil Islamic state (*dawla islāmiyya madaniyya*) alternative to Western-shaped modernization and globalization (Belkeziz 2009).

The positive aspect is that, as Syed Khatab put it, "As an Islamic state is not an end in itself but only a means that facilitates the ordinances of the law [*sharī'a*] and manages the affaire of the people, [it is obvious that] the political ordinances of the *sharī'a* do not prescribe a specific form to which an Islamic state must conform. Thus, there is not only one form of the Islamic state, but many, and it is for the Muslims of every period to discover the form most suitable to their needs. [. . .] As for the manner or the method of consultation [*shūrā*], no particular system or model has been specified, so its application is left to existing circumstances and needs. This consultation did not follow any established or formally defined system but left it to the Muslims to devise the best method or system of their age" (Khatab and Bouma 2007, pp. 21, 15, 35–36).

4   Conclusions

It is obviously compelling to verify whether the concepts of *shumuliyya*, *maqāsid al-sharī'a*, *shūrā*, and *ijmā'* can actually pave the way to the realization of a political hegemony within the Arab-Islamic states in disruption through the action of active political subjects in society. Being Muslim civil societies still weak and often oppressed by autocratic regimes, the directive role must be bestowed upon renewed parties which represent—in Antonio Gramsci's terminology—hegemonic forces.

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[6]Besides Tariq Ramadan's books quoted above, I remember Auda (2008).

The Modern Prince, i.e., the party in Gramsci's terminology, ought to realize the "intellectual and moral direction" of society. Accordingly, for example, *ijmā'* must be not simply "consensus" (which can be extorted by force through the mass-medias manipulation or the control of political institutions) but interpreted—again—as Gramsci's collective will. This assertion involves that partitism (*hizbiyya*) is best than movement (*harakiyya*) and that Islamic movements ought to try to transform themselves in political parties. Islamization must be a process from below and not from above, and a party that practices hegemony is the best tool in order to achieve this goal. The political-social bloc between rulers and ruled in a state implies a hegemonic discourse. If, to date, this hegemonic discourse has seen the domination of a class over another (the bourgeoisie over the proletariat), it is now impelling to identify its articulations in a historical framework wherein conditions of (1) collapse of ideologies and (2) transformation or nonexistence of class struggle are happening. Although it is no longer sovereignty but governmentality (*governamentalité* in Michel Foucault's words) that dominates present political horizon, the hegemonic problem of the moral (intellectual) and political leadership of society is nevertheless still urgent. We can use Gramsci as the litmus paper to ascertain the characteristics of the Islamic state.

Admittedly, a number of Islamist movements transformed themselves in parties in recent past, like the Muslim Brotherhood in Egypt and *Ennahda* in Tunisia during the "Arab springs," but they have failed to realize hegemony, the "historical block" between the intellectual and the masses envisaged by Gramsci. As I have already dealt with these issues elsewhere, I prefer to focus here only on the functionality and political operability of the new concept of civil Islamic state (*dawla islāmiyya madaniyya*)—which has been theorized to a great extent by moderate Muslim intellectuals[7]—in the broader context of the present international Western-shaped global system, dominated by Western neocolonial powers like the USA, Israel, and their allies. Is there room in Muslim countries for a policy not going through a crisis of representation? So far, different proposals have been put forward: from old utopias like 'Abd al-Razzāq al-Sanhūrī's *Society of Oriental Nations* in the 1920s to 'Abullahī al-Na'īm's (1996) incitement to refound Islamic international law on the basis of human rights and civil liberties. In the perspective of political thought, Islamic civil state ought to function as a centripetal force, able to coagulate around common projects of Arab-Muslim interest countries and nations today so much fragmented and reciprocally enemies to the effect of resulting impotent. The centripetal force could be the *Umma*'s charisma, obviously on the very basis of the

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[7]It is important to observe that there are considerable differences between the conceptions of the radical movements and those of the "moderate" intellectuals who form the backbone of *Wasatiyya*. The Islamic state in the elaboration of radical Islam makes strict reference to the sources, for example, by maintaining a literal and inflexible application of the *sharī'a* law's (few however) norms. This "exaggeration" in the applicative role of religious Law is far from the "median" way of Islam. The Islamic state, in the elaboration of "median" intellectuality (*Wasatiyya*), focuses on a religious-based hegemonic project beyond any stiffness in normative application. On the *Wasatiyya* see Baker (2003).

believers' *al-'urwa al-wuthqā*, the rope of God whom the Muslim is exhorted to climb thereof (see the Qur'ān, Q. 2:256). The lacking in Islam of a central decisional organism like the Roman Catholic Church is undoubtedly an obstacle for a full explication of charisma. *Ijtihād* (free rational interpretation of the sources) is not sufficient in itself. Though, charismatic *Umma* could represent and unify the still very weak civil societies of the Arab-Islamic world. But how could the charismatic *Umma*, transformed in modern civil society, play an international constructive role when the great majority of Arab-Islamic countries is ruled by autocratic or frankly dictatorial regimes? Actually, there is a contradiction, a negative dialectics, between the implosion of singular Arab-Islamic states like Syria or Libya or Yemen and the potential expansive influence of a united charismatic *Umma*.

The picture I have drawn is perhaps more dark than bright. Yet, Islamic political thought and the idea of Islamic state are alive and seeking for their way, while Western model of globalization is patently in crisis not only in the Arab-Islamic world but in the same Europe and all over the world.

References

Afsaruddin A (2002) Excellence and precedence: medieval Islamic discourse on legitimate leadership. Brill, Leiden

al-'Awa MS (2006) Fī'l-nizām al-siyāsī li'l-dawla al-islāmiyya. Dār al-Shurūq, Cairo

Al-Jabri MA (1992) Introduction à la critique de la raison arabe. La Découverte, Paris

Al-Na'im A (1996) Towards an Islamic reformation. Syracuse University Press, Syracuse

Auda J (2008) Maqasid al-shari'a as philosophy of Islamic law. The International Institute of Islamic Thought, Herndon

Baker R (2003) Islam without fear. Egypt and the new Islamists. Harvard University Press, London

Belkeziz A (2009) The state in contemporary Islamic thought. I.B. Tauris, London

Bennabi M (1954) Vocation de l'Islam. Seuil, Paris

Bunton M (2015) Arab spring. In: Oxford bibliographies in Islamic studies. Oxford University Press, New York

Campanini M (2012) L'alternativa islamica. Bruno Mondadori, Milano

Campanini M (2015) Islam e politica. Il Mulino, Bologna

Campanini M (ed) (2017) Arab nationalism(s) in the twentieth century. Oriente Moderno 97 (1):4–35

Campanini M (2018) The utopian dimension of a (possible?) Islamic philosophy of history. In: Gualtieri C (ed) Utopia in the present. Cultural politics and challenge. Peter Lang, Bern, pp 43–56

Dale S (2010) The Muslim empires of the Ottomans, Safavids and Mughals. Cambridge University Press, Cambridge

Dawisha A (2002) Arab nationalism in the twentieth century. From triumph to despair. Princeton University Press, Princeton

Galli C (2015) Filosofia politica. In: Cambiano G, Fonnesu L, Mori M (eds) Storia della Filosofia occidentale. 7. Problemi d'oggi. Il Mulino, Bologna

Hanafi H (2007) Democracy: an end or a tool? Oriente Moderno 87(2):431–436 (Campanini M (ed) Islams and democracies)

Heck P (2015) Knowledge. In: Böwering G (ed) Islamic political thought. An introduction. Princeton University Press, Princeton
Hodgson M (1974) The venture of Islam. Chicago University Press, Chicago
Howard D (2017) A history of the ottoman empire. Cambridge University Press, Cambridge
Khatab S, Bouma G (2007) Democracy in Islam. Routledge, London
Kraemer G (2015) Pluralism and tolerance. In: Böwering G (ed) Islamic political thought. An introduction. Princeton University Press, Princeton
Laroui A (1967) L'idéologie arabe contemporaine. Maspero, Paris
Laroui A (1975) Histoire du Maghreb. Essai de synthèse. Maspero, Paris
Laroui A (1987) Islam et modernité. La Découverte, Paris
Laroui A (1999) Islam et histoire. Albin Michel, Paris
Owen R (2004) State, power and politics in the making of modern middle East. Routledge, London
Ramadan T (1998) To be European Muslim. The Islamic Foundation, Leicester
Ramadan T (2008) Islam, la réforme radical. Ethique et liberation. Archipoche, Paris

Globalization and Evolution of Public Administrative System in the Middle East and North Africa (MENA)

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Abstract This chapter aims to describe the evolution of administrative system under globalization pressures in the MENA region. For this reason and for considering the adaptability of public administration in these countries, government performance as a result of administrative system reforms and globalization is analyzed according to six dimensions: (1) government effectiveness, (2) regulation quality, (3) E-government, (4) political stability, (5) corruption control, and (6) general governance. This study uses the panel data approach covering the period 2010–2017 for the MENA countries and employs methods for identifying patterns of behavior. Results indicate that globalization and government performance have a strong and nonlinear relationship and their interactive pattern of behavior is oscillatory. In the interactive relationship between these two variables, administrative system reform activities are mediator variable.

1 Introduction

Governments everywhere are under pressure of globalization, and they are engaged in projects of administrative and managerial improvement (Lynn 2001). Enhancement of government performance is a focus of public administration and management research, policy, and reform (De Waal 2010). By focusing on developed countries, public administration reforms embrace adaptive responses to globalization forces, and the performance of government has an essential role in economic growth (La Porta et al. 1997; Olson 1996).

The public administrative system of any country is an engine of development, and it needs to perceive environmental changes and adapt to them. Countries need continuous administrative reforms in order to achieve comprehensive adaptation, and thus sustainable development based on government performance is a result of dynamic administrative system. Herein globalization offers extensive opportunities for truly worldwide development, but it is not progressing evenly. Some countries are becoming integrated into the global economy more quickly than others.

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In this regard, globalization is one of the main external factors with a wide range of influence, affecting environmental changes and creating new requirements. Therefore, by neglecting this fact as a common issue of developing countries, governments cannot cover the new environment characteristics.

Among all regions and countries, the MENA countries marginally differ in terms of political system, economy, ideology, demography, culture, race, and so on. Furthermore, government performance in the MENA countries is often referred to as third world or developing countries. Along with globalization trends, the important factors influencing administrative reforms in developing countries are (a) social and cultural, (b) economic, (c) political, and (d) administrative characteristics (Atreya 2002), but the MENA countries have some special problems.

Reports from the MENA region indicate that the main problems of these countries (except two or three countries) are instability, extensive or thematic poverty, and several major economic challenges due to their common culture and administrative structure. In this regard, the government performance of some countries which have less poverty and economic problems depends on their oil-based situation, political power, and international relationships. However, countries like the United Arab Emirates are caching up in these areas. Due to strategic geographical and environmental situation of MENA countries, the political system of them prevails over the country's technical, cultural, and economic system. In general, these countries can be divided into two categories:

1. Countries with stable political system, structural cohesion, and even progressive economy
2. Countries with unstable political system and declining economy

It is now clear that in the contemporary context of globalization and in the knowledge-based society, managerial activities need more development to have an increasingly bigger significance, and undoubtedly the role of government has been changing rapidly particularly in the developing and MENA region.

The point is that under the highlight of globalization trends, how do MENA countries react to changes? Generally, MENA countries based on their profiles do not have comprehensive fit to global society, and this chapter intends to examine the performance of the administrative system reforms of the MENA region in order to obtain the best fit to global landscape. In addition, it tries to develop the role of administrative system reforms to reduce the challenges of globalization in MENA countries.

2 Literature Review and Concepts

Globalization and administrative system are complicated issues, and their concepts basically have socioeconomic aspects. This section looks at literature concerns with the meaning of globalization regarding public administration reform.

2.1 An Overview of Globalization

Globalization is not a new phenomenon from the historical point of view. In fact, interdependence and interconnections among nations and peoples have a long history, which can be dated in parts of the world as early as the sixteenth century or even earlier during the time of the Roman, Hellenistic, and even Persian Empires (United Nations 2001), but the process has greatly accelerated during the past decades.

Historically, the evolution of globalization may be traced back and have begun about 2000 years ago with the creation of the Silk Road; no definitive starting point has been identified for this phenomenon. The Silk Road was an ancient network of trade routes which were central to cultural interaction for centuries, originally through regions of Eurasia connecting the East and West and stretching all the way to and from the Korean Peninsula. Thus, the Silk Road encompassed essential elements that are now labeled as globalization (Habich and Nowotny 2017). In this manner, globalization is a highly relevant issue for economy and politics.

Globalization is a complex and multidimensional phenomenon and impacts on societies in ideological, economic, financial, technological, social, cultural, communication and information technology, environmental, political, and many other aspects. Moreover, globalization can be considered as a process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital, and goods (Clark 2000; Norris 2000).

Globalization in the context of this chapter is the result of process that different economies and societies become more closely integrated and construct emerging communities and new societies. It refers to the developing process of nonlinear interconnections (complex connectivity) between nations, culture, institutions, communities, groups, and individuals in the compression time and space manner (Tomlinson 1996).

Globalization is the trend toward increasing integration, and it is the driving force for the diffusion of innovations, but globalization does not only counteract the borders and reduce trade barriers between countries; it is also a set of change generator. The International Monetary Fund (IMF) identified four basic aspects of globalization:

– International trade and transactions
– International movement of capital and investment
– Migration (movement of people)
– International dissemination of knowledge (IMF 2000)

There are diverse interpretations with regard to the meaning, intensity, dimension, extent, cause, and consequence of globalization in existing literature (Haque 2002). Government restructuring, economic deregulation, political and business relationship development, financial liberalization, and increased flows of goods and

Table 1 Phases of globalization

Phases	First phase From the early fifteenth until the nineteenth century (specially 1945)	Second phase From 1800	Third phase From 2000 to the present time
Impulse	The Renaissance and the Enlightenment (beginning of modern geography, e.g., nautical developments)	Industrial Revolution	Information revolution (formation of multinational and supranational entities)
Main factors and process	Natural resources and labor, factor-seeking. Trade is rare	Physical capital, market seeking. Trade is rare but regular	Human capital, cultural-ideological effect, market/technology seeking. Trade increases hugely
Human and society	To get the God's religion to the pagans	Burden of the white man, racialist theories, individuality	Highest level of civilization and great convergence
Dimensions	Countries globalize	Companies globalize	Individuals globalize
Forms of political structure	Rise of empires, colonization and first developed states	Nation and mature states	Network and global governance forms, regional and economic integrations
Result	Colonialism and expansionism	Anarchism and imperialism	Globalization

Source: Yaman (2001) and Borcuch et al. (2012)
Authors' own table

services—underpinned by the developments in information and communication technology—have distinguished the phase of globalization (Bhattacharya 2004).

Holistic perspective has identified globalization at least in three distinct but interrelated implications: first, to describe the economic phenomenon of increasing integration of markets (include trade, finance, flows of information and technology, and offshoring) as the main driver of global growth across political and geographical boundaries; second, to describe the political phenomenon of falling government as construction of political plays and imposed barriers to international flows of goods, services, and capital; and finally, to describe the broader political phenomenon of the global spread of market-oriented policies in both the domestic and international spheres at which processes of internationalization interact (Lindsey 2002).

According to Held et al. (1999), globalization is analyzed in five steps: (1) the domain and extent of networks; (2) patterns of relations and their connections; (3) the intensity of activities, processes, and flows through those networks; (4) timing and speed of the interchanges; and (5) the results and consequences of interactions.

As scholars have mentioned, globalization has been accompanied by the creation of new legal regimes and legal practices and the expansion and renovation of some older forms that bypass national legal systems (Sassen 2000). Therefore, globalization did not evolve linearly but rather in phases. According to different authors, growth of globalization can be categorized into three phases (Table 1).

Evolution of globalization stages indicate development of information and communication technologies brings changes to all areas of our everyday life. As a result, the globalization with the revolution of information technology has been dramatically changing human behavior, management of corporations, and governance of states much more than the industrial revolution transformed the agricultural society (Kim 2008).

Streeten (2001) states globalization is transforming all aspects of national and global activities and variables such as trade, finance, production, employment, immigration, knowledge, technology, communications, power, the environment, social systems, ways of living, cultures, humanity, patterns of governance, societies, and world order. Globalization does limit the independence of national governments in some dimensions. Governments have many degrees of freedom to balance their national and international relations and manage the complex interaction between trade, capital, labor, and technology, on the one hand, and national culture and environment, on the other (World Bank 2002).

As countries, particularly developing countries, have become more open in the recent years, the concern about globalization and its different effects on economic growth, poverty, inequality, environment, consumption patterns, and cultural dominance has increased (Bhandari and Heshmati 2005; Baldwin and Forslid 2000). There are some forces that lie behind globalization and drive it. These forces are summarized as follows (United Nations 2001):

- Trade and investment liberalization policies and reduction in multilateral trade barriers
- Technological innovation and the reduction in communication and transportation costs
- Entrepreneurship
- Global social networks and increase in consumer demand

These forces create a competition between countries to have a better adaptation to the environmental changes. In the globalization era, the key of being successful for each country might be the access, the utilization, or the distribution of knowledge. Informatization is a word rarely used when talking about globalization (Habich and Nowotny 2017). Advanced information system is usually available only in developed countries, while many developing countries are limited in the application of advanced information technology to public management (Kim 2008). Accordingly, the main target of the globalization process is the nation states and performance of governments especially through digitalization.

Good governments protect property rights and individual freedoms, keep regulations on businesses to a minimum, provide an adequate (efficient) level of public goods (e.g., infrastructure, schools, health care, police protection, court system), and are run by bureaucrats who are generally competent and not corrupt (La Porta et al. 1999). Globalization changed dramatically the priorities of public administration because of the modification and the extension of administrative actions both inside and outside the states (Purec 2013).

In many countries, on the one hand, pressure to increase the capacity and efficiency of governance has led to efforts to improve cooperation and coordination between the many different levels of government (Halligan 2007), and on the other hand, central government would like to exert more control over local activities and services, despite the fact that local government would prefer to enhance its autonomy in both a political and an administrative and professional sense.

2.2   Public Administrative Reforms Under Globalization

Global forces demand fundamental changes of the social, economic, political, and administrative systems throughout the countries (Kim 2008), and public administration does not exist in a vacuum, and it is largely shaped by the political and social context in which it operates. At the same time, public administration responses can in turn shape external factors, most notably in financial terms, as evinced by the financial crisis.

Public administration that has been changing with the effect of globalization process has been seen in the efforts of adapting to today's changing conditions and new requirements. In fact, one of the factors often mentioned to explain administrative reform activities is globalization, a complex phenomenon linked to the internationalization of markets, the increased transnational transactions in goods and services, the success of multinational corporations, the spread of new information technologies, and the extension of the effects of national decisions beyond states' territorial boundaries (Cassese and Savino 2005).

Undoubtedly, public administration is one of the main tools through which the relationship between the state, civil society, and private sector is realized (Batalli 2011), and it reflects the institutional foundations of how countries are run (Holmberg and Rothstein 2012). In this regard supporting public administration innovations enables achieving higher development objectives in particular economic advantages, poverty reduction, harmony, and institutional stability.

Over the last three decades, we have seen extensive reform efforts in the public sector all around the world, and most governments initiated at least one or two major programs, in a variety of names, directed at reforming. Reforms have focused on the change of core government functions and government capacity building for global competitiveness. The impact of global forces on public administration, however, is remarkably different among countries, especially between Western and non-Western countries (Yeh 2010), and by dividing government reforms over the decades into two parts, we can see a fair distribution of reform efforts between developed and developing countries. Besides this shared general expectation, however, governments began their reform activities with different focuses and orientations.

For some countries government reform and innovation involves the reform of an old bureaucracy in the context of a newly democratic state, and for some other countries, it started with the NPM reforms (Pollitt and Bouckaert 2004). These reforms contained an extensive agenda of administrative reform, including major

restructuring at the center of government and in the civil service (Christensen et al. 2007). Government reform and innovation for very different reasons is a global phenomenon. In some countries this movement has been called reinventing government; in other countries it is referred to as building state capacity or modernization of the state, and in other countries, this is named the New Public Management (Kamarck 2003). We now also see the spread of some post-NPM ideas and practices. Based on similarities, administrative system reforms are divided into five categories as below (Yeh 2010):

1. Organizational changes
2. Governance model and managerial technology changes
3. Operational changes
4. Process changes
5. Human resource change

Generally, the primary force of reform in the first decade happened in the developed world, ignited by Prime Minister Margaret Thatcher of the United Kingdom (Walters 1986) and later by US President Ronald Reagan (Oberfield 2005). The focus was on reducing government workloads through privatization and economic liberalization. These efforts transcended into the second decade domestically but also triggered similar reforms in other countries such as New Zealand, Australia, Canada, Japan, and other OECD countries (Yeh 2010), and in the second decade, beginning in the 1990s and carrying through the new millennium, a trend of reform was launched by new democracies or newly industrialized countries notwithstanding other developed countries carrying their course of reforms even further (Kamarck 2003) (Table 2).

The key concept all over the world is administrative reform with regard to the productivity of governance. Today the concepts such as good governance, e-state, confidence, social capital which reveals the society's direction of self-perpetuation, increment in the organizational power and capacity, consolidation of the producer, and regulatory potential have substituted these key concepts (Temizel 2015).

The "public administration" and the "new public management" will co-exist with increasing pressure to adopt the new in the era of globalization (Chittoo and Gaojie 2003). The pace and significance of globalization place increasing emphasis on transnational governance rather than on national administration (Koppell 2010). The concept of governance became a current issue with discussions of change and transformation in public administration (Temizel 2015) (Table 3).

Public administration in both developed and developing countries tends to respond differently to the challenge of global forces, and the development from pre-NPM, through NPM, to post-NPM is cyclical and dialectical in nature. Today, public sector reforms aim to enhance performance for public servants as well as in the administrative institutional design. As a matter of fact, market forces and market model principles have increasingly made public administration more like business. Like business administration, public administration has been increasingly focusing on efficiency, effectiveness, productivity, performance, accountability, responsiveness, and flexibility by adopting techniques mainly used in corporations (Kim 2008).

Table 2 The reforms of the 1990s and 2000s and their institutional mechanisms

Topic	Institutional mechanisms
Fiscal adjustment	• Control/reduction of public expenditure • Privatization of public functions • Tax reforms • Expanding customer choice
Management efficiency	• Decentralization • Managerial reforms • Information management systems • Introducing market mechanisms • Adapting to culture change • Outsourcing public services • Quality and value • Meeting citizen expectations
Capacity building	• Capacity building of human resources • Creating career and salary structures • Census of civil servants and reclassification of their posts • Self-regulating partnership • Evaluation and monitoring of management • Change management • Strategic rationality, incentive system, and citizen interest • Civil society participation
Accountability	• Greater interface with users of services • Service delivery systems and quality of service rendered • Reform of legal structures and continuously improving of process • Development of a management • Managing the outputs by assessing the objectives • Services to the citizen-consumer • Whole of Government Accounting and comprehensive reports

Source: Bangura (2000) adapted by Rezende (2008)
Authors' own table

Correspondingly, corporate governance involves a network of relationships between corporate managers, directors, and providers of equity or stakeholders. Interest in corporate governance is now truly global, reflecting recognition by world leaders, business leaders, and investors that the quality of corporate governance is a factor in the ability of a nation's economy to thrive (Gregory 2000).

With the coming age of globalization, governments around the world will face the challenges in the new century of complex governance from both internal and external environments (Lin and Lee 2011), and public administration reform is a recurrent issue in most countries (Hammerschmid et al. 2013). One reason is that during this turbulent knowledge-oriented era and under pressure of globalization forces, simple linear administrative systems are no longer able to face the current openness, diversity, resource constraints, and uncertainty.

Generally, the impact of globalization is mixed in terms of its effect on aspects of public administrative system (Meenu 2013). They are such as below:

1. Public-private partnership
2. Competition in public sector

Table 3 Comparison among the pre-NPM, NPM, and post-NPM reforms

Dimensions of analysis	Comparative evidence
Reasons for the emergence of the reforms	• Management reforms are caused by the combination of structural factors such as fiscal crisis, globalization, democratization, performance deficit, raising of management efficiency • From a national view of reform to a view on reform that includes interaction and cooperation of international actors and cross-national drivers • Isomorphic processes of spreading policy paradigms
Theoretical roots	• Political theory, bureaucratic system, political and administration dichotomy (pre-NPM) • Economic theory with public choice, modern management techniques, market ideology (NPM) • Institutional theory, complex social system, and governance theory with network studies (post-NPM)
Structure-shaping mechanisms	• Establishing specialized government agencies • Uniform and loosely defined provision to delivery networks • Decentralization of functions to local governments and exclusivity of nongovernmental actors in public policies. Emergence of hybrid models of governance • Privatization of public functions with the expansion of markets into providing public services (NPM and post-NPM) • Plural and pluralist, setting up networks of public, nonprofit, and private agencies agreed upon shared values and value creation in network (post-NPM)
Role of government	• Roles and images of government changed from rowing, designing, and implementing policies and paternalistic to steering, empowering, serving, and creating public values and in more developed countries to negotiating interests with stakeholders
Role of citizen	• Changed from leader to customer and participator in decision
Funding	• Higher-income countries fund their own reform policies. Developing countries depend on funding from multilateral agencies in order to produce institutional reforms
Focusing	• Management reforms aim at promoting redefining the role of the state, increasing accountability, management capacity building, and management efficiency. Considerable variability of focusing strategies among countries • From emphasis on the political system to productive delivery and getting things done and now ability to understand and procure intelligent technical systems for multidimensional solutions • Post-NPM emphasis on reassertion of state • NPM has an intraorganizational focus and post-NPM focus on relations between governments and others
Dominant tools for accountability	• Hierarchy (pre-NPM) • Output, result and market-drive-outcomes, and traditional contracts (NPM) • Multifaceted: return to central coordination, integration, relational contracts, and political process (post-NPM)

(continued)

Table 3 (continued)

Dimensions of analysis	Comparative evidence
Rules versus authority	• Hands-on management skills (pre-NPM) • Contingent tools and boundary-spanning skills and collaboration (NPM) • Intelligence tools and information and communication technologies (post-NPM)
Nature of control	• From vertical performance of single organizations to horizontal performance of the network of organizations • Conformity to procedures and political and administrative control (pre-NPM) • Institutional autonomy and producing productive results (NPM and post-NPM) • Impacts control (post-NPM)

Source: Han and Kim (2017), Christensen and Lægreid (2011), and Rezende (2008)
Authors' own table

3. Efficiency
4. Effectiveness
5. Transparency
6. Responsiveness
7. Accountability
8. People participation
9. Business principles
10. Specialization
11. Use of IT and knowledge exchange
12. Increase in productivity
13. Decrease in number of employees
14. Labor relations
15. Citizens satisfaction

Therefore, we can conclude that public administration reforms and globalization are closely interrelated and interlinked with each other in a dynamic adaptive manner.

Over the last few decades, OECD countries have implemented administration reforms in order to improve the performance of governments in a wide range of domains, with a view to enhancing living standards and prosperity by raising labor utilization and productivity and increasing the resilience of the economy to shocks. However, administration reform activities in MENA region countries because of their strategic characteristics (as resource-based economy, oil and gas resources, geographical location and recent wars, the rule of political power, etc.) are different, and administrative system and the relationship between development agent in these countries (public sector, private sector, NGOs, and people) are more complex. Thus, complexity theory can enhance our understanding of phenomena and challenge our basic assumptions about governance (Buuren and Teisman 2007).

Based on the literature review, it is understood that globalization causes administrative systems to have unpredictable and complex dynamics. Some authors

(Robertson and Choi 2010) foresee public administration reforms as adapting to large trends in society, moving from a mechanistic view of the world to a more ecological approach. This is because stable equilibriums at national level of countries can be suddenly disrupted by unexpected events through internal and external changes. Therefore, adaptability is one of the central themes in dynamic administrative reform activities, and besides the above concepts, self-organization and coevolution are also very relevant to public administration. As a result, in the shadow of globalization, the MENA administrative systems are in need of substantial administration reform to improve their government performance and to grow their governance network. They need to create linkage with features of globalization.

In order to study administration reform behavior of MENA countries and the level of their adaptability under globalization pressures, the influence of globalization and government performance is examined. In this study, government performance is considering a better provision and use of public services, related welfare outcomes, and the performance of all actors to improve the level of country development. They are all outputs of public administration reform activities.

3 Data and Methodology

The objective of this study is to evaluate various implications of globalization on government performance and administrative system in MENA countries.

The key variables to be considered are globalization, economic governance (entailing government effectiveness, regulation quality, and e-government), political governance (political stability), institutional governance (corruption control), and general governance.

This chapter examines a panel of 18 MENA countries with data from KOF Globalization Index, World Governance Indicator of World Bank, e-Government Development Index, and Governance Rank of the Legatum Prosperity Index for the period 2010–2017. The periodicity is chosen because of constraints in data availability. Good governance measurements from the World Bank Governance indicators are only available from 1996, while the latest year for general governance variable is 2010.

The study is a descriptive survey and was done with the aim of calculating the coefficients and the weight of each government performance indicators in MENA countries and identifying the relationships between these variables and globalization. A conceptual model is shown in Fig. 1.

Based on the conceptual model, a correlation is run to test the relationship between government performance as a result of administrative reforms and globalization across MENA countries. Then a regression analysis is run to determine the causal effect of government performance indicator on the globalization through public administration reforms, and finally characteristic patterns of behavior are developed.

Leading indicators are defined as:
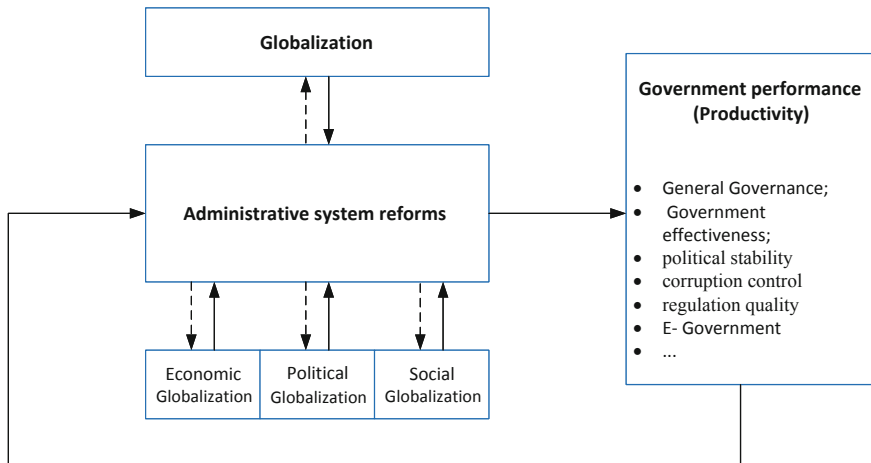
Fig. 1 Conceptual model. Authors' own figure

The Worldwide Governance Indicators[1] Report aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2016, for six dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Out of these six indicators, four indicators that are more directly linked to the systematic reform of the administrative system were selected.

Government Effectiveness Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Regulatory Quality Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Control of Corruption Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Political Stability Measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.

e-Government Development Index[2] The EGDI assesses national websites and how e-government policies and strategies are applied in general and in specific

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[1].World Bank Group. http://info.worldbank.org/governance/wgi/#home

[2]UN e-Government Development Index (EGDI). https://publicadministration.un.org/egovkb/en-us/about/methodology

sectors for delivery of essential services. The assessment rates the e-government performance of countries relative to one another as opposed to being an absolute measurement. The results are tabulated and combined with a set of indicators embodying a country's capacity to participate in the information society, without which e-government development efforts are of limited immediate use. Mathematically, the EGDI is a weighted average of three normalized scores on three most important dimensions of e-government, namely, (1) scope and quality of online services (Online Service Index, OSI), (2) development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII), and (3) inherent human capital (Human Capital Index, HCI).

The Governance[3] This pillar measures a country's performance in three areas—effective governance, democracy and political participation, and rule of law.

Globalization Index[4] This measures the economic, social, and political dimensions of globalization. Globalization in the economic, social, and political fields has been on the rise since the 1970s, receiving a particular boost after the end of the Cold War.

4 Public Administration Reforms Under Globalization: An Experience from MENA Countries

4.1 MENA Countries Definition (http://istizada.com/mena-region; https://www.investopedia.com/terms/m/middle-east-and-north-africa-mena.asp; http://istizada.com/mena-region)

The Middle East and North Africa (MENA) is a diverse region encompassing approximately 20 countries whose development potential has yet to be fully unleashed. While there is no standardized list of which countries are included in the MENA region, the term typically includes the area from Morocco in northwest Africa to Iran in southwest Asia and sometimes down to Sudan in Africa.

Despite current geopolitical challenges, the MENA region accounts for approximately 6% of the world's population, 60% of the world's oil reserves, and 45% of the world's natural gas reserves. Due to the region's substantial petroleum and natural gas reserves, MENA region is an important source of global economic stability.

In addition, countries in the region benefit from a privileged geographic location situated at the crossroads of Europe, Africa, and Asia; a young and increasingly

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[3]The Legatum Prosperity Index. http://www.prosperity.com/

[4]KOF Globalization Index. https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html

educated population; and great potential in sectors such as renewable energies, manufacturing, tourism, and business development services.

However, while the term MENA is almost always inclusive of Iran, it is typically not inclusive of Turkey, Afghanistan, or Pakistan and is strictly geographically defined, rather than religiously or socially.

For example, Armenia, Azerbaijan, Djibouti, Mauritania, Somalia, Sudan, Turkey, and Western Sahara are countries sometimes considered MENA (Table 4).

4.2 Empirical Results

The MENA region has become a "penetrated system" since the nineteenth century, where major political developments such as the very creation of the state system have been initiated, shaped, or controlled by external actors (Csicsmann et al. 2017), and whether rapid or slowing, globalization has posed major economic and political challenges to the MENA countries and has supported public governance reform and modernization efforts in this region. In summary, public governance reform in the MENA rests on four interconnected pillars: (1) human resources and capacities, (2) public finance, (3) regulatory policies and the rule of law, and (4) policy-making capacity (OECD 2010).

To start to consider the relationship between globalization and government performance and to determine the role of administrative system reforms as mentioned before, comparative and correlation analyses were conducted for main variables, and behavioral patterns were generated for key indicators of each MENA country over the selected time at first level, and the correlations between globalization and each administrative system reform indicator (output variables) were examined at second level.

In order to summarize the findings and to focus on results of administration reform activities, patterns of behaviors in each MENA country are presented in Fig. 2.

In addition, the relationship between globalization and the effects of implementing administrative system reforms in MENA region was also examined for two different years. The purpose of this test is to understand the trend of adaptability between globalization and government performance (Tables 5 and 6).

5 Conclusion and Future Perspective

5.1 Discussion and Conclusion

Globalization has always remained an important issue among policy-makers and researchers in the public management and administrative system planning field due to lack of consensus on this subject. Potential unresolved issues about globalization

Table 4 MENA region countries list 2018

| No	Country	Population 2016 (World Bank databank) Million	GDP PPP-$ 2016 (United Nations databank)	HDI rank 2016 (From 154 Country)	No	Country	Population 2016 Million	GDP PPP-$ 2016	HDI rank 2016
1	Algeria	40.6	15,013.3	83	11	Morocco	35.3	7710	123
2	Bahrain	1.4	–	47	12	Oman	4.4	–	50
3	Egypt	95.7	11,248.8	111	13	Qatar	2.6	127,480.5	33
4	Iran (Islamic Republic of)	80.3	19,948.8	69	14	Saudi Arabia	32.3	54,416.6	38
5	Iraq	37.2	17,348.9	121	15	State of Palestine	4.6	5080.8	–
6	Israel	8.5	37,472.3	19	16	Syrian Arab Republic	18.4	–	149
7	Jordan	9.5	9047.8	86	17	Tunisia	11.4	11,595.5	97
8	Kuwait	4.1	74,264	51	18	United Arab Emirates	9.3	72,399.7	42
9	Lebanon	6	14,308.8	76	19	Yemen	27.6	2080.5	168
10	Libya	6.3	–	102					
MENA region			435.5 million		MENA region GDP PPP-$			19,519	
World population			7.444 billion		World region GDP PPP-$			16,216.9	

Authors' own table
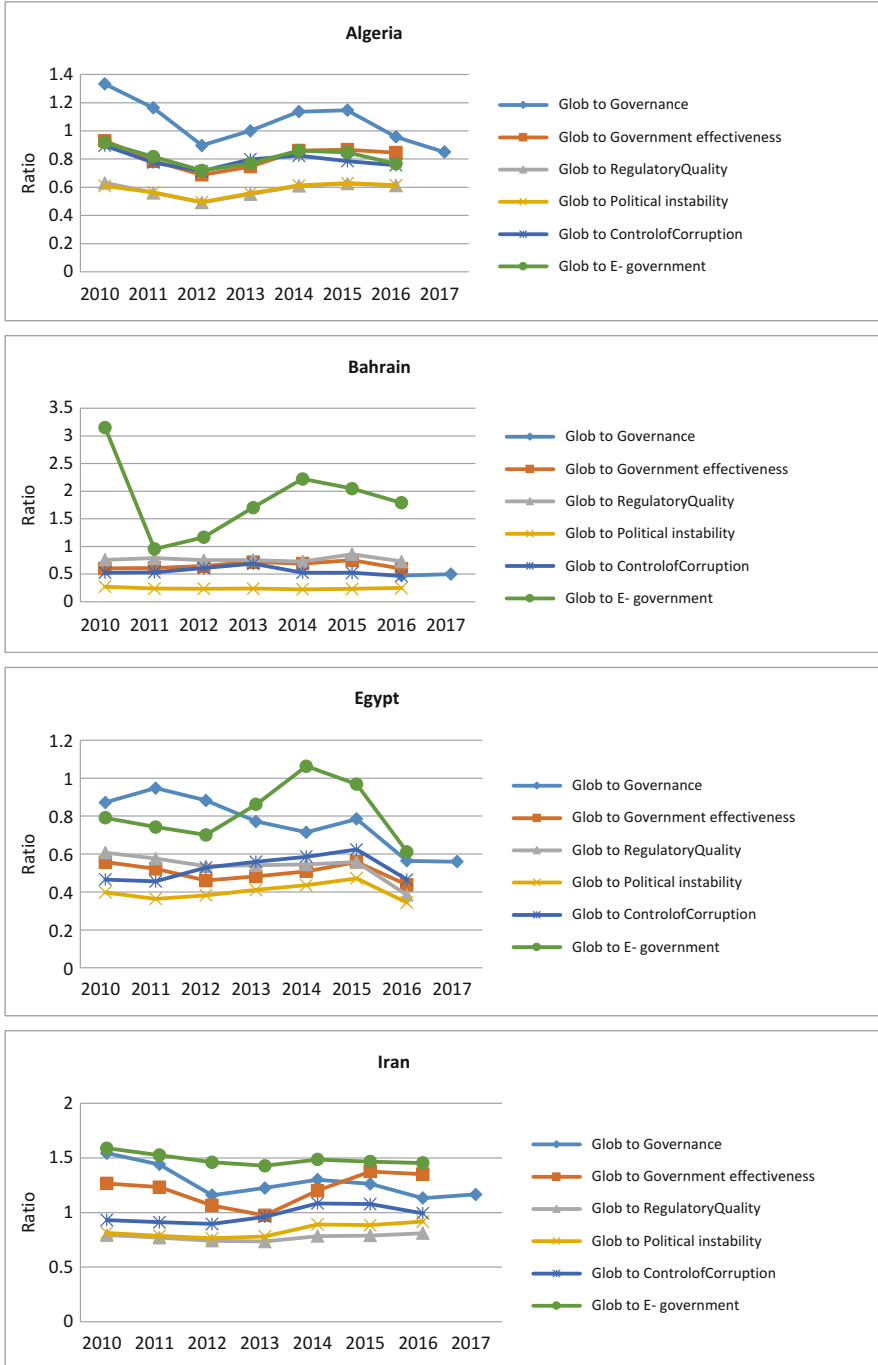
Fig. 2 Results of comparative analysis for 18 MENA countries. Authors' own figures
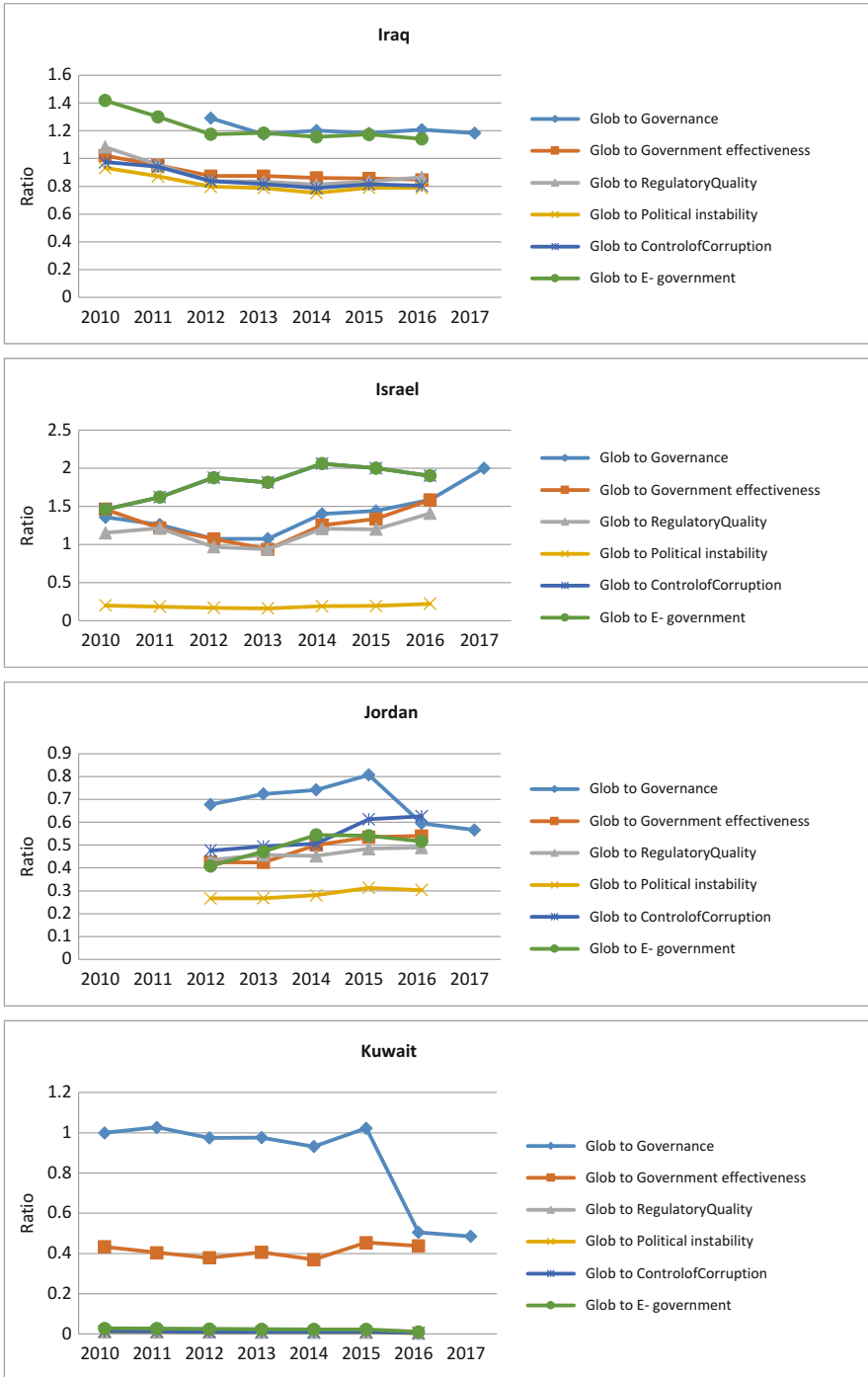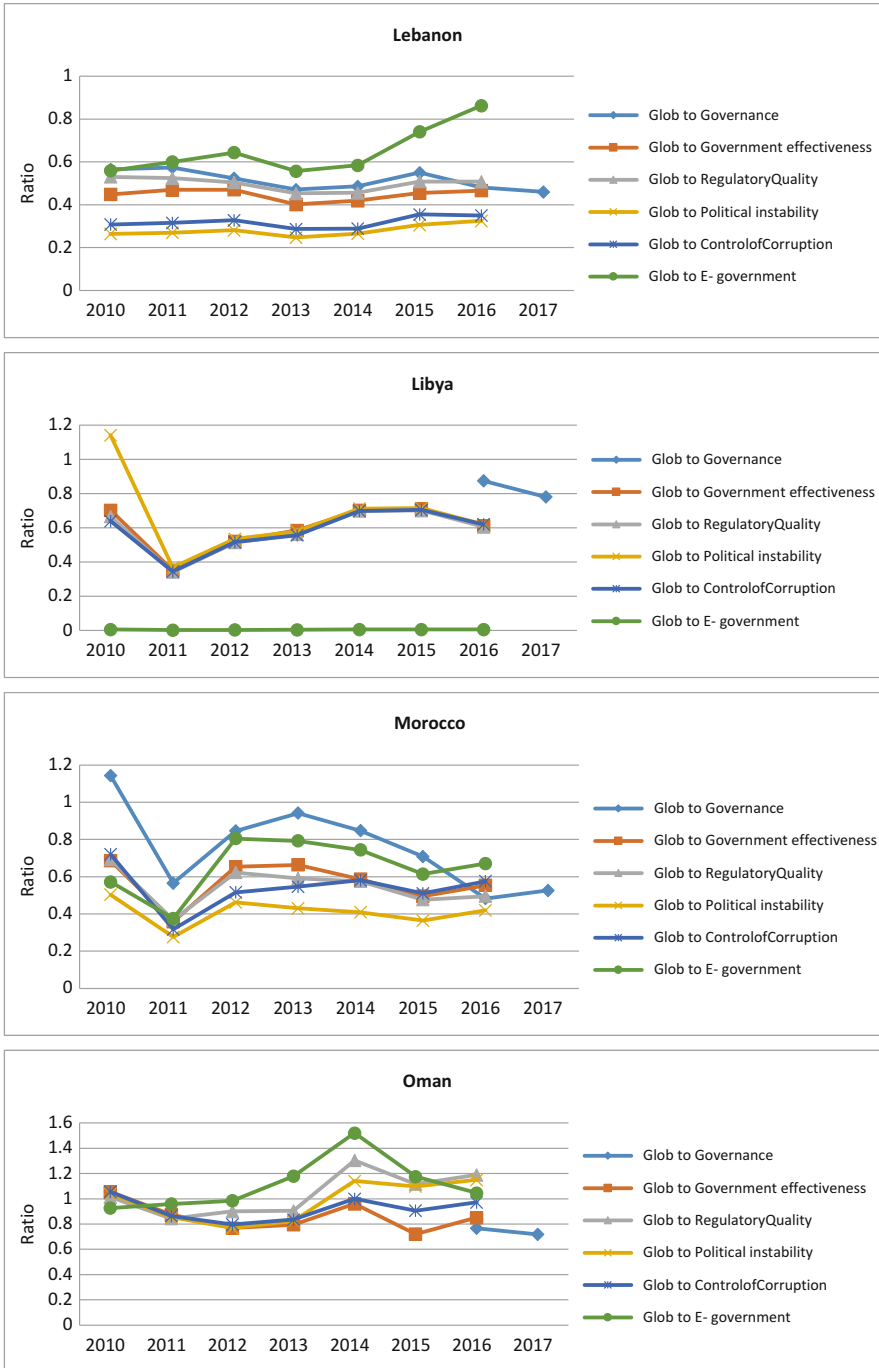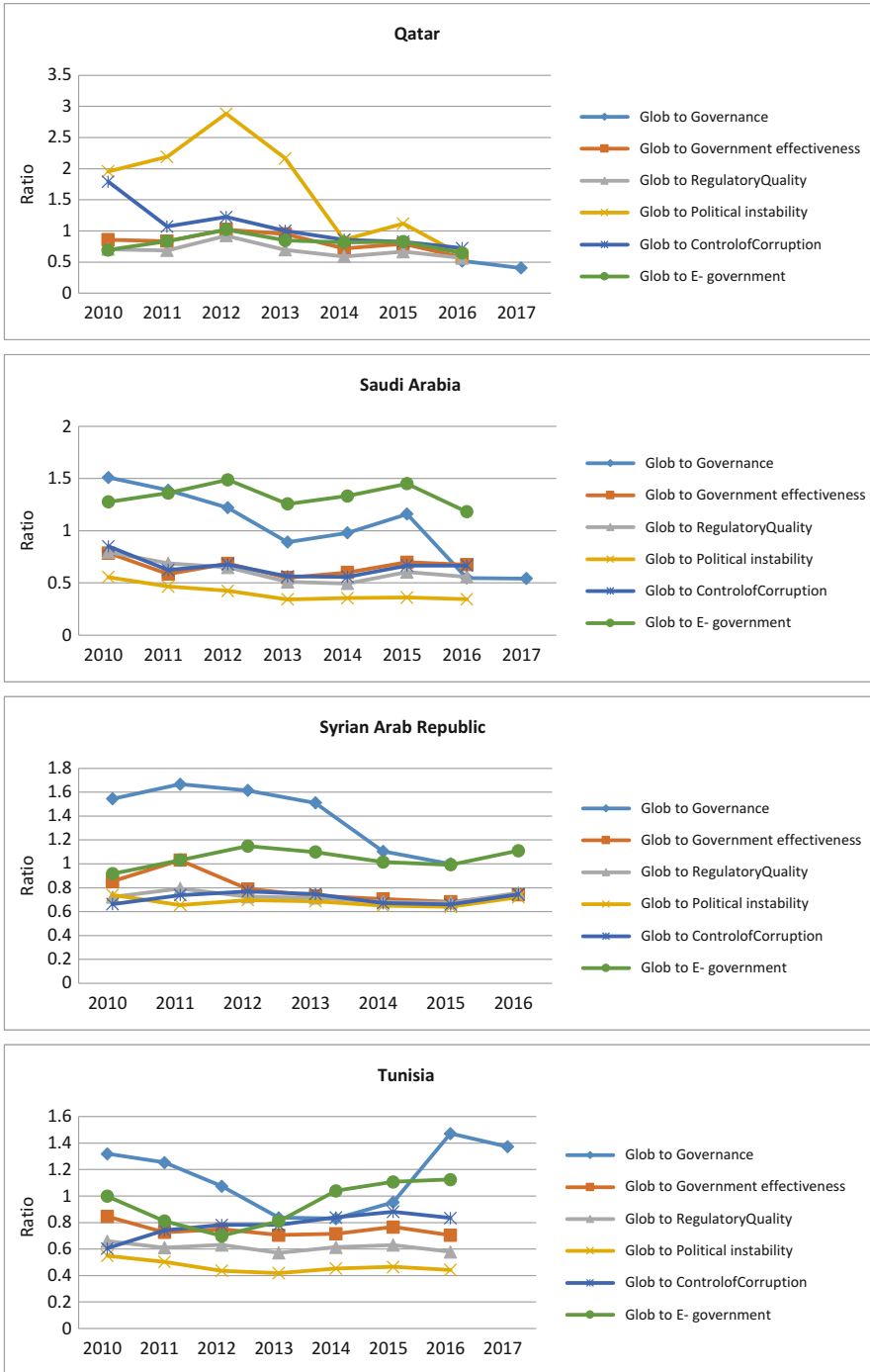
Fig. 2 (continued)

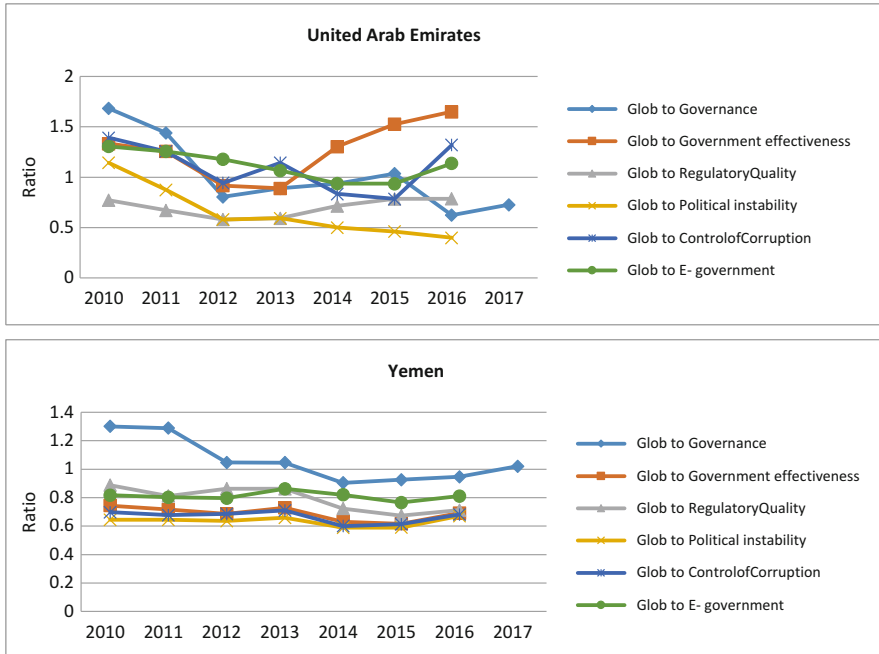**Fig. 2** (continued)

Fig. 2 (continued)

Fig. 2 (continued)

are its impact on government performance in both developed and developing countries and the role ambiguity of public administration reforms. The present study attempts to explore interlinks between globalization and government performance based on administrative system reform activities.

Studies indicate there is little information about the role and effect of public administration reform activities in this area, and most documents focus on the status of developed countries or, in particular, OECD countries. The analysis presented here is based exclusively on the available comparative public administration and globalization indicators.

Results of all specifications based on correlation analysis show that administrative system reforms have positive and statistically significant effect on adaptability of governments to meet globalization needs in MENA countries, and it is very evident that MENA region has adopted an approach to public administration that reflects its history and its cultural, geopolitical, socioeconomic, and conflictive environments. Despite this fact, findings from comparative analysis in each country indicate globalization has negative impact on general governance in this region. According to definition of general governance indicator, democracy and political participation pillar is a component that is extremely sensitive to globalization.

Based on analysis and at the first level of analysis, it is concluded that in most MENA countries, especially in Bahrain, Egypt, Iran, Israel, Kuwait, Lebanon, Libya, Syria, Tunisia, and the United Arab Emirates, the direction of globalization

Table 5 Correlation between globalization and government performance indicators—2010

Indicators		Governance	Gov. effectiveness	Regulatory quality	Political instability	Control of corruption	e-Government development	Globalization
Governance	Pearson correlation	1	0.833	0.785	0.647	0.922	0.850	0.812
	Sig. (2-tailed)		0.000	0.001	0.017	0.000	0.000	0.001
	N	13	13	13	13	13	13	12
Gov. effectiveness	Pearson correlation	0.833	1	0.870	0.587	0.925	0.829	0.805
	Sig. (2-tailed)	0.000		0.000	0.011	0.000	0.000	0.000
	N	13	18	18	18	18	18	17
Regulatory quality	Pearson correlation	0.785	0.870	1	0.551	0.844	0.739	0.845
	Sig. (2-tailed)	0.001	0.000		0.018	0.000	0.000	0.000
	N	13	18	18	18	18	18	17
Political instability	Pearson correlation	0.647	0.587	0.551	1	0.709	0.522	0.555
	Sig. (2-tailed)	0.017	0.011	0.018		0.001	0.026	0.021
	N	13	18	18	18	18	18	17
Control of corruption	Pearson correlation	0.922	0.925	0.844	0.709	1	0.801	0.799
	Sig. (2-tailed)	0.000	0.000	0.000	0.001		0.000	0.000
	N	13	18	18	18	18	18	17
e-Government development	Pearson correlation	0.850	0.829	0.739	0.522	0.801	1	0.772
	Sig. (2-tailed)	0.000	0.000	0.000	0.026	0.000		0.000
	N	13	18	18	18	18	18	17

Table 5 (continued)

Indicators		Governance	Gov. effectiveness	Regulatory quality	Political instability	Control of corruption	e-Government development	Globalization
Globalization	Pearson correlation	0.812	0.805	0.845	0.555	0.799	0.772	1
	Sig. (2-tailed)	0.001	0.000	0.000	0.021	0.000	0.000	
	N	12	17	17	17	17	17	17

Authors' own table

Table 6 Correlation between globalization and government performance indicators—2016

Indicators		Governance	Gov. effectiveness	Regulatory quality	Political instability	Control of corruption	e-Government development	Globalization
Governance	Pearson correlation	1	0.858	0.812	0.558	0.882	0.753	0.770
	Sig. (2-tailed)		0.000	0.000	0.016	0.000	0.000	0.000
	N	18	18	18	18	18	18	18
Gov. effectiveness	Pearson correlation	0.858	1	0.920	0.708	0.958	0.862	0.819
	Sig. (2-tailed)	0.000		0.000	0.001	0.000	0.000	0.000
	N	18	18	18	18	18	18	18
Regulatory quality	Pearson correlation	0.812	0.920	1	0.724	0.914	0.900	0.880
	Sig. (2-tailed)	0.000	0.000		0.001	0.000	0.000	0.000
	N	18	18	18	18	18	18	18
Political instability	Pearson correlation	0.558	0.708	0.724	1	0.768	0.595	0.615
	Sig. (2-tailed)	0.016	0.001	0.001		0.000	0.009	0.007
	N	18	18	18	18	18	18	18
Control of corruption	Pearson correlation	0.882	0.958	0.914	0.768	1	0.832	0.852
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
	N	18	18	18	18	18	18	18
e-Government development	Pearson correlation	0.753	0.862	0.900	0.595	0.832	1	0.849
	Sig. (2-tailed)	0.000	0.000	0.000	0.009	0.000		0.000
	N	18	18	18	18	18	18	18

Table 6 (continued)

Indicators		Governance	Gov. effectiveness	Regulatory quality	Political instability	Control of corruption	e-Government development	Globalization
Globalization	Pearson correlation	0.770	0.819	0.880	0.615	0.852	0.849	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.007	0.000	0.000	
	N	18	18	18	18	18	18	18

Authors' own table

effect on development of e-government differs from other indicators. Undoubtedly, progress in the e-Government Development Index is not necessarily dependent on the reform of the administrative system at all. The nature of development status of telecommunication infrastructure and other similar subindexes is different from other indicators, and most of the administration reform activities relate to policies, management systems, structures, and soft administrative technologies.

Control of corruption and government effectiveness in most countries have similar effect on globalization. And according to pattern of behaviors, the behavior of reform activities about control of corruption, quality of regulations, and government effectiveness against globalization is almost the same, and patterns of behavior are oscillatory.

It is important to note, however, the political instability is a critical issue for all MENA countries; its behavior has a specific pattern.

Despite the fact that most of the countries try to improve their government effectiveness level and some of them have higher economic growth, capacity building to face changes and diversity is not a main issue, and evidence obtained in this study shows that administration reforms are not an ongoing activity in most of MENA countries and they do not have a systematic behavior to adapt to global changes, such as Iran, Jordan, Kuwait, Morocco, Oman, and Syria.

At the second level, a synthetic analysis shows that globalization has a very significant correlation with regulatory quality and control of corruption and e-government effectiveness, while globalization affects all government performance indicators continually. Government performance is a result of administrative system adaptability, and the strong relationship between these variables means that the reform activities guarantee the continuity of government productivity improvement.

In addition, the findings show the regulatory quality has a very strong relationship with government effectiveness, control of corruption, and e-government development, whereas there is a moderate correlation between political stability and other variables in particular with governance and e-government development, and it is just significant at 0.05. The different behavior of this variable indicates that political systems of many of the studied countries are still in the process of transition from central planning to more efficiently administrative systems. That might be another possible explanation for why the effects of political stability on government effectiveness and performance are still weak.

Finally, it is important to note that (1) globalization and government performance have a nonlinear relationship and their pattern behavior is oscillatory and (2) public administration reform has a nonlinear effect on the relationship between the two examined variables as a mediator variable (e.g., differences between e-government development and political instability activities).

5.2   Policy Implications and Future Studies

This study presents and comments a selection of government performance indicators as a result of public administration reform activities. Of course, the selected indicators do not claim to give a comprehensive assessment of government and instead should be understood as a first step to better understand the status quo and progress in key areas of public administration reform. Because there is not a set of indicators related to government performance, this chapter tried to introduce variables and indicators for assessing the outputs and outcomes of public administration reforms.

Moreover, globalization has always remained a hot issue among researchers due to lack of consensus on the subject. A potential unresolved issue about globalization is its impact on governance and government performance. Adaptability of public administration reform programs with globalization trends is another important issue which is in the early stages of study. This chapter, therefore, has attempted to explain the role of administrative system reform under globalization forces.

The policy implications of this study are relatively straightforward. Administrative reform activities are only one part of the story of government performance improvement. The other is how to benefit more from globalization. In this respect, the responsibility of policy-makers is to improve the level of public administration adaptability to get more opportunities from globalization. These public policies are important not only in their own right but also in helping developing countries, in particular MENA countries to derive the benefits of globalization.

The major research limitation of this study was the failure to collect data about administrative reform activities for all MENA countries. Therefore, future research for all MENA countries would shed light on the systematic review of their administrative reform programs. In addition to improve the global knowledge, comparing the results of administrative reforms between developing countries (especially the MENA region) and developed countries to adapt with globalization is valuable.

References

Atreya B (2002) The applicability of new public management to developing countries: a case from Nepal. Doctoral dissertation. School of Management Faculty of Business and Law, Victoria University of Technology, Melbourne

Baldwin RE, Forslid R (2000) Trade liberalization and endogenous growth: a q-theory approach. J Int Econ 50:497–517

Batalli M (2011) Impact of public administration innovations on enhancing the citizens' expectations. IJEEEE 1(2):156–162

Bhandari AK, Heshmati A (2005) Measurement of globalization and its variations among countries, regions and over time. IZA Discussion paper 1578. The Institute for the Study of Labor (IZA)

Bhattacharya D (2004) Globalization and the state: human development and capacity building needs – a review of Asian country experiences. In Globalization and the state: challenges for economic growth and human development. United Nations, New York

Borcuch A, Piłat-Borcuch M, Świerczyńska-Kaczor U (2012) The influence of the internet on globalization process. J Econ Bus Res 1:118–129

Buuren AV, Teisman GR (2007) Implementing NPM: a complexity perspective on public administration reform trajectories. In: Pollitt C, van Thieland S, Homburg V (eds) New public management in Europe: adaptation and alternatives. Palgrave Macmillan, Basingstoke, pp 181–196

Cassese S, Savino M (2005) The global economy, accountable governance, and administrative reform. In: 6th Global forum on reinventing government. Towards participatory and transparent governance, Seoul, May

Chittoo HB, Gaojie (2003) Is new public management an outdated model? Century China, Hong Kong

Christensen T, Lægreid P (2011) Complexity and hybrid public administration – theoretical and empirical challenges. Public Organ Rev 11(4):407–423

Christensen T, Lie A, Lægreid P (2007) Still fragmented or reassertion of the centre? In: Christensen T, Lægreid P (eds) Transcending new public management. Ashgate, Aldershot, pp 17–42

Clark W (2000) Environmental globalization. In: Nye JS, Donahue JD (eds) Governance in a globalizing world. Brookings Institution Press, Washington, DC

Csicsmann L, Rózsa EN, Szalai M (2017) The MENA region in the global order: actors, contentious issues and integration dynamics. MENARA, Methodology and concepts papers 4

De Waal A (2010) Achieving high performance in the public service. Public Perform Manag Rev 34(1):81–103

Gregory HJ (2000) The globalization of corporate governance. Weil, Gotshal & Manges LLP, Global Counsel, 7(52). http://rru.worldbank.org/documents/globalisation of corporate gover nance.pdf

Habich J, Verena Nowotny (2017) A closer look at globalization: roots and remedies. Background paper. Trilogue Salzburg, pp 7–19

Halligan J (2007) Reform design and performance in Australia and New Zealand. In: Christensen T, Lægreid P (eds) Transcending new public management. Ashgate, Aldershot

Hammerschmid G, Görnitz A, Oprisor A, Štimac V (2013) Public sector reform in Germany: views and experiences from senior executives. Work package 3, country report Germany as part of the COCOPS research project (Coordination for cohesion in the public sector of the future)

Han C, Kim S (2017) The changing modes of administrative reform in South Korea. Transylv Rev Adm Sci 50(E):54–72

Haque MS (2002) Globalization, new political economy, and governance: at third world viewpoint. Adm Theory Prax 24(1):103–124

Held D, McGrew A, Goldblatt D, Perraton J (1999) Global transformations: politics, economics and culture. Polity Press, Cambridge

Holmberg S, Rothstein B (eds) (2012) Good government: the relevance of political science. Edward, Cheltenham

International Monetary Fund (2000) Globalization: threats or opportunity. IMF Publications, Washington, DC

Kamarck EC (2003) Government innovation around the world. Ash Institute for Democratic Governance and Innovation, John F. Kennedy School of Governance, Harvard University, Boston

Kim CK (2008) Public administration in the age of globalization. Int Public Manag Rev 9(1):39–55

KOF Globalization Index (2010–2017) Rankings. KOF Swiss Economic Institute, ETH Zurich. https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html

Koppell JGS (2010) Administration without borders. Public Adm Rev. 70(1):46–55. Special issue on the future of public administration in 2020

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny RW (1997) Trust in large organizations. Am Econ Rev 87:333–338

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny RW (1999) The quality of the government. J Law Econ Org 15(1):222–279

Lin JS, Lee PY (2011) Performance management in the public organizations: a complexity perspective. Int Public Manag Rev 12(2):81–96

Lindsey B (2002) Against the dead hand: the uncertain struggle for global capitalism. Wiley, New York

Lynn LE Jr (2001) Globalization and administrative reform: what is happening in theory? Public Manag Rev 3(2):191–208. https://doi.org/10.1080/14616670010029584

Meenu (2013) Impact of globalization and liberalization on Indian administration. Int J Mark Financ Serv Manag Res 2(9):120–125

Norris P (2000) Global governance and cosmopolitan citizens. In: Nye JS, Donahue JD (eds) Governance in a globalizing world. Brookings Institution Press, Washington, DC

Oberfield Z (2005) Measuring presidential success: Ronald Reagan, the states and welfare reform. In: Paper presented at the annual meeting of the Midwest Political Science Association, Palmer House Hilton, and Chicago, IL

OECD (2010) Progress in public management in the Middle East and North Africa: case studies on policy reform. Organization for Economic Co-operation and Development, Paris. ISBN 978-92-64-08206-9 (Print)

Olson M Jr (1996) Distinguished lecture on economics in government: big bills left on the sidewalk: why some nations are rich, and others poor. J Econ Perspect 10(2):3–24

Pollitt C, Bouckaert G (2004) Public management reform: a comparative analysis, 2nd edn. Oxford University Press, Oxford

Purec S (2013) Public administration and globalization. In: 4th international conference on finance, accounting and law (ICFA '13). Chania, pp 160–68. ISBN: 978-960-474-327-8 (Print)

Rezende F (2008) The implementation problem of new public management reforms: the dilemma of control and the theory of sequential failure. Int Public Manag Rev 9(2):40–65

Robertson P, Choi T (2010) Ecological governance: organizing principles for an emerging era. Public Adm Rev 70(1):89–99. Special Issue

Sassen S (2000) The state and the new geography of power. In: Kalb D et al (eds) The end of globalization. Rowman and Littlefield, Lanham

Streeten P (2001) Globalization: threat or opportunity? Copenhagen Business School Press, Handelshojskolens Forlag, Copenhagen

Temizel M (2015) Transformation of public administration and the approach of governance. Eur Sci J:216–227. ISSN: 1857 – 7881 (Print)

Tomlinson J (1996) Cultural globalization: placing and displacing the west. Eur J Dev Res 8(2): 22–35

United Nations (2001) Globalization and state. World public sector report. Department of economic and social affairs. Publication no. ST/ESA/PAD/SER.26. A United Nations Publication, New York

Walters A (1986) Britain's economic renaissance: Margaret Thatcher's reforms 1979–1984. Oxford University Press, New York

World Bank (2002) Globalization, growth and poverty: building an inclusive world economy. A World Bank policy research report. Co-publication of the World Bank. Washington & Oxford University Press, New York

Yaman S (2001) Historical development of globalization. http://w3.gazi.edu.tr/web/syaman/kuresellesme2.htm. Accessed 15 Mar 2008

Yeh J (2010) Globalization, government reform and the paradigm shift of administrative law. Natl Taiwan Univ Law Rev 5(2):13–141

The Evolution of Higher Education in Oman Under the Gravity of Globalization and Innovation

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Abstract Globalization is described as the driving force of innovation, knowledge, individual values, and ideas. The influence of globalization and internationalization in higher education institutions has become a key theme in recent research. Higher education institutions are influenced by the social and economic diversity originating from globalization. In the present knowledge society, various new ideas are associated with higher education institutions' instruction framework. For instance, entrepreneurial universities and corporation universities have emerged through the impact of globalization. The main objectives of this chapter are to examine the significance of globalization and innovation on the evolution of higher education in Oman and to explore the readiness of universities to embark on a second academic revolution in transforming traditional teaching universities into entrepreneurial universities by introducing the triple helix model of innovation. The chapter is to study the entrepreneurial environment in higher education by reviewing the legislation, post-basic education, entrepreneurship education in the school curriculum, entrepreneurship education in the vocational training curricula, Business Simulation Centers (BSCs), national and regional milieu, and existing support structures and clusters for practicing entrepreneurship education in Oman. The current study is conceptual, and the approach consists of formulating proposals and definitions based on an extensive literature review. It has been concluded that based on the overview of the triple helix model from a neo-institutional perspective, the external forces provide a favorable environment for the initiation of entrepreneurial universities in Oman. There are many elements of the triple helix model which are now present in Oman, and the environment is propitious for the establishment of entrepreneurial universities.

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1   Introduction

The term "globalization" refers to "the development of increasingly integrated systems and relations beyond the nation" (Marginson and Rhoades 2002). It is increasing universal connectivity, integration, and interdependence in the economic, social, technological, cultural, and political systems of the world. According to Stromquist and Monkman (2000), globalization involves numerous and extraordinary changes in every aspect of social life, especially economics and culture. Most researchers concur that globalization has had an immense impact on economic, political, and social levels. Globalization is not a new era but continued growth; therefore, it is a complex and debated concept. Globalization has highlighted the significance of being growth-oriented regarding economic indicators that incorporate per capita income, gross domestic product, gross national product, external investment, external trade including import and export of products, the rate of financial development, and new innovation, in addition to other things. Globalization is described as the driving force of innovation, knowledge, and individuals' values and ideas. It is a flow of technology, economy, knowledge, people, values, and ideas, and it is also known as mobility in many forms such as information, knowledge, people, and employment (Carnoy 1999), resulting in an integrated global economy.

Globalization has a tremendous impact on the global economy. The global economy is widely integrated and focused on discovering new models of ideas and opportunities. Uvali'c-Trumbi'c (2002) indicated that the globalization of economics creates opportunities for the mobility of knowledge-workers and knowledge-seekers across the world. The reorientation of this global economy is caused by knowledge and information (Lafon 2009). This procedure of reorientation is portrayed as internationalization. The internationalization of higher education is one of the methods by which nations can respond to the requirements of globalization. The influence of globalization and internationalization on the character and behavior of higher education institutions has become a key theme in recent research (Enders 2004). In recent decades, the rising impacts of globalization have significantly affected institutions of higher education across different parts of the globe. Universities are encouraged to become more entrepreneurial not only for the purpose of generating income but also for increasing the national competitiveness in research, innovation, and technological advancement in order to standardize favorably in international ranking. All institutions of higher education, public and private, are rapidly evolving into global actors, following a trend found in many other industries (Naidoo 2006).

The main objectives of this study are to examine the significance of globalization and innovation on the evolution of higher education in Oman and to explore the readiness of universities to embark on a second academic revolution in transforming traditional teaching universities into entrepreneurial universities by introducing the triple helix model of innovation. The chapter is to study the entrepreneurial environment in higher education by reviewing the legislation, post-basic education, entrepreneurship education in the school curriculum, entrepreneurship education in the vocational training curricula, Business Simulation Centers (BSCs), national and regional milieu, and existing support structures and clusters for practicing entrepreneurship education in Oman.

2 Literature Review

2.1 *Globalization*

For the past several decades, the argument about globalization in the Arab world has not only been a common issue in academic, governmental, and other professional settings, but it has also been a very dynamic issue among individuals. Now the inquiry is how the Arab nations will survive globalization. The three conceivable responses to this inquiry are full resistance, full surrender, and surrender (Al-Harthi, n.d.). As indicated by Sklair (1998), since Arab nations are very consuming countries that depend on imported products and joining international organizations such as WTO, it becomes more challenging for these nations to resist and isolate themselves from being a part in globalization. Also, in the event that protection from globalization appears to be inconceivable, the next alternative would be to fully surrender to globalization. There are two types of surrender: "active" and "passive" (Al-Harthi, n.d.). In "active" surrender the Arab nations enthusiastically integrate and assimilate the macro-environmental factors or characters of globalization into their structures, and in "passive," which is the forcing or imposition of globalization, the Arab countries are obliged to follow the globalization structures (Al-Harthi, n.d.). He stated that "the idea of integration seems very problematic to achieve because globalization requires a certain culture which Sklair (1998) calls 'culture-ideology of consumerism' that contradicts with most local and national cultures in Arab countries, and imposition is also difficult to accomplish because, despite the success of colonial systems in exploiting the colonized countries economically, politically, and to some extent culturally, colonizers failed to completely impose their cultures and convert colonized people from their lifestyles" (p. 112). Al-Harthi (n.d.) analyzed "since both the full resistance and the full surrender to globalization are impractical alternatives for the Arab nations, there could be a middle course, which can be found in some of the educational reforms in some of the Arab countries that endeavor to develop "comparative advantages" and the "new modes of productions" in order to be prepared for the challenge of globalization. It is this middle course which is needed in order to adapt and adjust the globalization requirements and at the same time endeavor to keep the local culture" (p. 113).

Oman, like any other country in the world, has faced many challenges, one of which is globalization, seen by many scholars as having a very strong impact on education in general. There are numerous studies that debate the impact of globalization on education. Globalization according to Panic (2003) has a positive influence on society. In the Sultanate of Oman, investment in infrastructure and increasing diversification of the economy has helped in controlling the dependence on oil. This kind of economy demands diversified skills and knowledge that fulfill the needs of the rising economy. Therefore, the declaration of Oman Vision 2020 to have an economy which considers education as a pathway and turning point has made education reforms as a priority in developing the educational system in the Sultanate of Oman.

2.2 Globalization and Educational Reform in Oman

As one of the oldest established civilized states in the Middle East, the history of Oman goes back at least 5000 years. It has played a significant role in trade routes due to its geographical position facing the Indian Ocean and linking Europe and the Middle East with Asia and Africa. The ancient history of Oman's interaction with the world and its development, especially in the field of education, is the main reason for choosing Oman among GCC countries as the case study to examine globalization through educational reforms. The development of the education system in Oman is very dynamic and has undergone several waves of modifications and reforms during the last decades.

The contemporary educational system in Oman has not been established for long. Before 1970, there were just three schools in the whole of Oman teaching the primary level; however, since His Majesty Sultan Qaboos bin Said ascended the throne in 1970, and under Majesty prudent direction, Oman has experienced economic growth and development.

Al Hinai (2006) stated that "Omani education has undergone several changes and developed qualitatively and quantitatively in different periods. The first period (1970–1975) and the second period (1976–1980) were the beginning of the spread of formal education throughout the Sultanate. The main concern of these two periods was to build schools to accommodate both boys and girls. At that time, there were two shifts working schools: a morning shift for boys and an afternoon shift for girls. The curriculum was not national but borrowed from neighboring countries. The focus here was on quantitative issues of provision. The third period (1981–1985) was characterized by continuing the spread of education with additional emphasis on improving the quality of education. This period saw progress in introducing the first national curriculum. Moreover, there was a specific focus on illiteracy and adult education. The fourth period (1986–1990) and fifth period (1991–1995) made great development in Omani education by starting higher education. For example, Sultan Qaboos University, the only state university, was opened in 1986. The sixth period (1995–2020), the "period of reform," has been characterized by many changes, such as introducing basic education, a new curriculum, and adding new subjects. Many argue that this period of reform has been a result of the conference Oman Vision 2020" (p. 499).

According to Al-Harthi (n.d.), "With the intention of preparing students for the challenges of globalization, the government of Oman has started reforming and refining the educational system from preschool to higher education which can be traced to the Oman Vision 2020 conference, which was held in Muscat in June 1995 with the aim of moving the Omani economy into a new phase of development leading to higher growth and prosperity" (p. 113). Al Maamari (2014) stated that "quantitative provision of education in Oman began in 1970 to 1995, marked by the distribution of learning for all Omani areas, and the qualitative period started in 1998 with the introduction of basic education" (p. 111).

2.3 Globalization and Higher Education in Oman

Although higher education development in Oman is extremely dynamic, it has endured many changes and progress. The public forces for easier access to higher education, combined with the government expectations on the contribution of the university to the socioeconomic growth of the country, have all created a fresh framework of development for higher education. In recent years, the need for refortifying the educational system framework, particularly in higher education, has been considered as a high national priority in Oman. In order to remove the gap between the education system and industry and workplace demands, His Majesty the Sultan of Oman has advised associated investors, stakeholders, and policymakers to reconsider and amend all education programs and policies. In this regard, all universities are encouraged to play a vital role in the economic growth of Oman. Though, whether Omani universities are capable of playing this role by transforming themselves into entrepreneurial organizations is a concern (Al Harthy 2014).

Globalization has a chronicled impact on higher education (Giddens 1990; Altbach and Knight 2007). In coping with globalization, higher education institutions in Oman structured three main forces: privatization, internationalization, and accreditation. The idea of privatization began when state universities were unable to absorb student demand. The Royal Decree No. 41/99 issued in 1999 promoted the development of private higher education and a resolution allowed for the establishment of private higher education institutions (PHEIs). The PHE sector was considered one of the main keys to economic development. This policy was implemented by the government through several extensive incentives, which included subsidy orders, land grants, and loan provisions with subsidized interest rates, in order to help in the growth of private colleges and universities. With an increasing number of higher education institutions, there was a need for guaranteeing stakeholders and the community about the quality of the PHEIs' provision. At this stage, the government looked outside the country for a solution through a transnational higher education (TNHE) package. TNHE is a term used widely to refer to education in which learners are not located in the awarding country (UNESCO-CEPES, Bucharest 2001). The belief is that the transnational partnership can ensure that the successes of students in the Omani HEIs are equivalent to those of students at the international partner institutions (Ameen et al. 2010). PHEIs were required to affiliate and collaborate with internationally recognized universities known as international academic affiliation, and the expectation is that the overseas universities will ensure quality and comparability of the provision of local Omani HEIs and help them develop capacity. According to the Ministry of Higher Education (2014–2015), 26 of Oman's PHEIs have entered into partnerships with more than 50 educational institutions. The Ministry of Higher Education encourages PHEIs to choose highly reputable universities as partners in academic affiliation agreements for the purpose of monitoring and improving quality, diversifying program offerings, and increasing the prestige of the degrees awarded by private HEIs.

As a reflection of the rapid growth of the higher education sector in Oman, the government recognized the requirement to launch a government body to be an expert external quality assurance agency in the field of higher education. In response to this requirement, a Royal Decree was issued in 2001 to establish the Oman Accreditation Council (OAC) to act as an official body responsible for the accreditation of HEIs and the programs offered by them. In order to increase effectiveness and to correspond with international best practices which emphasize independence and autonomy of the agencies responsible for quality assurance and accreditation of higher education, a Royal Decree was issued in 2010 establishing the Oman Academic Accreditation Authority (OAAA), replacing the former OAC. The OAAA is an independent entity by the government. The OAAA's objective is to produce a set of institutional accreditation standards and provide confidence to the public that the quality of higher education in Oman meets international standards. The OAAA encourages continuous improvement in the quality of higher education. And its responsibilities continue to include conducting quality audits of HEIs along with the periodic accreditation of local academic programs and recognition of foreign ones.

In Oman, many higher education institutions are in the process of looking for accreditation (Ross and Trevor-Roper 2015). In each case, accreditation will mean that the OAAA has determined that the program or institution has met the relevant OAAA standards. Many HEIs were audited by the OAAA, and 44 audit reports were published until March 2016. Oman's national program accreditation system is to establish broad standard programs which are internationally benchmarked but also address local needs. The OAAA has created nine standard areas of operation in higher education. Each standard has a set of sub-standards. The areas of institutional standards in Oman are (1) Governance and Management (Criterion 13), (2) Student Learning by Coursework Programs (Criterion 10), (3) Student Learning by Research Programs (Criterion 6), (4) Staff Research and Consultancy (Criterion 9), (5) Industry and Community Engagement (Criterion 6), (6) Academic Support Services (Criterion 7), (7) Students and Student Support Services (Criterion 10), (8) Staff and Staff Support Services (Criterion 10), and (9) General Support Services and Facilities (Criterion 4). It is expected that all international universities acting as partners to Omani local universities be accredited, as accreditation brings the promise of quality provision. At the international level, the OAAA joined the International Network for Quality Assurance Agencies in Higher Education (INQAAHE) through the membership of the Ministry of Higher Education in this network in 2001.

3 Globalization and the Need for Entrepreneurship Education

3.1 Need for Entrepreneurship Education

Globalization and entrepreneurship cannot be discussed in isolation and are intrinsically connected. Entrepreneurship will progressively play a significant role in contemporary economic global development. The contribution of entrepreneurship to economic growth and employment creation cannot be denied. Therefore, worldwide, there is a need for entrepreneurship education which associates entrepreneurial activities with economic growth. In developed countries, there is harmony in the importance and significance of entrepreneurship at the national level, but this is not the case in many developing countries. Over the last few decades, in the Arab Gulf region, there have been some new entrepreneurship development initiatives, such as the Qatar Science and Technology Park, Knowledge Economic City in Saudi Arabia, and Dubai's Mohammed bin Rashid Al Maktoum Foundation, all of which are promising initiatives that are much needed. Entrepreneurship will inspire developing countries in terms of long-term growth and increase in productivity.

Since His Majesty ascended the throne, a new era began in the modern history of the country, causing Oman to experience healthy economic growth and remarkable political stability. Oman has been positioned as one of the most progressive countries in the Middle East due to the oil and gas sector, which dominates the economy. However, since it is predicted that Oman has less than 20 years of oil reserves left, the government must reduce its reliance on its oil revenues by diversifying the private sector. Economic and social challenges such as dropping oil prices, unemployment, the labor market, cultural and social norms, education, and training have been key factors in pressuring the government to realize the need to foster the entrepreneurial spirit in the country and open up the concept of entrepreneurship and self-employment, especially among the youths, as key mechanisms in dealing with these challenges and diversifying the economy. As a part of this movement, the Sultanate of Oman is fostering the shift toward an entrepreneurial society and culture by training well-educated entrepreneurial citizens who have the spirit and interest to think in innovative ways and the courage to face and accept the challenges facing them (Al-Shanfari 2012). In recent years, entrepreneurship and entrepreneurship education have gained special attention in Oman. The objective is to progress in encouraging entrepreneurial mindsets in society with effective action. However, in developing countries that have a small private sector and low national entrepreneurial activity, encouraging entrepreneurship education is not an easy task. According to Al-Shanfari (2012), there were no issued IPOs for any new businesses with high growth in the Muscat Securities Market (MSM) for the last 10 years.

Since 1970, with the accession of His Majesty Sultan Qaboos, the government of Oman has considered Technological, Vocational, Education, and Training (TVET)

as one of the main strategic policies of Oman for the development of human resources. This practice encourages entrepreneurship education at the national level and has paved the way for building a strong link with different stakeholders as well as strategic partners. Various initiatives and pilot projects at the national, regional, or international level have been implemented to promote entrepreneurship and to provide entrepreneurship education especially among youth, students, and unemployed; these projects also encourage young entrepreneurs to take up independent business options such as the SANAD program, Know About Business (KAB), INJAZ, the Intilaaqah program, or Business Simulation classes (BSC). A jointly report organized by UNESCO-UNEVOC (2013) discusses the initiatives as follows:

> The SANAD program was started in October 2001 under the Ministry of Manpower with an objective to promote entrepreneurship and the development of small-scale enterprises among young people by providing loans and expertise to new graduates. The SANAD program provided financial and technical support to 28,000 Omanis until 2010 (Khan et al. 2005). Know about Business (KAB) was introduced in 2007, as the government gave importance to training methodology and training entrepreneurship, to create awareness about entrepreneurship among youth and to prepare youth to be more enterprising in their lives and in their careers. The main focus of KAB is the training of entrepreneurs in management skills for developing an entrepreneurial attitude through entrepreneurship education. KAB is effectively being applied in colleges of technology and vocational training centers. The students are trained before they start their venture out into the job market. Injaz Oman was established in 2005. The organization provides dynamic programs that contribute to the development of young people's skills and also improve their innovative and leadership abilities. The aim is to inspire and prepare young people to succeed in a global economy. Sultan Qaboos University and the Higher College of Technology participated in the program in 2007–2008. The Intilaaqah program was launched in Oman in 1995. It is part of the Shell group worldwide initiative, LiveWIRE. The purpose of Intilaaqah is to inspire and encourage unemployed young Omanis to consider the option of starting their own businesses, and it helps the young entrepreneurs by providing them training, counseling and consultancy services which allow them to start their own venture (Khan et al. 2005). BSC (Business Simulation classes) is a project being developed at Nizwa College of Technology. This project integrates entrepreneurship with college academic programs. It aims to offer proper training and integrate entrepreneurial culture within the college academic programs by providing an actual functioning business enterprise, totally managed by students (pp. 2–4).

3.2   Need for Entrepreneurship in Higher Education

Considering the impact of globalization on higher education and an uncertain world economy, governments and educational institutions worldwide have given more attention to entrepreneurship. Entrepreneurship in higher education is now recognized as a major driver to innovation. The significance of entrepreneurship education is derived from the importance of the entrepreneurs to the economic system. Universities and other higher education institutions play a significant role in providing entrepreneurship education, training, and technical assistance to existing and

potential entrepreneurs. Government agencies have also sought to develop creativity among students through entrepreneurial activities and programs.

3.3 The Need for Entrepreneurship Universities

With the arrival of globalization, liberalization, and privatization in the domain of higher education, traditional universities as social institutions are no longer sustainable. According to Etzkowitz (2004), the second academic revolution is transforming the traditional teaching and research university into an entrepreneurial university. The advent of the entrepreneurial university is an implication of internal development of the university and external influences on the university, in conjunction with the increasing role of knowledge in society- and knowledge-based innovation, which are known as the drivers of productivity and economic development. Liesner (2006) indicated that one common definition that is well accepted in the entrepreneurial university discussion depicts the entrepreneurial university as a university that behaves like an enterprise, competes for external research funding, and emphasizes business-like efficiency. Wissema (2009) highlighted the current transformation through the concept of the *Towards the Third Generation University*. The traditional university is usually engaged in two main activities: research and teaching. Knowledge is transferred to the community through students, who are later incorporated into the labor market, and by publications in scientific journals, which can take a considerable period of time. The traditional character of the university in the community—as a knowledge inventor through research and technology, as a knowledge transfer agent, and as a supporter of economic growth—has been reconsidered by entrepreneurial universities (Bercovitz and Feldman 2006). The new exercises expected by entrepreneurial universities intend to facilitate the procedure toward taking an interpretation of research and making it into applications that can easily be implemented. This conversion is promised by the creation of associations with industry that provides new resources and intangible assets to the universities. According to Inzelt (2004), since entrepreneurial universities are involved in partnerships, networks, and other relationships with public and private organizations that are an umbrella for interaction, collaboration, and cooperation, many different interactions may exist. This means that the entrepreneurial university implements several strategies and a new institutional configuration to work together with the government and industries to facilitate the generation and exploitation of knowledge and technology (Leydesdorff and Meyer 2003). In Oman, studying entrepreneurial universities requires the investigation of internal and external aspects which play a dynamic role in conversion toward entrepreneurial culture.

3.4   The Triple Helix Approach

Another popular model for the entrepreneurial university is the "triple helix model" (Etzkowitz and Leydesdorff 2000) which is based on academic-industry-government linkages forming a spiral pattern of cooperation (Goldstein 2010). The conceptual framework of triple helix began in the mid-1990s, a time when universities and industry were encouraged to work together more closely for the benefit of society. Etzkowitz and Leydesdorff (2000) further explained the triple helix of university-industry-government relations as a model for studying both knowledge-based and developing economies. According to Al Harthy (2014), "The Triple Helix is described as one of the critical ideas that contribute to explaining the innovation system concept as an interactive process" (p. 85). The networks of university-industry-government relations can be deliberated as a neo-institutional arrangement. The triple helix model considers universities as key players in national socio-economic development (Owen-Smith et al. 2002). Universities play an important role in developing skilled human resources which is an important factor for the development of knowledge-based society and knowledge-based economy. For the last few decades, the role of higher education institutions in the modern economy changed dramatically. Universities now face new challenges and a new strategic orientation based on globalization, innovation, and increased international competition. The conceptual framework of triple helix offers a comprehensive perspective for understanding the sources and development paths of innovation and can be an attractive model that aims to improve one's knowledge base and create an environment of excellence around research themes with commercial potential and innovative firms.

4   Discussion

4.1   The Triple Helix as a Model of the Knowledge-Based Economy

In the triple helix model of the knowledge-based economy, the main institutions have first been defined as university, industry, and government (Etzkowitz and Leydesdorff 1995), and innovation is increasingly based upon a triple helix of university-industry-government interactions. Etzkowitz (2003) highlighted the importance of knowledge and the role of the university as incubation of technology-based organizations has given it a more noticeable place in the institutional firmament. The entrepreneurial university plays a crucial role in putting knowledge to use and in increasing the input into the creation of academic knowledge. As firms advance their technological level, they move closer to an academic model and training in higher levels and in sharing of knowledge, and the government acts as a public entrepreneur and venture capitalist (Etzkowitz 2003). Halibas et al. (2017) highlight that education in the form of knowledge and ideas is the building

block in an innovation and knowledge economy that drives social change and improves the quality of life (OECD 1997), and HEIs and research institutions play a key role in forming a knowledge-based society.

The World Bank developed a Knowledge Economy Index (KEI) in 2012 which ranked Oman as 47th among 145 countries in terms of its readiness in becoming a knowledge-based economy. Oman's KEI is measured in terms of six sub-indexes: (a) Knowledge Economy Index (with a score of 6.14/10); (b) Economic Incentive Regime Index (6.96/10); (c) Education Index (5.23/10); (d) Information and Communications Technologies Index (6.49/10); (e) Knowledge Index (5.87/10); and (f) Innovation Index (5.88/10). As innovation is a major factor in a knowledge economy, it has been considered an important strategy to address sustainability issues and promote economic growth (Bjork 2016). Considering the Omani score (5.88 out of 10) in the Innovation Index, Oman must take full advantage of its readiness in becoming a knowledge economy, while it still has the resources to support an efficient transition (Al-Rahbi 2008). The following are several practices toward becoming a knowledge-based economy.

4.1.1 Research and Innovation

Within the context of Oman, higher education institutions are now transforming from being traditional teaching institutions to research-oriented institutions for socioeconomic development of the region. In 2012, the new instructions of His Majesty the Sultan to support higher education institutes can be noticed by establishing new research projects and teaching programs that focus on innovation and entrepreneurship. The government has authorized The Research Council (TRC) to take the lead role in fostering and supervising research innovation in the region through close cooperation with relevant stakeholders and various research programs, including the Open Research Grant (ORG), Strategic Research Grant, Faculty Mentored Undergraduate Research Award Program (FURAP), and Research and Innovation Award. For example, TRC established the Industry Innovation Centre (IIC) in order to simplify the collaboration between the industrial sector and the academic sector, as Omani universities have weak linkages and collaboration networks. The other programs and projects of TRC are the establishment of the Business Incubation Program, Innovation Park Muscat (IPM), Oman Virtual Science Library (OVSL), Oman Research and Education Network (OMREN), and The Survey on Science and Technology Indicators. Another important initiative by the government is the OAAA, which, as discussed previously, is authorized by the government to foster quality in higher education.

4.1.2 Legislations

According to Oman Vision 2020, Oman has planned an instruction framework which propagates deep-rooted learning to guarantee that all Omanis have the

required skills and capabilities for life and for the workforce. Focus on the skills required for life; workforce and life-long learning have all stressed the commitment toward incorporating entrepreneurial skills within the education system. The Ministry of Education and Higher Education has developed the aims of post-basic education, which is to cultivate different types of problem-solving thinking and abilities, as well as employ scientific thought in practical real-life situations. Post-basic education also offers an opportunity for students to continue the development of entrepreneurship skills required for higher studies, employment, and career planning. The development of problem-solving and decision-making skills is essential to entrepreneurship. It is clear that the legislation of the Ministry of Education supports entrepreneurship education. Vocational training centers and colleges also have several legislations that support entrepreneurship education.

Entrepreneurship Education in the School Curriculum The Ministry of Education is responsible for the development of a curriculum for public schools in Oman. The aim is to produce self-sustaining energetic young entrepreneurs. The curriculum emphasizes preparing the student for a productive life; thus there is a great deal of focus on life skills such as critical and creative thinking, time management, and self-teaching (Masri et al. 2010).

Entrepreneurship Education in Post-Basic (Secondary) Education In this stage, the focuses are on developing positive attitudes toward society, work, environment, and continuing the development of life and career planning skills. It inspires more independence in learning, and it also prepares students with an entrepreneurial mindset and encourages career planning at an early stage (Masri et al. 2010).

Entrepreneurship Education in Higher Education Higher education institutions are also focused on preparing students for an entrepreneurial career by providing knowledge, skills, and attitudes. There are several courses in curricula that directly or indirectly support entrepreneurship skills whether in class or through extra-curricular activities. In a major boost for the small- and medium-sized enterprises, a mandatory semester-long course on entrepreneurship has been introduced for all higher education students. All students entering higher education since Fall 2014 must take this course. A significant number of recommendations of the strategy have been executed or are currently being executed. Entrepreneurship and entrepreneurship education are receiving increased consideration in Oman, and this consideration requires various procedures such as research, expenditure, curriculum development, teacher training, and collaboration with NGOs (Masri et al. 2010).

Entrepreneurship Education in Vocational Training The Ministry of Manpower is responsible for developing occupational standards, learning outcomes, and curricula in vocational training centers in order to meet the requirements of the Omani labor market. The focus is to provide students with life skills and technical/technological education (Masri et al. 2010).

The National Career Guidance Centre (NCGC) The center aims to provide career guidance to students and job seekers. It also focuses on training career guidance experts to enable them to help students in the transition from school to higher education or to the job market. Several programs have been implemented by NCGC that promote entrepreneurship education. For example, it participates in several events to assist students in identifying their talents and abilities when considering their future career (Masri et al. 2010).

Business Simulation Centers (BSCs) The Ministry of Manpower has also initiated and implemented the development of Business Simulation Centers (BSCs) to support learning and training using modern techniques in several institutions. In collaboration with the Ministry of Manpower, many projects have also been established by HEIs and have been funded by the private sector. Those projects aim to offer appropriate training and integrate the institution's academic programs with an entrepreneurial culture (Masri et al. 2010).

4.1.3 Existing Support Structures and Clusters in Oman

At the National Level
Industry Collaboration: Many initiatives have been developed by industries to encourage young people to start their own businesses, such as the Career Awareness Program which was sponsored by Shell Oil Company and delivered to students at varying school levels. The program aims to provide specialized skills training to familiarize students and job seekers with those skills and allow them to more easily find jobs (Masri et al. 2010).

  Incubator Program: The SANAD program intends to encourage youth business ventures by providing loans and expertise to fresh graduates. It promotes entrepreneurial education by presenting fresh graduates with ways and means of starting their own businesses (Masri et al. 2010).

At the Regional Level
Nonprofit Organization Involvement: INJAZ Oman is a nonprofit organization which aims to inspire and prepare young people to succeed in a global economy. It offers a practical learning experience to youth in enterprise education from school to university level. As the INJAZ Oman Board of Directors includes prominent companies in Oman, it has strong links and support from the industry. INJAZ Oman also works very closely with INJAZ Al-Arab (Masri et al. 2010).

5 Conclusion

The discussion reveals that the university-industry relation where the government plays the role of establishing rules and regulations has already been initiated in Oman. Universities in Oman have started to make some initiatives in order to

become entrepreneurship universities based on their degree of flexibility. However, they are facing serious challenges in the implementation of an entrepreneurial, innovation-oriented mission. For example, for allocation of funds, the largest percentage of the funding for the Sultan Qaboos University (SQU) comes from the government, but for the private universities, it comes from government subsidies in addition to student fees. The industry sector as a knowledge user and technology transfer agent has been identified as a strategic partner in the era of entrepreneurship economies but because of industry size and industry capability in Oman, the sector is not ready to accommodate the research and innovation outcomes and therefore cannot be a strategic contributor. Although all policy action undertaken by the government and industry to promote entrepreneurship education could generally be seen as a good indicator of the readiness of Oman to initiate entrepreneurial universities, future studies should provide more case analysis of universities which will undergo a transformation process to become entrepreneurial universities and evaluate how successful they are in Oman.

It has been concluded that based on the overview of the triple helix model from a neo-institutional perspective, the external forces provide a favorable environment for the initiation of entrepreneurial universities in Oman. There are many elements of the triple helix model which are now present in Oman, and the environment is therefore propitious for the establishment of entrepreneurial universities. Nevertheless, the Sultanate still has a long way to go and faces numerous obstacles if it is to develop a strong entrepreneurship environment in education. One such obstacle is that the most important relationship between industry and universities comes in the form of a research project. However, the final question that arises then is: will the research from partner universities be strong enough to be used in industries?

As mentioned earlier, additional research is needed to investigate a model of entrepreneurial universities in Oman, where priority is given to knowledge absorption readiness and this research should be validated by case analysis of universities undergoing the transformation. The experience might lead to better adoption of entrepreneurial university models and could be used to assess core processes in the transformation of traditional educational teaching strategy. Last but not least, more studies are needed to assess the role of universities in the proposed ecosystem discussed earlier, and this may help the country in facilitating efficient technology transfer and absorption ability when combined with building substantial national innovation policies Oman.

References

Al Harthy S (2014) The entrepreneurial university and the entrepreneurial environment: organizational analysis and policy considerations. University of Manchester, Great Britain

Al Hinai K (2006) The effectiveness of educational planning centrality in the education system in Sultanate of Oman. PhD Thesis, College of Social and Human Sciences

Al-Harthi H (n.d.) Globalization and the necessity of educational reform in the Sultanate of Oman. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.97.9793&rep=rep1&type=pdf. Accessed 5 Dec 2010

Al-Maamari S (2014) Education for developing a global Omani citizen: current practices and challenges. J Educ Train Stud 2:111

Al-Rahbi I (2008) An empirical study of the key knowledge economy factors for sustainable economic development in Oman. Doctoral dissertation, Victoria University. http://vuir.vu.edu.au/2033/1/Al-Rahbi_Ibrahim_PDD_thesis_April_2009.pdf

Al-Shanfari DA (2012) Entrepreneurship in Oman: a snapshot of the main challenges

Altbach PG, Knight J (2007) The internationalization of higher education: motivations and realities. J Stud Int Educ 11(3):290–305

Ameen H, Al-Barawani T, Chapman DW (2010) Cross-border collaboration for quality assurance in Oman: contested terrain. In: Cross-border partnerships in higher education: strategies and issues, vol 9780203849262. Routledge Taylor & Francis Group, London, pp 133–150

Bercovitz J, Feldman M (2006) Entrepreneurial universities and technology transfer: a conceptual framework for understanding knowledge-based economic development. J Technol Transf 31:175–188

Bjork F (2016) Social innovation, sustainable development, and governance. PowerPoint Presentation, Sweden. https://www.slideshare.net/lufrbj/si-sd-governance

Carnoy M (1999) Globalization and educational reform: what planners need to know. The United Nations Educational, Scientific and Cultural Organization, Paris

Enders J (2004) Higher education, internationalization and the nation state: recent developments and challenges to governance theory. High Educ 47:361–382

Etzkowitz H (2003) Innovation in innovation: the triple helix of university-industry government relations. Soc Sci Inf 42(3):293–337

Etzkowitz H (2004) The evolution of the entrepreneurial university. Int J Technol Glob 1(1):64–77

Etzkowitz H, Leydesdorff L (1995) The triple helix—university-industry government relations: a laboratory for knowledge based economic development. EASST Rev 14:14–19

Etzkowitz H, Leydesdorff L (2000) The dynamics of innovation: from National Systems and "Mode 2" to a triple helix of university-industry-government relations. Res Policy 29 (2):109–123

Giddens A (1990) The consequences of modernity. Polity Press, Cambridge

Goldstein HA (2010) The entrepreneurial turn and regional economic development mission of universities. Ann Reg Sci 44(1):83–109

Halibas AS, Sibayan RO, Maata RLR (2017) The penta helix model of innovation in Oman: An HEI perspective. Interdiscip J Inf Knowl Manag 12:159–172

Inzelt A (2004) The evolution of university-industry-government relationships during the transition. Res Policy 33(6–7):975–995

Khan SA, Ghosh AP, Myers DA (2005) Women entrepreneurship in Oman. In: Proceedings of the 50th world conference of the International Council for the Small Business (ICSB), Washington, DC, 15–18 June 2005

Lafon A (2009) Globalization and higher education: what might the future bring? Programme on institutional management in higher education. OECD Publishing. http://www.oecd.org/edu/imhe/44302672.pdf. Accessed 16 Feb 2015

Leydesdorff L, Meyer M (2003) Triple helix indicators of knowledge-based innovation systems. Scientometrics 5(82):191–203

Liesner A (2006) Education or service? Remarks on teaching and learning in the entrepreneurial university. Educ Philos Theory 38(4):483–495

Marginson S, Rhoade G (2002) Beyond national states, markets, and systems of higher education: a glonacal agency heuristic. High Educ 43(3):281–309

Masri MM, Jemni AM, Al-Ghassani A, Badawi A (2010) Entrepreneurship education in the Arab States. A joint project of UNESCO and the StartREAL Foundation. Regional synthesis report

Naidoo V (2006) International education: a tertiary-level industry update. J Res Int Educ 5 (1):323–345

OECD (1997) National innovation systems. Organisation for Economic Cooperation and Development, Paris, p 10. http://www.oecd.org/science/inno/2101733.pdf

Owen-Smith J, Riccaboni M, Pammolli F, Powell WW (2002) A comparison of U.S. and European university-industry relations in the life sciences. Manag Sci 48(1):24–43

Panic M (2003) Globalization and national economic welfare. Palgrave Macmillan, New York

Ross J, Trevor-Roper S (2015) The case for national program accreditation in the sultanate of Oman. OQNHE Conference, Muscat, 24–25 February

Sklair L (1998) The sociology of progress (International library of sociology). Routledge, London

Stromquist N, Monkman K (2000) Globalization and education: integration and contestation across cultures. Rowman and Littlefield, Maryland

UNESCO-CEPES, Bucharest (2001) Code of good practice in the provision of translational education. http://www.cepes.ro/hed/recogn/groups/transnat/code/code.htm

UNESCO-UNEVOC (2013) Promising Practices/Entrepreneurship Education, Oman (Rep.). http://www.unevoc.unesco.org/go.php?q=Promising+Practices+List&id=1

Uvali'c Trumbi'c S (2002) Globalization and the market in higher education: quality, accreditation and qualifications. UNESCO, Paris

Wissema G (2009) Towards the third generation university: managing the university in transition. Edward Elgar, London

Part IV
Asia and Latin America

Cultural Globalization: A Critical Analysis of Identity Crises in the Developing Economies

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Abstract Cultural globalization and local identity are two indivisible words. There is a crucial debate whether cultural globalization thrives or deteriorates local identity. The main objective of this chapter is to justify whether cultural globalization is a threat to local identity. This study used a qualitative interpretive meta-synthesis (QIMS) that reviews literature on cultural globalization in the developing economies. Results showed that in many countries especially in the developing one, cultural globalization has emerged as a threat to local identity. As a result, these countries perceive a number of socioeconomic, cultural, and psychological problems such as poverty and social inequality, erasure of local cultures and heritages, regional disparity, and lack of development ownership. Many of these aspects are closely related with the threat to local identity. This chapter argues that there are many benefits of globalization, but the vast negative consequences are related with the scope of local identity such as cultural dislocation and displacement, cultural realm, breaking cultural autonomy, diffuse cultural traits, and destruction of local traditions and occupations. The finding would be useful to development thinkers, policymakers, and cultural activists.

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1   Introduction

Globalization and local identity are two indivisible words. Globalization is an apparent phenomenon in today's life that impacts on our total socioeconomic, cultural, psychological, and ecological trajectories. On the other hand, local identity is such feeling of belong that a human being perceives or possess in his/her own culture. There is a crucial debate whether globalization thrives or deteriorates local identity. The people who see globalization as a positive process think globalization gives plenty of opportunities, where people become much more concerned about the uniqueness and particularity of their own identity. This identity provides the global significance where a person can rather extend his/her indigenous knowledge and sense of self-identity. On the other hand, those who see globalization as a negative process think it saturates cultural boundaries that intensify the Western ideologies and values across the world. Kaul (2012) found that globalization creates crises through its encouragement of conflicts rather than conciliation, through opportunities of expression and cross-border alliances.

There is a wide range of literature about the positive and negative aspects of globalization. Sharma and Sharma (2010) mention a mixed opinion about the impacts of globalization. They said that globalization opens new vistas and broadens horizons for an increasing number of people from diverse origins. They added that globalization promotes the intercommunication of cultures that helps people to have a greater understanding and universal norms with larger diversity on their local experiences and traditions. On the other hand, globalization increases individualism and consumerism, expands and exploits material desires, and finally creates identity dislocations and a collective relative deprivation in a large section of people. In this regard, Bhavsar and Bhugra (2008) argued that the negative impacts have direct transformation and its spread and degree of influence are not restricted to economic sphere but also have intense on the sociocultural and psychological spheres that response of individuals, communities, cultures, and governments to such consequences.

Globalization creates huge diversity that may have some positive impacts, but its negative consequence is large particularly in the developing economies. It is seen that the flow of diversity slowly diminished local culture and identity. Naz et al. (2012) and Lowe and Lloyd (1998) argued that globalization wrecked cultural identities, established localities, and displaced people like a flood tide does. Another dimension of this globalization debate is in the cultural realm, and its ever-expanding form generates cultural imperialism (Dorman 2000). In this regard, Inglehart (2000) and Nash (2001) found globalization as post-modernization where the Western values turn into a dominant issue even if these must manoeuvre within a global cultural context. Bottomore and Goode (1984) viewed that the expansion of global popular culture industries fastens in homogenized subjectivities that definitely conflicts with traditional cultures and local identities.

2 Conceptual Framework: Globalization and Local Identity in the Developing Economies

This paper covers three main concepts, e.g. globalization, local identity, and developing economies. The concept 'globalization' is a complex issue. It permeates cultural boundaries and in the process results in the spread of Western ideologies and values across the world (Kaul 2012). It offers many possible meanings, which depend on ideology, context, perspective, and location. It is a hotly disputed and contested issue (Carnoy et al. 1999). Harcourt (undated) notes that some global advocates, such as Ohmae (1990, 1995), write enthusiastically about the 'borderless world' and 'the end of the nation state' (in Islam 2016). In economics, globalization means 'free trade'. In this aspect, Eslake (2000) argues that many specialized commercial venture has been created from globalization from the dawn of human civilization. The literature published by the World Bank and the International Monetary Fund (IMF) highlights globalization as a process of money transformation. For example, Harcourt (undated) argues that there are mainly four dimensions in which globalization appears to human society: trade, investment, organizational change, and 'new economy' technology. The dependency and Marxist approaches have emphasized the inequalities as inherent in the global expansion of capitalism. In sociology and cultural studies, globalization refers to human networks of influential interaction which are measured and explained by many factors, including migration, trade, empire, technology, and the spread of languages and disparate cultural elements. From the political point of view, Ramsaran and Price (2003) state that the processes of globalization can be seen within state and global institutions. Mittelman (2000) argues that globalization means a historical transformation in the economy, of livelihoods and modes of existence; in politics, a loss in the degree of control exercised locally; and in culture, a devaluation of a collectivity's achievements. Globalization is emerging as a political response to the expansion of market power. [It] is a domain of knowledge. However, globalization is not easily understood for its multidimensional nature, asymmetric impact, and complexity. Islam (2009, 2016) found four main dimensions of globalization such as economic globalization, formation of world opinion, democratization (transition to a more democratic political regime), and political globalization. Change in one of these dimensions (such as economic globalization) elicits changes among other dimensions.

The concept 'identity' has been originated from many complex and interrelated interactions of human qualities that give a distinct/unique position of human being (Erickson and Roberts 1997). Rummens (1993) stated that local identity is a unique character belonging to any given individual or shared by all members of a particular social category or group. Vukić (2012) observed that local identity is a social and intellectual construct associated both with local cultural values and global influences. This local identity mostly related with cultural identity. Horowitz (2000) stated that cultural identity is a part of a group that provides one's belonging to a group in a particular geographical surface where people stake common individualities like many social components such as language, religion, culture, and other

behaviours. Cultural identity is an individual's sense of self derived from formal or informal membership in groups that transmit and inculcate knowledge, beliefs, values, attitudes, traditions, and ways of life (Kaul 2012). The process of identity formation is extremely complex and varies depending on time and space. Identities can be overlapping and individuals may have several identities. For example, Jönsson (2010) observed that the Southeast Asia encompasses people from the urban middle class in Singapore as well as rural ethnic minorities in Laos, and state identity does not necessarily equal individual identity. Another example is that the ASEAN attempts to shape a 'common regional identity' which is not exclusively clear, and it was not possible to achieve so far. Within this gamut, we can see that solidarity and cooperation have been materialized as two keywords in these open societies (Jones and Kierzkowski 2004). Jones and Kierzkowski consider identity as a social system that is compared as organic system. This system eventually produces the basis of living environment of human beings such as values, rules, beliefs, and practices. Livesey (2004) found an upfront association between cultural identity and social identity where people live with those individual and social relationships. This chapter considers local identity as unique and distinct characters of individual, group, race, community, or nation which gives them structural and cultural values, beliefs, and sense of self cultural uniqueness.

The central objective of this paper is closely related with the social identity theory (SIT) that has huge implications on cultural globalization and local identity. The SIT is a social psychological model that was first proposed in the latter part of the twentieth century. With an example of workplace environment, this model argues that people want to identify themselves as a social being first, and then they feel proud to identify themselves with this distinct identity in diverse kinds of group through a psychosocial interaction with people at working environment (Haslam 2001; Carr 2006). This interaction is peoples' self-importance through social and intergroup comparison, namely, by achieving collective differentiation from other groups (out-groups). However, it is clearly evident that the outcome of such interaction has both differentiations in one hand and cultural integration on the other. The SIT argues that this twin relationship applies equally at both minority and majority groups that generate its own sense of identity in an ever-changing and interconnecting social world.

3 Study Argument and Rationale

The main objective of this study was to explore some interrelated and interconnected concerns of cultural globalization that dismayed local identity in the developing economies. In the line of this objective, the central argument of this study is that though there are many other issues which dismayed local identity, cultural globalization is likely more influential than others which shields strong components of human lives such as local knowledge, beliefs, values, attitudes, traditions, and social system. We have seen from the introduction section that local identity is such an

entity of human being which is considered as a sensitive object to every human being. This entity entails/shapes people in such a way where they found themselves mentally safe, secure, distinct, and socially cohesive. Cultural globalization that is product of Westernization overturns these mental and social roots particularly in the developing economies, where people are economically vulnerable in terms of low income and socially susceptible in terms of illiteracy, low education, and lower level of modernization. This study provides a number of examples from the developing economies and critically analyses how cultural globalization is a threat to local identity.

4 Methodology

4.1 Research Approach and Method

This study presented findings through a qualitative exploration. A qualitative inter-pretive meta-synthesis (QIMS) (Aguirre and Bolton 2013; Islam 2016; Islam et al. 2018; Ruiz and Praetorius 2016; Chowdhury et al. 2018; Reza et al. 2018) was conducted to analyse the current literature on cultural globalization and its conse-quences on local identity.

4.2 Research Design

QIMS is a phenomenological and qualitative traditional approach that engrossed the impacts of cultural globalization on local identity following the studies of Islam and Hossain (2014); Islam and Mungai (2016); Ruiz and Praetorius (2016); Islam (2016); Chowdhury et al. (2018); and Reza et al. (2018).

4.3 Criteria

Studies were qualified for insertion if these studies (1) employed 'cultural globali-zation, (2) contained a qualitative research design, (3) were published in English, and (4) were published in journals listed in either Thomson Reuters or Scopus. All other studies were disqualified for this study.

4.4   Process of Searching Documents, Sampling Criteria, and Narrowing the Sample

This study used two search engines such as Web of Science and Scopus by using four keywords, e.g. globalization, cultural globalization, local identity, and identity crisis. The study recorded 17 years' (2001–2017) published literature such as journal article, books, book chapters, conference papers, etc. based on 'title' from both of these sources on the selected keywords. The Web of Science recorded 16,684 literatures on globalization, 79 on cultural globalization, 121 on local identity, and 339 on identity crisis (Table 1). On the other hand, the Scopus recorded 16,644 literatures on globalization, 390 on cultural globalization, 1183 on local identity, and 1123 on identity crisis (Table 2) which are quite higher than the numbers of the Web of Science. From the numbers of publications in the Web of Science last 17 years, there is no significant variation though the number is increased in the Scopus. This trend was upward in all keywords except 'globalization', which decreased after 2013. It is found that the number of literature in the Web of Science is low on the three keywords such as cultural globalization, local identity, and identity crisis. None of the publication was found on the keyword 'cultural globalization on local identity in the developing economies'. To consider the shortages of the publications, we also considered some relevant research reports and Internet sources to conduct this study. Finally, we considered 42 documents for review. A significant number of these are cited in the reference section.

Table 1 Web of Science cited publications between 2001 and 2017

Year	Globalization	Cultural globalization	Local identity	Identity crisis
2001	526	3	4	30
2002	597	6	3	10
2003	556	6	2	10
2004	659	2	4	14
2005	601	3	5	15
2006	667	1	3	20
2007	733	3	6	14
2008	810	10	7	19
2009	862	6	3	15
2010	782	8	7	23
2011	744	7	7	18
2012	692	3	10	13
2013	602	8	14	19
2014	633	5	5	17
2015	754	0	14	31
2016	798	4	16	38
2017	668	4	11	33
Total	11,684	79	121	339

Source: Authors based on Web of Science (2018)

Table 2 Scopus cited publications between 2001 and 2017

Year	Globalization	Cultural globalization	Local identity	Identity crisis
2001	576	12	23	34
2002	732	12	33	33
2003	869	14	27	42
2004	919	12	34	55
2005	937	18	45	55
2006	1131	16	42	61
2007	1224	21	51	71
2008	1184	22	59	54
2009	1171	24	62	67
2010	1150	36	72	84
2011	1129	39	97	93
2012	1185	34	123	75
2013	1055	34	100	91
2014	953	25	89	84
2015	879	23	89	95
2016	809	22	106	113
2017	741	26	131	116
Total	16,644	390	1183	1123

Source: Authors based one Scopus (2018)

4.5 Data Analysis: Theme Extraction and Synthesis

We tried to conserve the integrity of the selected publications for data analysis so that the originality of each publication is maintained. We also used the synonyms of the words in order to avoid the plagiarism of those publications, but in many cases we kept the similar words/concepts which carry significant meanings. We identified the common factors as themes, collected across studies, and pooled to form a synergistic understanding from distinct categories. We maintained the accuracy and reliability and validity throughout the process of theme extraction.

5 Review Findings: Globalization Is a Threat to Local Identity in the Developing Economies

There is vast number of literature which revealed mixed opinions about the impacts of cultural globalization on local identity. Some documents mentioned this as significant means for ascertaining universal unity and democracy. Many of them mentioned that this kind of globalization offers global people to live in the 'global village'. There is another collection of literature that strongly disagrees and affirms that cultural globalization has destroyed national as well as local identity.

Overall, the literature gives number of upsetting notions about the threats of cultural globalization on local identity in the developing economies. Through reviewing the literature, this chapter finds the following threats. Cultural globalization:

- Is a big threat to traditional values and indigenous identity
- Becomes synonym of 'danger' to developing economies
- Destroys artistic heritage
- Loses 'self'
- Creates lack of space of local culture
- Creates gaps into cultural 'in-betweenness'
- Is a new risk of ancient cultures
- Creates identity crisis
- Has no root or connection with the national identity
- Imposes to treat all cultures in one manner
- Attempts to learn diverse cultures in a heterogeneous manner
- Creates conflicts between 'globalism' and 'localism' and so on

In the line of many other issues, it is remarkably observed that many of the indigenous cultures and practices from the South are being replaced by the Western cultures (Muzaffar 2002). Kaul (2012) argues that this process creates some form of ultra-values and beliefs that have no root or link to its original national identity. This gives a certain level of confusion/paradox between the Western and local cultures, where local identity crisis is extremely high. Allen and Skelton (2005) argued that the present form of the Western cultural globalization is not an ultimate production of our ongoing human accomplishments and practices, and people are not impartially aided from this so-called cultural diversities; rather people are losing their control and local identity, and they are living with a certain level of cultural dominance. Castells (1996) argues that this kind of cultural globalization rather gives some kinds of sense on their identity, which is radical or unorthodox with respect to their own cultures. Morley (2000) argued that identity cannot be a universal concept, rather it geneses such a way where people can meet and interconnect themselves within their real social and cultural experience, and globalization surely extinguishes such uniqueness of these social relationships.

Köchler (1986) stated that though globalization is considered as an ideological tool, it controls this tool in the hands of industrialized world, and its rheostat power inflicts domination to the rest of the world. This is more dangerous that the whole world is shifting into a single place, single culture, and single identity through globalization. This process is creating such a global cultural surface where one's own culture is obliterating and reshaping to a global culture, and everybody is bound to conceive such culture with many obstructions and hegemony. This kind of materialization creates religious conflict and decays artefact prettiness of the country. Dalby (2007) found this as impassive as it roots out the folk art forms from their religious ritualistic nature. Naz et al. (2012) argued that globalization has brought cultural pluralism, which creates cultural conflict among the locally defined cultural traits, and these traits are defusing from the Western culture. Marshall (2005) stated

that although globalization has been called an integrating force, cultural conflict has become the most rampant form of international violence that globalization has accelerated. He observed 36 violent conflicts raging around the world in 2003; the Iraq invasion was the sole international war. He added that the remaining 35 were internal wars within the territory of 28 countries, and all but four of these were communal conflicts, inspired by ethnic, sectarian, or religious grievances. The influence of geopolitical organizations, those larger than nation-states, is on the rise. According to Scott's (1997) observation, their development entails a mix of de- and reregulation, as well as attempts to build political bodies, civil societies, and cultural identities at a level higher than that of the nation-state. Therefore, the continued evolution of these organizations carries political, cultural, and social ramifications that go beyond predictions made by globalization theory.

On the other hand, globalization and local identity are the forms of interaction which emerges as a cultural conflict. A number of studies highlighted this issue in such a way that clearly proves that globalization is a threat to local identity. For example, Bird and Fang (2009) mentioned that globalization brings debate in the nature and meaning of 'local'. Most of the analyses of globalization conceived 'local' as a part of the whole 'global'. This kind of statements gives a certain level of contradictions that local is a part of whole and how it is called global. It is rather mostly observed that such kind of attitude creates contradictions between conventional globalization theory and cultural imperialism or colonialism. This is agreed that globalization means import and export of cultures. However, it is noticeable that people of a country can be changed easily through a geographical contact or through the Internet and the interaction of cultural beliefs across global communities. Bhugra and Mastrogianni (2004) called this processes as 'acculturation', 'assimilation', 'deculturation', or 'biculturation'. Coldwell-Harris and Aycicegi (2006) mentioned that a noticeable change is that the process of globalization is rapidly fostering individualism in collectivistic societies. Salzman (2001) argued that most of the people cannot cope with the processes that Bhugra and Mastrogianni mentioned. As a result, culture is often considered as a coping resource that offers anxiety-buffering self-esteem. However, most people will see them as 'losers' that increased anxiety and social distress.

Alfasi and Fenster (2005) observed the local status about the impacts of global orientations on different cities in the world. They found that the impact of these cites was not exclusively economic rather to religion, culture, heritage, landscape, or other qualities of uniqueness. They argued that crises of national identity have become shared challenge for both the developing and the developed world. On the other hand, globalization also constitutes the reason for the revival of local cultural identities in different parts of the world. In this connection, Zhuojun and Hualing (2014) found that the national identity in the era of globalization takes on the dual character of undermining and reconstructing and weakening and strengthening. We would believe that cultural as well as economic globalization most commonly abates many developing countries' state's sovereignty.

Cultural globalization increased the level of control of the developed economies over developing economies. The consequence of this process is increased

dependency on global development frameworks in the developing economies. In many cases, the non-governmental organizations (NGOs) are facing many challenges in the developing economies to implement these so-called global development interventions, and these have been proved unacceptable and unsuccessful. Many local people in the developing economies are struggling to cope with these global development interventions (Islam 2017a). People also feel lack of development ownership, and they cannot participate with those development interventions due to lack of their understanding about the development meanings (Islam 2014a, b). A number of authors such as Islam and Morgan (2012), Islam (2014a, b, 2017a, b), and Tembo (2004) found that the beneficiaries of the NGOs are facing lack of development freedom, and the beneficiaries are development ownership due to lose their 'self' and lack of space. We present two quotations from two studies that showed how the Smith communities were facing such kind of crisis in Bangladesh:

> In many cases, we found that NGOs' participation initiatives were not fully successful. By reviewing NGOs' development policies and activities, we concluded that many development concepts and frameworks were imported from the Western countries. We observed that in some cases, the imported knowledge tools were successful and in many cases, the smiths failed to grasp these tools. If we look at the NGOs' two divergent development constructs (indigenous versus imported knowledge approaches), we can apprehend that it is really very difficult to understand this imported knowledge approach that the NGOs are using in community development interventions. In terms of the type, nature, mode, explanation, data creation, communication and learning, and knowledge management, the imported knowledge approaches were found harder to them to grasp when compared to indigenous knowledge. (Islam 2017a)

> The research found that development ownership is one of the concerns in the external aid-based funding projects. This concern has been more commonly expressed in the language of the needs and wishes of the recipient country. The use of the language of empowerment, participation, negotiation, partnership, consultation, capacity building and rights has, therefore, only become fashionable. Within the actor oriented development approach, various players are working with the poor, promoting similar institutional frameworks, and using a common language. Should non-governmental (development) organizations be moulded into the fashion or should they support the poor in shaping the system into one, which delivers poverty reduction goals effectively? Similarly, the research found that the major issue was that the poor people were struggling for space to exercise their images of reality, rather than simply being voices at the negotiation. (Islam 2017b)

A number of literatures cover three important aspects where globalization creates identity crisis in the developing economies. First, it is highly acknowledged that globalization accelerates economic growth through market economic system, but there are many destructive impacts of globalization that modestly obfuscate our lives, and eventually the totality of this process hits on our local identity (Zhuojun and Hualing 2014). Secondly, due to globalization, the accumulation of capital flow has been concentrated to a small number of industrialists. Such economic development increases income disparities, rural-urban gaps, and problem of redistribution of the social resources. It is remarkably observed that the whole process generates a new interest group who either takes control or power of the resources or who creates social inequality in the developing economies. According to the International

Monetary Fund (IMF) (2000), globalization serves to amplify the level of inequality between nations. In this connection, Robert and Lajtha (2002) investigated the impact of globalization in industrial sector. They mentioned that the multinational companies take advantage, e.g. cheap labour that is obtained from the developing countries. These companies normally provide poor working conditions and do little to upgrade the knowledge of their workers. Consequently, the workers are not in a position to improve their social welfare. Thirdly, globalization intensifies corruption among different groups that has now a big challenge to the developing economies. As a result, many of the development interventions are not functioning properly. Islam and Morgan (2012) examined that the poor people have no access to the local market in order to sale their products as all of the markets are being dominating by the syndicate, where local people feel powerless.

In the era of globalization, there is lack of regionalism and regional integration. A number of authors such as Kinnvall and Jönsson (2002), Howes (1996), Morley (2000), and Ritzer (2008) examined that many of the developing countries in Southeast Asia are facing threats to the local identity, e.g. regional identity, cultural identity, ethnic identity, etc., due to globalization. We can insert two observations from Kaul (2012) and Babran (2008), who showed how globalization is loosening local culture and its impacts on media:

> Even though cultural argument against globalization is unacceptable, we should recognize that deep within it lies an unquestionable truth. This century, the world in which we will live will be less picturesque and imbued with less local colour than the one we left behind. The festivals, attire, customs, ceremonies, rites, and beliefs that in the past gave humanity its folkloric and ethnological variety are progressively disappearing or confining themselves to minority sectors, while the bulk of society abandons them and adopts others more suited to the reality of our time. (Kaul 2012)

> One of the prominent tasks of the media in the globalization process has been its pursuit in developing a single cultural world. The culture sponsored by the western media is a culture, which dictates to the society what to eat, what to wear, how to live, what to think and what to know. This enormous chain of global communication institutions and its allies in the camp of capitalism have transformed the majority of ordinary people into obedient consumers, without identity or ability to command their destiny. (Babran 2008)

This chapter agrees that the impacts of cultural globalization on local identity are diverse and vivid based on the local socioeconomic and political contexts. Recently, the authors of this chapter (Islam et al. 2018) conducted a detailed study on the impacts of globalization on local identity between Southeast Asia and Latin America. This study looked at some issues such as how local, global, and glocal interventions are shaping and what are the efforts that comprise integration of multi-ethnicity, national identity-building, and regionalization that can integrate through globalization. The study identified the negative and positive impacts of globalization on local identity between these two developing regions. With diverse aspects, this study unfolded that the negative impacts of globalization massively destroy the local culture, traditions, habits, and social norms which are big threats to local identity in both regions. The study acknowledged that though in both regions globalization in terms of their development is not measured in large scale, the overall findings proved

that globalization rooted out local identity. We can insert three quotations from this study:

> Like other countries, globalization has wide impacts in the ASEAN countries. It is said that many countries of the ASEAN region failed to take advantages from globalization. However, it is a problem of their identity crisis. It is because, due to poverty, low literacy rate, low level of infrastructure, and nondemocratic political administration, many countries such as Lao, Vietnam, Cambodia and even in Indonesia and Malaysia could not take full advantages from globalization that the countries such as Brunei and Singapore achieved. The cultural diffusion, low level of coping strategies, drug addiction, traffic jam, rural urban migration, overcrowd at urban areas, climate change and disasters are common problems in the Southeast Asian countries due to globalization. However, the onset of globalization had not only brought the economic and social benefits, but also heightened the security threat to states and societies. Through the use of the Internet, the pervasive and regressive religious ideology of Islamic radicalism is spread out to the masses. In the late 1990s, unrest and social violence in Indonesia was partially attributed to the Islamic radicalism taking root among the masses, and partly because of a greater awareness of concurrent events happening elsewhere in the world. Terrorism, insurgencies, and militancy have replaced large scale interstate wars to become the foremost security threat in the world today.

> Due to globalization, the Latin American countries' language diversity has increased over time. This is not the time that the Brazilians speak in Portuguese and the rest speak in Spanish. The cultural diversity is very vibrant. In terms of culture, Latin America is categorized by a wide range of vibrant topics that together demonstrate the character, personality and the creativity of the civilization(s). This culture is the combination of high culture (literature, high art) and unpopular culture (music, folk art and dance) as well as religion and other customary practices. The dances such as samba or salsa and the talents of promising actors and actresses such as Gael García Bernal and Salma Hayek, have added new dimension to its identity. The typical foods, beverages, and cooking styles common to many of the countries and cultures in Latin have come from a great variety of sources.

> The negative impacts of globalization in the case of Brazil were mentioned as threat on local traditions and culture, local food, carnival, cosmopolitan values, gay and lesbian culture, and indigenous occupations such as blacksmiths, wood makers, local small farming, and so on. On the other hand, the country Chile is facing a number of other social problems such as mass poverty, gap between rich and poor, wage gap, cultural attack, privatization of education, political imperialism (monopoly), high tax, elite privileges, brain drain, mixed culture, poor people's lack of access to public services, deterioration of human values and ethics.

6   Discussion

Based on a qualitative interpretive meta-synthesis (QIMS), this study reviews literature on cultural globalization and local identity in the developing economies. The main objective of this study was to justify whether globalization is a threat to local identity. There are number of limitations to conduct this study. The methodological limitations were also acknowledged here as this study is based on content analysis (Islam and Mungai 2016; Islam 2016; Chowdhury et al. 2018; Reza et al. 2018). Firstly, there is lack of scientific publications on cultural globalization and identity crisis. Secondly, the literature was not well-structured. Thirdly, due to the

diversity and differences of the developing economies, it was a challenge to bring the whole picture on this aspect. A further comparative study is proposed that can give clearer understanding about the impacts of cultural globalization on local identity in developing economies in different regions or continents.

At the introduction and review results, this chapter acknowledged a number of important merits of globalization that include universal unity, democracy, productive global culture, inhabitants of global village, uniqueness of culture, expansion of the sense of self-identity, new vistas and broadened horizon, promoted intercommunication of culture, increased individualization and freedom, etc. On the other hand, this chapter elaborately sketched the negative aspects of the cultural globalization that destroy local identity in the developing economies. At the beginning of the review findings, the chapter pointed out a number of these negative aspects that includes cultural globalization abolishes traditional values and indigenous identity, destroys artistic heritage, loses 'self', is a new risk of ancient cultures, imposes to treat all cultures in one manner, and creates conflicts between 'globalism' and 'localism' and so on.

The results section of this chapter mainly analysed six aspects within the negative aspects of cultural globalization on local identity. Firstly, it clearly showed a number of aspects about the process of cultural globalization that negatively impact on local identity. With a number of references such as Muzaffar (2002), Kaul (2012), Allen and Skelton (2005), Castells (1996), and Morley (2000), this paper showed how the indigenous culture is being replaced by the Western culture where a diverse cultural identity is formed. In this point, this paper revealed two arguments such as cultural identity cannot be a universal concept and it is one type of cultural domination. Secondly, this chapter unfolds that cultural globalization has created a certain level of ideological debates within our family and social system. With referencing a number of influential comments by Köchler (1986), Dalby (2007), Naz et al. (2012), Marshall (2005), and Scott (1997), this chapter argued that the whole world is shifting into a single place, single culture, and single identity through globalization. This does not give any ideological panacea rather people are losing their original sense of belongings in terms of their heritage, cultural habits, religious practices, and decays artefact prettiness. With an example of 36 violent conflicts from 28 countries, this chapter clearly showed the communal conflicts, inspired by ethnic, sectarian, or religious grievances. Thirdly, this chapter showed how the cultural globalization forms the cultural conflict and dual culture where people lose their own cultural image. With a number of examples from Bird and Fang (2009), Bhugra and Mastrogianni (2004), Coldwell-Harris and Aycicegi (2006), Salzman (2001), Alfasi and Fenster (2005), and Zhuojun and Hualing (2014), this chapter argued that such kind of cultural formation creates contradictions between conventional globalization theory and cultural imperialism or colonialism. This kind of conflict weakens many developing countries' state's sovereignty.

Fourthly, cultural globalization increased the level of control of the developed economies over developing economies. This chapter considered a number of examples from Islam (2014a, b, 2017a, b), Islam and Morgan (2012), and Tembo (2004) in the developing economies. In this connection, this chapter found that in many

cases, the global development interventions through NGOs in the developing economies are facing many challenges, and this has been proved unacceptable and unsuccessful as the local people in the developing economies are struggling to cope with this development framework. Most of these studies claimed that the local beneficiaries cannot participate in the development interventions, and they feel lack of development ownership, and they cannot participate with those development interventions due to the lack of their understanding about the development meanings. A number of authors such as Islam and Morgan (2012), Islam (2014a, b, 2017a, b), and Tembo (2004) showed that the beneficiaries of the NGOs are facing lack of development freedom and development ownership due to lose their 'self', and lack of spaces in their own culture. Fifthly, this chapter found the lack of regionalization within cultural globalization where local identity has been misjudged. This issue has been validated with a number of evidences from Kinnvall and Jönsson (2002), Howes (1996), Morley (2000), Ritzer (2008), Kaul (2012), and Babran (2008). With an example of the Southeast Asia, a number of authors remarked that cultural globalization wrecked many regional indigenous festivals, attire, customs, ceremonies, rites, and beliefs. Cultural globalization pursuits in developing a single cultural world where majority of ordinary people into obedient consumers, without identity or ability to command their destiny. Sixthly, this chapter concludes to cite three comparative examples between Southeast and Latin America. These examples reconnoitre that cultural globalization twisted many negative metaphors such as cultural diffusion and low level of coping strategies. The possible threats are disappearing local food and carnival, and indigenous occupation such as blacksmiths, wood makers, and increase social inequality, and destroy local small farming, and cosmopolitan values.

7   Conclusions

The main objective of this chapter was to explain whether cultural globalization is a threat to local identity. This chapter analysed different impacts of this globalization from developing countries. The study found that there are number of benefits of this globalization. Most of the studies showed globalization as a fast-tracking concept that can easily interact with different cultures. Finding showed that traded goods are often the reflection of culture. The study explored that cultural mingling is massively stirring for the human spirit. It is also an influential source of innovation. At the same time, it stretches many types of tensions, misinterpretations, and conflicts. This chapter analysed some examples from the developing countries such as Bangladesh, Malaysia, Indonesia, Thailand, Brazil, Chile, etc. and found that due to the loss of national identities, these countries give emphasis to protect cultural diversity. The chapter reported that cultural globalization rooted out many indigenous practices, values and norms, traditions, habits, food practices, and even the originality of the languages that has adverse negative impact of cultural diversity and identity. However, there are many benefits of cultural globalization, but the

developing economies are facing many problems such as cultural dislocation and displacement, cultural realm, breaking cultural autonomy, diffuse cultural traits, and destruction of local traditions, knowledge, and occupation.

This chapter analysed many political, economic, and sociocultural examples from the developing economies and proves that cultural globalization has dual dichotomies. We observed that cultural globalization and cultural identity are correlated and interconnected phenomena, where cultural globalization is a source of transformation of new and modern ideas and development of human capital and information, but on the other side, it is a threat to sociocultural environment in the context of identity. In this regard, the argument of Castells (1999) is worth: 'our world and our lives are being shaped by the conflicting trends of globalization and identity'. Furthermore, cultural globalization strews cultural characters from one society to the other, which interrupts the local culture. In this regard, Bauman (1998) stated that this kind of culture has been reshaped through diffusion and commercial or political relations. In the context of cultural contact and cultural experiences, Tomlinson (1999) points out that culture is changing where people make culture and culture makes people in the form of cultural identity. We have seen that this kind of cultural transmission generates the kind of cultural characters that adversely upsets the integration and acculturation. The overall process directly or indirectly sways our social and economic components such as local values, religious practices, and economic structure of the local community or society. In addition, we also observed that currently the influence of globalization on cultural identity is one of the immense and multidimensional worries, because this fetched vital alteration in the origins of our local identity from the values of family, community, nation, and physical geography to those of global media (Scholte 2000).

References

Aguirre RT, Bolton KM (2013) Why do they do it? A qualitative interpretive meta-synthesis of crisis volunteers' motivations. Soc Work Res 37(4):327–338

Alfasi N, Fenster T (2005) A tale of two cities: Jerusalem and Tel Aviv in an age of globalization. Cities 22(5):351–363

Allen T, Skelton T (eds) (2005) Culture and global change. Routledge, London

Babran S (2008) Media, globalization of culture, and identity crisis in developing countries. Intercult Commun Stud 17(2):212–221

Bauman Z (1998) On glocalization: or globalization for some, localization for some others. Thesis Eleven 54(1):37–49

Bhavsar V, Bhugra D (2008) Religious delusions: finding meanings in psychosis. Psychopathology 41(3):165

Bhugra D, Mastrogianni A (2004) Globalization and mental disorders. Br J Psychiatry 184 (1):10–20

Bird A, Fang T (2009) Cross cultural management in the age of globalization. Int J Cross-cult Manag 9(2):139–143

Bottomore T, Goode P (1984) Austro-marxism. Stud Sov Thought 27:66–71

Carnoy M, Hallak J, Caillods F (1999) Globalization and educational reform: what planners need to know. UNESCO, International Institute for Educational Planning, Paris

Carr SC (2006) Globalization and culture at work: exploring their combined glocality. Springer Science & Business Media, New York

Castells M (1996) The rise of network the society. Blackwell Publishing, Oxford

Castells M (1999) Information technology, globalization and social development, vol 114. United Nations Research Institute for Social Development, Geneva

Chowdhury SR, Wahab HA, Islam MR (2018) The role of faith-based NGOs in social development: invisible empowerment. Int Soc Work. https://doi.org/10.1177/0020872818767260

Coldwell-Harris CL, Aycicegi A (2006) When personality and culture clash: the psychological distress of allocentrics in an individualistic culture and idiocentrics in a collectivistic culture. Transcult Psychiatry 43(3):331–361

Dalby S (2007) Globalization, geography and environmental security. In: Kofman E, Youngs G (eds) Globalization: theory and practice. Continuum, New York

Dorman P (2000) Actually existing globalization. In: Rethinking globalization(s). Palgrave Macmillan, London, pp 32–55

Erickson B, Roberts M (1997) Marketing local identity. J Urban Des 2(1):35–59

Eslake S (2000) The drivers of globalization. Presentation to a Regional Defence Seminar hosted by the Australian Department of Defence Cypress Lakes Resort. New South Wales, 20 Nov 2000

Haslam SA (2001) Your wish is our command: the role of shared social identity. Social identity processes in organizational contexts, p 213

Horowitz D (2000) Betty Friedan and the making of the feminine mystique: the American left, the Cold War, and modern feminism. University of Massachusetts Press, Amherst

Howes D (ed) (1996) Cross-cultural consumption: global markets, local realities. Routledge, London

Inglehart R (2000) Globalization and postmodern values. Wash Q 23(1):215–228

Islam MR (2009) Indigenous knowledge and globalization in Bangladesh: NGOs' capacity for social capital and community development. PhD Thesis, University of Nottingham, UK

Islam MR (2014a) Improving development ownership among the vulnerable people: challenges of NGOs' community empowerment projects in Bangladesh. Asian Soc Work Policy Rev 8 (3):193–209. (Wiley)

Islam MR (2014b) NGOs' role for social capital and community empowerment in community development: experience from Bangladesh. Asian Soc Work Policy Rev 8(3):261–274

Islam MR (2016) NGOs, social capital and community empowerment in Bangladesh. Palgrave Macmillan, Singapore

Islam MR (2017a) NGO community empowerment projects in Bangladesh: how do these fit the local context. Local Econ 32(7):763–777

Islam MR (2017b) Non-governmental organizations and community development in Bangladesh. Int Soc Work 60(2):479–493

Islam MR, Hossain D (2014) Island char resources mobilization (ICRM): changes of livelihoods of vulnerable people in Bangladesh. Soc Indic Res 117(3):1033–1054

Islam MR, Morgan WJ (2012) Non-governmental organizations in Bangladesh: their contribution to social capital development and community empowerment. Community Dev Journal 47 (3):369–338

Islam MR, Mungai NW (2016) Forced eviction in Bangladesh: a human rights issue. Int Soc Work 59(4):494–507

Islam MR, Wahab HA, Chowdhury SR (2018) The impacts of globalization on local identity: comparative study between Southeast Asia and Latin America. University of Malay, Kuala Lumpur

Jones RW, Kierzkowski H (2004) 10 globalization and the consequences of international fragmentation. In: Money, capital mobility, and trade: essays in honor of Robert A. Mundell. MIT Press, Cambridge, MA, p 365

Jönsson K (2010) Unity-in-diversity?: regional identity-building in Southeast Asia. J Curr SE Asian Aff 29(2):41–72

Kaul V (2012) Globalization and crisis of cultural identity. J Res Int Bus Manag 2(13):341–349

Kinnvall C, Jönsson K (eds) (2002) Globalization and democratization in Asia: the construction of identity. Psychology Press, London

Köchler H (1986) The relation of man and world. Existential and phenomenological perspectives. In: Köchler H (ed) Phenomenological realism. Selected essays. Peter Lang, Frankfurt am Main, pp 45–58

Livesey C (2004) Culture and identity, sociological pathways. http://www.sociology.org.uk/pathway2.htm

Lloyd PJ (1998) Globalisation and competition policies. Weltwirtschaftliches Arch 134(2):161–185

Marshall MG (2005) Current status of the world's major episodes of political violence. Report to Political Instability Task Force, 3 February 2005

Mittelman JH (2000) The globalization syndrome: transformation and resistance. Princeton University Press, Princeton

Morley D (2000) Home territories: media, mobility, identity. CRC Press, London

Muzaffar C (2002) Globalization and religion: some reflections. http://www.islamonline.net. Retrieved Dec 2012

Nash K (2001) The 'cultural turn' in social theory: towards a theory of cultural politics. Sociology 35(1):77–92

Naz A, Khan W, Daraz U, Hussain M (2012) The crises of identity: globalization and its impacts on socio-cultural and psychological identity among Pakhtuns of Khyber Pakhtunkhwa Pakistan. https://doi.org/10.2139/ssrn.2082990

Ohmae K (1990) The borderless world. Collins, London

Ohmae K (1995) Putting global logic first. Harv Bus Rev 73:119–125

Ramsaran D, Price DV (2003) Globalization: a critical framework for understanding contemporary social processes. Globalizations 3(2):15–32

Reza MM, Subramaniam T, Islam MR (2018) Economic and social well-being of Asian labour migrants: a literature review. Soc Indic Res. https://doi.org/10.1007/s11205-018-1876-5

Ritzer G (2008) Sociological theory. McGraw-Hill, New York

Robert B, Lajtha C (2002) A new approach to crisis management. J Conting Crisis Manag 10 (4):181–191

Ruiz E, Praetorius RT (2016) Deciphering the lived experience of Latinos with diabetes and depression: a qualitative interpretive meta-synthesis. Soc Work Public Health 31(2):70–82

Rummens J (1993) Personal identity and social structure in Sint Maartin/Saint Martin: a plural identities approach. Unpublished Thesis/Dissertation, York University

Salzman MB (2001) Globalization, culture, and anxiety: perspectives and predictions from terror management theory. J Soc Distress Homeless 10(4):337–352

Scholte JA (2000) What is 'global' about globalization? Macmillan, London

Scott AJ (1997) The cultural economy of cities. Int J Urban Reg Res 21(2):323–339

Sharma S, Sharma M (2010) Globalization, threatened identities, coping and well-being. Psychol Stud 55(4):313–322

Tembo F (2004) NGDOs' role in building poor people's capacity to benefit from globalization. J Int Dev 16(7):1023–1037

Tomlinson J (1999) Globalization and culture. University of Chicago Press, Chicago, IL

Vukić F (2012) Communicating local and collective identity: sustainable development as creative collaborative practice. In: Arte-Polis 4 international conference creative connectivity and the making of place, living smart by design, January 2012

Zhuojun W, Hualing H (2014) National identity in the era of globalization: crisis and reconstruction. Soc Sci China 35(2):139–154

Social Globalization and Consumer Life Satisfaction: An Empirical Study in Malaysia

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Abstract Undoubtedly globalization is taking place at a rapid pace all over the world. Specifically, this chapter attempts to examine the relationship between the subindices of social globalization and consumer life satisfaction. The main purpose of this study is to examine whether a specific subcomponent of social globalization, namely, television viewing, is reflected in life satisfaction of individuals. This study adopts and uses the gratification theory to understand the gratification sought and obtained by adult consumers when watching various international television genres. Since the power of media mobilizes consumers to have connections with the world through television, this process creates the perception among people that they are global citizens. Studies have found that people's life satisfaction tends to be high when their social globalization level is high. This study argues that individuals who watch certain foreign TV genres, as a means to perceive themselves as global citizens, tend to be more satisfied with their lives. The study was undertaken in Malaysia, a multi-ethnic and fast-growing economy. A survey was conducted among 900 adult TV consumers. The results indicated that adult consumers who spend time watching specific TV genres tend to be more content with their lives. Although this study has shed light onto some implications of television viewing and life satisfaction of adults, a few limitations exist and are further discussed in this chapter.

1 Introduction

The concept of globalization was first introduced in the early 1940s (Şiriner and Nenička 2011). The term globalization refers to becoming worldwide, and its first definition came from the field of sociology. Robertson (1992) was the first sociologist to define globalization, referring to the world as a single space, which can be described as "the compression of the world and the intensification of the consciousness of the world as a whole".

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Today, globalization is defined in a narrow sense as the development of an increasingly integrated global economy marked especially by free trade, free flow of capital, and cheaper foreign labour markets (Benjamin 2017; Donnan 2017; Basu 2016; Potrafke 2013). But in a broader sense, it encompasses every aspects of international interactions where dependence increases in every field such as production, trade, communication, culture, international relationships, law, human rights, and more (Mahutga et al. 2017; Cornali and Tirocchi 2012; Raikhana et al. 2014; Kojo 2018; Ralf 2014; Meena 2017).

According to Goryakin et al. (2015), recent efforts at measuring globalization were built on the conceptualization by Keohane and Nye (2000) of three different relevant dimensions of globalization: (1) *economic*, long-distance flows of goods, capital and services, as well as information and perceptions that accompany market exchanges; (2) *political*, the diffusion of government policies internationally; and (3) *social*, the spread of ideas, information, images, and people (Dreher 2006).

The third dimension, which is the focus of this present study, is *social globalization*. The widespread dimension of social globalization has been made possible through technology (Schroeder 2018). As technology has become indispensable in societies, it has also led to deep cultural change and increase in human interactions across cultures, as geographical boundaries have been virtually shortened (Hassi and Storti 2012). Communities worldwide are aware of the latest information and happenings through the various means of communications, including television. These major developments indicate social globalization (Servaes 2008; Karancan and Ergin 2011).

The component of social globalization variable has been studied using various methods such as telephone traffic transfers, international tourism foreign population, international letters, Internet users, number of foreign restaurants, number of international shops, and trade in books used by consumers and the media in a particular society (Goryakin et al. 2015).

Researchers have extensively documented the extent to which information technologies have impacted human activity and how they occupy an important place in human activity (Castells 2000). Due to the impact of globalization, culture also faces new challenges in its meaning. Culture can be viewed today as the cumulative human knowledge, beliefs, and behaviour that are transmitted to succeeding generations (Legare 2017). As globalization makes societies change in many ways, culture serves to solve problems and needs that one encounters. In this context, economy and politics are also part of culture. The importance of family and institutions in shaping the youth is diminishing, while that of the media is increasing (Corcoran 2012).

The media has an effect on nearly everything. From encouraging consumption to shopping, messages can be seen in almost all events that are watched on television by people all over the world (Alejandro 2010). Anchors have become important television announcers who can impact on the thoughts of millions worldwide. Furthermore, national languages are also taking a secondary importance. Foreign words enter local languages (Karancan and Ergin 2011).

Global media news companies export information through news, radio, and the Internet. This creates a flow of information and exposure of products and values across cultures (Giulianotti and Robertson 2007). Karancan and Ergin (2011) argued that people's life satisfaction tends to be high when their social globalization level is high. People's life satisfaction increases when they have a television and access to transnational brands. Hence, the power of media mobilizes consumers to have connections with the world through television (Kaul 2012). This process creates the perception among people that they have become global citizens.

Despite the increasing consumption of new media, as well as research on audience reactions which demonstrated major contradictions between television consumption and the satisfaction obtained from this activity, watching television remains the most important leisure activity worldwide (Gui and Stanca 2009).

There are many cases in which we might assume that people watch TV because they enjoy it (Depp et al. 2010). It is however unclear whether watching TV makes its users unhappy or if TV is a "refuge" for less happy people. Depp et al. (2010) reported that studies found that despite watching more TV, older adults reported similar or higher levels of positive affect, lower levels of negative affect, and greater life satisfaction compared to younger and middle-aged adults (Charles et al. 2001; Mroczek and Kolarz 1998). Another study by Rubin (1983) revealed that people who had high life satisfaction viewed television not for escape or social interaction but mostly for the purpose of relaxation and entertainment (Gülnar and Balcı 2012).

Studies have shown that Western nations have high social globalization values in comparison to sub-Saharan African regions (Karancan and Ergin 2011; Sundaram et al. 2010). While many studies have investigated the social globalization values in the West, very little is known about societies and their social globalizations values in the East. This has led the author to conduct the present empirical study in Malaysia, a multi-ethnic and fast-developing economy in Southeast Asia, to determine whether television viewers of global programs are significantly happier.

Although many studies have explored the dimension of social globalization on several outcome variables (Goryakin et al. 2015; Fors 2014), there are practically no empirical studies which have explored its relationship to life satisfaction among adult consumers. The present study argues that in the context of social globalization, watching various international television genres can provide a major example where TV consumption choices can maximize life satisfaction, in the sense that it causes individuals to perceive themselves as being more global citizens.

Hence, the objective of this present study is to determine the magnitude of which social globalization is reflected in the life satisfaction of individuals. To achieve this end, this study examines the subindices of social globalization by exploring the extent to which individuals watch international television genres, as a means to gratify themselves as global citizens, and their relationship this has to their life satisfaction. In doing so, the theories of uses and gratification and life satisfaction were adopted as a theoretical framework to support this study.

2 Literature Review

2.1 *Social Globalization and Television*

The phenomenon of globalization is more of a reality than ever. There are different ways to approach this topic, different levels of debate, and different points of view. What is certain is that globalization is intimately connected to sharing information, media is often regarded as the main vehicle for its rapid expansion, and globalization has had a tremendous impact on the media (Kaul 2012).

According to Chalaby (2016), the last few decades have been transformative for television, as technology and globalization have combined to bring rapid change. The new millennium marks the moment when the TV content chain internationalized—as signalled by a sudden and synchronous development of transnational TV channels—and the TV industry began to be coordinated on a global scale. Chalaby (2016) argued that globalization is at once a structural reality (television is globalizing because value-adding sequences have become international) and a structuring reality (firms' decisions and strategies are coordinated by a value chain that is global in scope). The TV industry has been integrated through international trade.

According to Butt (2014), technological advancement has not only shattered the social boundaries of the world, but it has also brought tremendous transformation in all fields of life. Peoples of the world now live in close proximity, they share their joys and sorrows with one another, and they benefit from the inventions and discoveries made by other people. It is the media that creates the experience of global shared time, especially by informing people throughout the world of "events" which they can share. Communications give people a chance to contact others in distant locations regardless of the time. Globalization of any country is a reflection of that country. Globalizing TV shows and films have influenced people, shaping the way they understand their social identities, their cultural communities, and the wider world in which they live.

3 The Uses and Gratification Theory Approach

The uses and gratification theory has been widely used and is among the most influential theories in media studies (Basilisco and Kyung Jin 2015). Unlike mass media concepts and theories that emphasize the media influence, the uses and gratification approach explores how the media is used, and it based on what motivates the recipients to use the media as well as which gratifications are obtained from it (Tanta et al. 2014). While some older theories suggested that the audience is passive and can be easily manipulated (e.g. the magic-bullet and hypodermic needle theory), the uses and gratification approach emphasizes positive motivation and active use of the media content that can gratify individual recipients' needs.

The uses and gratification theory is an appropriate theory to understand individuals' motives of using any type of media (Conrad et al. 2015). In fact, some researchers have long suggested that we can glean a greater understanding of uses and gratification theory by examining different media and content types in subparts (Conrad et al. 2015).

Tanta et al. (2014) explained that the main advantage of the uses and gratification approach is that it gives an insight to motivation for consuming a particular media content, which complements the findings about the interaction between the media and its users. The simple fact that someone watches television for 4 h a day cannot give full information about their motives or which of their needs are gratified threat. For some recipients, a television is merely an acoustic background or escape from the feeling of being alone; for others, it is a means of relaxation or obtaining information. Some recipients may even seek excitement. This theory considers recipient's individual motives, thus discarding an obsolete premise about passive media recipients all influenced by the media in the same manner.

The theory focuses on individual use and choice and also acknowledges that different people can use the same medium for different purposes (Basilisco and Kyung Jin 2015; Dolan et al. 2016; Mehrad and Tajer 2016). Uses and gratification theory emphasizes the reasons behind why individuals choose a specific medium and whether they obtain any form of satisfaction from their choice (Alsridi 2018; Vale and Fernandes 2018). Motives are a fundamental component of audience activity and are the universal disposition defined by uses and gratification theorists that influence an individual's actions. Many studies have adopted this theory and have applied it to a variety of mass and media content, with the selection of media type evolving to match the dominant media of the day (e.g. Whiting and David Williams 2013; Ifinedo 2016; Ahad and Anshari 2017; Grissa 2017).

According to Smith (2015), audiences depend on media to gratify their needs, wishes, or motives. Gratification theory is often employed to understand the manner in which viewers use the available media and the gratification they get from the selected media. Liebes and Katz (1989) explained that when satisfying needs, media gratifies more than other sources. However, the degree of needs gratification varies according to the medium. Importantly, studies have reported that participants were dependent on television for a psychological aspect (Davies 2007; Smith 2015). In such cases, significant correlation between life satisfaction and television dependency was found (Smith 2015).

Uses and gratification researchers have identified several motivations for media use. The most widely recognized categorization of uses and gratification motivations is the one mentioned by McQuail (1983), who labelled them into the following categories:

- *Information*: It relates to the need of accessing information directly from brands. It refers to the need of staying updated about the brand or learning from other consumers' knowledge and may drive consumption (Gummerus et al. 2012; Muntinga et al. 2011; Zaglia 2013).

- *Entertainment*: It relates to the need of relaxation and evasion from daily routine through brand-related activities (Baldus et al. 2015; Muntinga et al. 2011) and can be a driver of engagement.
- *Personal Identity*: It relates to the need of shaping one's identity through self-expression and self-presentation by providing an image of one's personality and by receiving pee recognition (Schau and Gilly 2003).
- *Integration and Social Interaction*: It relates to the need of bonding with people with a common passion, gaining a sense of belonging to a community, and meeting like-minded others (Baldus et al. 2015). It was found to be related with consumption, contribution, and creation (Muntinga et al. 2011).

This study argues that individuals are motivated to watch international TV programs and in the process feel more integrated with the global community. People can relate to the need of bonding with others with a common passion, thereby gaining a sense of belonging to a global community. Hence, when people watch various international TV genres, they perceive themselves as more global citizens, as they feel connected with people who share the same passion around the world.

Allen and Jayachandran (2016) utilized a holistic approach to construct a causal model and identify major determinants of life satisfaction among Canadian respondents. It was found that respondents who were female, young, married, very religious, from high socioeconomic status, born in Canada, and who demonstrated high levels of neighbourhood interaction had greater satisfaction with life. Furthermore, respondents had a greater life satisfaction if they had greater sense of belonging to the community.

Interestingly, Simons (2015) investigated the social dimensions of engaged viewers' reception of TV drama and explored how audiences themselves experience contemporary television as a social medium. The idea of people belonging to an imagined community and viewers having a sense of belonging to an audience was a typical characteristic of TV as a social technology. In order to explore the idea of TV drama as a shared social experience, respondents were asked about their sense of belonging to a specific TV audience. Half of the sample said that they had experienced a feeling of belonging to an audience of a show. They described this feeling as a sense of belonging to a select group of viewers (feeling special), a feeling of belonging to a bigger family (relatedness), having something in common with other viewers (same taste), or as something that definitely contributed to the joy of watching TV fiction.

4 Television Viewing and Life Satisfaction

Life satisfaction is thought of as the feeling of happiness and state of joy or positive emotion that an individual may possess (Didino et al. 2018; Nemati and Maralani 2016; Argyle 1987). It is known as a subjective happiness or personal satisfaction, and the indicators of life satisfaction may differ from person to person.

Two competing approaches/theories in life satisfaction research have been discussed intensely in recent years: bottom-up theories and top-down theories (Loewe et al. 2014; Erdogan et al. 2012). Bottom-up theories consider overall life satisfaction as a function of various areas of life satisfaction (Erdogan et al. 2012). From this perspective, many different areas with a potential influence on overall life satisfaction (Loewe et al. 2014) can be identified in the literature, such as satisfaction with health, job, income, housing, leisure time, and family (Kuykendall et al. 2015; Argyle 1987; Agyar 2013; Loewe et al. 2014; Newman et al. 2014). In contrast, researchers have also proposed a top-down approach where life satisfaction is determined by personality disposition (Lachmann et al. 2018).

The top-down perspective considers the level of overall life satisfaction or areas of life satisfaction as a function of personality and other stable traits (Agyar 2013). Factors beyond personality traits are considered of importance. For example, situational factors such as (critical) life events and other environmental influences have been shown to be of relevance when assessing the level of life satisfaction. This study adopts the top-down theory of life satisfaction to explain how environmental influences can predict the level of life satisfaction.

There are researchers that consider life satisfaction as a common evaluation of an individual's surroundings which can be positive or negative (Sánchez-Álvarez et al. 2015; Freire and Gabriela Ferreira 2016). Technologies have always played a significant role in the quality of life (Lee 2014; Kubey and Csikszentmihalyi 2013; Wu et al. 2017; Subanti et al. 2018). Communication technologies are central to forming and reshaping our lifestyle, leisure, entertainment, and social relationships and can significantly impact media users' life satisfaction (Smith 2015; Wilczek 2018). To this end, Rubin (1983) put forward that individuals' utility of television is focused on social interaction and characteristics of life satisfaction. People tend to use television to get psychological enjoyment and to escape from stress. Therefore, they seek personal satisfaction through television viewing. Furthermore, it has been suggested that life satisfaction might be one of the motives of television use (Smith 2015).

Grable (2005) suggested that television influences life satisfaction, as the viewers compare themselves to and mimic the lifestyles of people they see on television. Studies have also reported that people who watch less than half an hour of TV a day tend to be more satisfied with their lives than people who choose more hours of TV consumption (Frey et al. 2007).

Stavrositu (2014) conducted a study to explore the cultivation effects of television viewing on meritocratic belief systems (particularly, system justification) and ultimately on perceived life satisfaction. The results of a cross-sectional survey revealed that genre-specific TV viewing cultivated system-justifying beliefs. More specifically, the findings suggested that heavy viewing of competition-based reality TV shaped viewers' economic system-justifying beliefs (i.e. the belief that the economic system was fair and legitimate). In turn, economic system-justifying beliefs enhanced viewers' perceived life satisfaction.

Webb et al. (2017) have studied the impact that exposure to TV advertising has on life satisfaction in Japan. Generally, their study found significant positive

relationships between hedonic values and attitude to advertising, TV consumption, and perceived standard of living in advertisement. Significant positive relationships were found between TV advertising and both perceived standard of living in advertisement and life satisfaction.

This study adopts the top-down theory of life satisfaction to explain how environmental influences, such as television, can predict the level of life satisfaction among adults. Likewise, in terms of social globalization, people's life satisfaction tends to be high when their social globalization level is high (Karancan and Ergin 2011). In other words, people's life satisfaction increases when they have access to television and are able to watch various television programs. The power of media mobilizes consumers to have connections with the world through television. This process creates the perception among people that they have become global citizens.

This study adopts the uses and gratification theory to understand the gratification sought and obtained through the consumption of various international television genres among adults. Using this theory, the author studies whether adults' life satisfaction and their television dependency are related to each other. The application of the uses and gratification theory allows us to explore the extent to which individuals watch international television genres as a means to gratify themselves as global citizens and how this relates to their life satisfaction. Hence, the following hypotheses are developed for this study in line with the discussion above.

5   Hypotheses of the Study

Based on the literature review, the following null hypothesis and alternate hypothesis are developed for this study:

H_1 Individuals who watch various international TV genres, as a means to perceive themselves as global citizens, exhibit differences in life satisfaction.

H_0 Individuals who watch various international TV genres, as a means to perceive themselves as global citizens, exhibit no differences in life satisfaction.

6   Methodology

In this study, social globalization is expressed as the spread of information. Social globalization is indicated through individuals' contact with mass media, namely, television and the various international genres offered by the medium. Typically, to measure the exposure of individuals to television, studies have calculated the number of hours spent for television viewing (Wu et al. 2017).

Television viewing was measured by the television genres that individuals watched and the number of contact hours individuals watched television on a weekly basis. Television genres included international news, sports, movies, drama,

documentary, comedy, and action and adventure programs. For each genre, specific international broadcast programs aired on TV were given as examples to respondents in order to ensure that they were aware of and exposed to the international dimension of the medium.

The dependent variable life satisfaction, in a broad definition, is living a good life with which one is satisfied. Life satisfaction is commonly measured with the help of short questionnaires such as the Satisfaction with Life Scale (Lachmann et al. 2018). In order to examine adults' life satisfaction, five short items (e.g. "In most ways my life is close to my ideal".) were designed. The scale was adopted from Diener et al. (1985).

This scale is generally used to measure a global cognitive judgment of individual's life satisfaction and consists of a five-point Likert-type scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). The actual items for all of the variables with their descriptive information and reliability scores are presented in the analysis and results section.

Television viewing and life satisfaction among adults were examined through a survey conducted in the Klang Valley in Malaysia for a period of four consecutive months. The target population were mostly students enrolled in undergraduate and/or postgraduate programs, both full-time and part-time, in public universities and private colleges of higher learning across the Klang Valley region in Malaysia. The Klang Valley region was chosen because most institutions of higher learning in the country are concentrated in this area. The questionnaire was completed by 900 respondents aged between 18 and 57 years old. Other demographic variables included gender, ethnicity, marital status, education level, and income.

7   Analysis and Results

7.1   *Scale Reliabilities*

The internal consistency reliabilities of the scales were first assessed. Cronbach's alpha coefficient, which was the most popular indicator of internal consistency, was employed in the present study to assess the reliabilities of measurement scales adopted (Malhotra 2004). Table 1 presents the descriptive statistics and reliability analysis of the study constructs.

The present study was based on Churchill's (1979) recommendation when assessing the reliability of each scale. Based on the results of the reliability analysis and descriptive statistics for individual items of life satisfaction and various international television viewing programs, the constructs displayed an acceptable degree of reliability with a Cronbach's alpha coefficient of 0.764 for life satisfaction and 0.783 for television viewing.

Table 1 Descriptive statistics and reliability analysis of the study constructs

Scale items	Mean	Std.	Cronbach's alpha
Life satisfaction measure[a]			0.764
Item 01: In most ways my life is close to my ideals	3.36	0.954	
Item 02: The conditions of my life are excellent	3.45	0.915	
Item 03: I am satisfied with my life	3.57	0.969	
Item 04: So far I have gotten the important things I want in life	3.38	1.013	
Item 05: If I could live my life over, I would change almost nothing	3.04	1.077	
Television viewing program measure[b]			0.783
News	3.91	3.831	
Sports	2.53	3.412	
Movies	4.41	4.741	
Drama	3.90	4.521	
Doc	2.64	3.225	
Comedy	2.97	3.960	
Action and adventure	3.33	4.748	

Author's own table
[a]Item scale ranging from 1 (strongly disagree) to 5 (strongly agree)
[b]News programs open scale 0–30 h per week; sports programs open scale 0–25 h per week; movies programs open scale 0–42 h per week; drama programs open scale 0–40 h per week; documentary programs open scale 0–30 h per week; comedy programs open scale 0–37 h per week; action and adventure programs open scale 0–48 h per week

8   Data Analysis

All five discrete variables from the Life Satisfaction Scale were pooled together to form a pseudo-continuous dependent variable ranging in score from 5 (1×5) to 25 (5×5). The satisfaction score was expressed as Totsat Score (Totsat) with lower scores indicative of reduced satisfaction with life and higher score indicative of increased satisfaction with life.

Initial statistical analysis conducted to compare the mean differences between the various demographic variables and life satisfaction constructs treated the pooled dependent variable life satisfaction as continuous.

In conducting the binary logistic regression analysis, the pooled dependent variable was collapsed and categorized into two outcome levels: "low" and "high" life satisfaction. Totsat Scores ranging from 5 to 15 comprised the "low" life satisfaction group, and Totsat Scores of 15–25 were defined as the "high" life satisfaction group. Adjusted odds ratios (OR) and confidence intervals (CI) were calculated to determine which international television programs were associated with high life satisfaction for each demographic group for both the "low" and "high" life satisfaction levels. Respondents at the "high" satisfaction level served as the referent group. Variables that were significant and marginally significant (i.e. meet the 0.05 significance level) were retained in the model. All respondents

who did not answer questions used in the regression procedure were excluded from the analysis.

The independent variables explored in this study were use of international news, sports, movies, drama, documentary, comedy, and action and adventure programs, along with demographic variables of gender, age, race, marital status, education, and income. Independent variables were treated as either continuous variables or categorical in the regression analysis.

9   Demographic Differences with Life Satisfaction

This section reports an investigation of demographic differences with life satisfaction constructs. Preliminary statistical procedures were employed to examine possible significant group differences in all constructs based on gender, birth, ethnicity, marital status, education, and income. Table 2 presents the demographic differences with life satisfaction.

Independent sample *t*-tests were used for examining gender differences with life satisfaction. Next, one-way analysis of variance was utilized to determine the significant differences in terms of age, ethnicity, marital status, education, and income with respect to the measure of life satisfaction. When there were significant differences, post hoc tests (Scheffe) were used to determine the particular groups which differed significantly within an overall one-way analysis of variance.

Based on Table 2, the relationships between *gender* and life satisfaction constructs were investigated by testing the significance of the mean differences between male and female. However this study reported no significant gender difference in relation to life satisfaction.

A one-way ANOVA was computed to compare the mean differences among four *age groups* with the construct of life satisfaction. Table 2 presents a summary of the ANOVA results. Overall, there were no significant associations between age and life satisfaction.

The association between *ethnic group* and the *life satisfaction* construct was investigated by testing the significance of the mean differences between four different groups. The result of this study showed that ethnicity exerts some influence on the life satisfaction construct ($F = 10.676$, $p = 0.000$). In comparison with Malay and Chinese ethnic groups, the Indian ethnic group tended to be more satisfied with their lives.

The associations between *marital status* and the *life satisfaction* construct of the study were investigated by testing the significance of the mean differences between four different groups in terms of their marital status. Table 2 presents the results of marital status differences with the life satisfaction construct of the study. Overall, there were significant associations between marital status and life satisfaction ($F = 4.899$, $p = 0.002$). Subjects who were married with children tended to score higher on life satisfaction than subjects who were single, married without children, or widow/widower/divorcee.

Table 2 Demographic differences with life satisfaction

Constructs	N	Mean[a]	F	Sig. $p \leq 0.05$
Gender			0.524	0.469
Male	362	16.7431		
Female	538	16.8420		
Birth			1.543	0.202
18–27 years old	211	16.5071		
28–37 years old	584	16.8151		
38–47 years old	91	17.1978		
48–57 years old	14	18.1429		
Ethnicity			10.676	0.000[*]
Malay	470	17.0234		
Chinese	262	15.8664		
Indian	87	17.9540		
Others	81	17.3086		
Marital status			4.899	0.002[*]
Single	784	16.6505		
Married without children	41	17.4634		
Married with children	66	18.2727		
Widow/widower/divorcee	9	16.2222		
Education			1.896	0.169
College diploma	255	17.0588		
Professional diploma/university degree	543	16.6851		
Income			1.092	0.363
Less than RM1000	578	16.6713		
RM1000 to RM1999	124	16.6613		
RM2000 to RM3999	135	17.4000		
RM4000 to RM5999	50	16.9200		
RM6000 to RM7999	10	17.6000		
RM8000 to RM9999	3	16.3333		

Author's own table

Note: RM = Malaysia Ringgit, 1 RM = US$0.25 approximately

[a]A Higher score represented greater agreement with the attributes

*The mean difference was significant at $p \leq 0.05$

The same statistical tool was used to examine the association between life satisfaction and *education level*. Table 2 presents the results of education group differences with the life satisfaction construct. The result of this study showed that education level did not exert any influence on the main construct.

The mean differences of six *income groups* with regard to the life satisfaction construct of the study were compared using one-way ANOVA analysis. Table 2 presents the results of income differences with life satisfaction. This study found no significant associations between income and life satisfaction.

10 Correlations Between Television Viewing Programs and Life Satisfaction

Pearson correlation was employed to examine if there are any associations between various international television genres and life satisfaction. Table 3 presents the matrix of the estimated correlations for all of the study constructs. The nature of the directional hypotheses of this study called for a two-tailed test.

With reference to Table 3, overall significant positive correlations were reported between all TV viewers of various international genres and life satisfaction. The correlation coefficient between television viewing for *news* programs and life satisfaction was positive ($r = 0.113$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *sports* programs and life satisfaction was positive ($r = 0.277$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *movies* and life satisfaction was positive ($r = 0.264$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *drama* programs and life satisfaction was positive ($r = 0.239$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *documentary* programs and life satisfaction was positive ($r = 0.380$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *comedy* programs and life satisfaction was positive ($r = 0.347$) and significant at $p = 0.01$ (two-tailed). The correlation coefficient between television viewing for *action and adventure* programs and life satisfaction was positive ($r = 0.354$) and significant at $p = 0.01$ (two-tailed).

These results of cross-tabulation concerning the degree of satisfaction with life and television viewing are very encouraging, as significant correlations were found between all international TV genres and life satisfaction. This is especially encouraging, in comparison with previous studies, whereby survey results concerning degree of satisfaction with life were cross-tabulated with television viewing increase, but no significant correlation was found (Kensaku 2010). On the other hand, Smith's

Table 3 Correlations between television viewing programs and life satisfaction

	News	Sports	Movies	Drama	Doc	Comedy	Action	Totsat
News	1							
Sports	**0.277**^{**}	1						
Movies	**0.264****	0.229**	1					
Drama	**0.239****	0.057	0.370**	1				
Doc	**0.380****	0.330**	0.384**	0.296**	1			
Comedy	**0.347****	0.283**	0.428**	0.345**	0.428**	1		
Action	**0.354****	0.233**	0.465**	0.372**	0.472**	0.639**	1	
Totsat	**0.113****	0.080*	0.019	−0.016	0.063	0.063	0.085*	1

Note: Totsat, life satisfaction; Doc, documentary; Action, action and adventure
**Correlation is significant at the 0.01 level (two-tailed)
*Correlation is significant at the 0.05 level (two-tailed)
Bold values indicate the significant correlations that are related to this study and discussion

(2015) study found significant correlations between homemaker's life satisfaction and television dependency.

The research objectives of the present study were established not only to analyse the associations between constructs but also to predict values of the dependent variables from values of the independent variables. Obviously, these objectives could not be accomplished with merely the use of Pearson correlation analysis. Therefore, a regression analysis was employed subsequently for hypotheses testing.

11 Regression Analysis

For the purpose of analysis, a binary logistic regression analysis was conducted. The results of the Omnibus test of model coefficient of the data showed that the full logistic regression model containing all the predictors was statistically significant, $x^2 = 54.467$, df $= 23$, $N = 900$, $p = 0.000$, indicating that the independent variables significantly predicted the outcome variable, high life satisfaction.

The results of Cox & Snell and Nagelkerke R^2 estimates presented in Table 4 indicated that the whole model explained between 6.6% and 8.8% of the variance can be predicted from the independent variables.

Using the non-significance of the p value as an indicator of goodness of fit, the Hosmer and Lemeshow test indicated that the model is a good fit to the data, $x^2 = 5.746$, df $= 8$, $N = 900$, $p = 0.676$.

In the classification table, the observed data against predicted value in terms of group membership was analysed based on the logistic regression model. Essentially, the classification table indicated how good the model was in predicting the actual outcome. The model was able to predict 61.8% of the categories, which was considerably better than the null hypotheses table (54%). Table 5 indicates that the model classified correctly 75.5% of the respondents who were less satisfied with

Table 4 Cox and Snell and Nagelkerke R^2 estimates

Step	-2 log likelihood	Cox and Snell R^2	Nagelkerke R^2
1	1046.331	0.066	0.088

Author's own table

Note: a. Estimation terminated at iteration number 20 because maximum iterations have been reached

Table 5 Classification table

			Predicted		
			Totsat		
	Observed		Low	High	Percentage correct
Step 1	Totsat	Low	326	106	75.5
		High	199	167	45.6
	Overall percentage				61.8

Author's own table

Note: a. The cut value is 0.500

Table 6 Logistic regression predicting likelihood of high life satisfaction

Variable[a]	B	S.E	Wald	df	P	Exp(B)	95% C.I. for EXP(B) Lower	Upper
News	**0.049**	0.022	4.729	1	**0.030**	**1.050**	1.005	1.097
Sports	**0.041**	0.024	2.781	1	**0.095**	**1.042**	0.993	1.093
Movies	−0.016	0.019	0.738	1	0.390	0.984	0.948	1.021
Drama	**−0.041**	0.020	4.217	1	**0.040**	**0.960**	0.923	0.998
Doc	−0.025	0.030	0.734	1	0.392	0.975	0.920	1.033
Comedy	−0.014	0.027	0.274	1	0.601	0.986	0.934	1.040
Action[b]	**0.059**	0.025	5.380	1	**0.020**	**1.060**	1.009	1.114
Gender(1)	**−0.268**	0.163	2.718	1	**0.099**	**0.765**	0.556	1.052
Birth			2.102	3	0.552			
Birth(1)	−0.115	0.724	0.025	1	0.874	0.891	0.216	3.683
Birth(2)	0.001	0.694	0.000	1	0.999	1.001	0.257	3.900
Birth(3)	−0.411	0.658	0.390	1	0.533	0.663	0.183	2.409
Race			12.598	3	0.006			
Race(1)	0.044	0.272	0.027	1	0.870	1.045	0.613	1.782
Race(2)	−0.349	0.297	1.376	1	0.241	0.706	0.394	1.264
Race(3)	**0.595**	0.354	2.833	1	**0.092**	**1.814**	0.907	3.629
Marstat			3.472	3	0.324			
Marstat(1)	0.058	0.825	0.005	1	0.944	1.060	0.210	5.338
Marstat(2)	0.540	0.878	0.379	1	0.538	1.717	0.307	9.597
Marstat(3)	0.578	0.856	0.456	1	0.500	1.782	0.333	9.541
EDU01(1)	0.171	0.181	0.894	1	0.344	1.186	0.833	1.690
Income			8.774	5	0.118			
Income(1)	0.819	1.367	0.359	1	0.549	2.268	0.156	33.043
Income(2)	0.771	1.371	0.317	1	0.574	2.162	0.147	31.732
Income(3)	1.339	1.357	0.974	1	0.324	3.816	0.267	54.544
Income(4)	0.525	1.357	0.150	1	0.699	1.691	0.118	24.192
Income(5)	1.171	1.455	0.648	1	0.421	3.227	0.186	55.851
Constant	−1.190	1.553	0.588	1	0.443	0.304		

Author's own table
[a]Variable(s) entered on step 1: news, sports, movies, drama, doc, comedy, action, gender, birth, race, marstat, EDU01, income
[b]Action = action and adventure

their lives and 45.6% of those who were more satisfied with their lives, for an overall classification success rate of 61.8%.

The results of the data analysis presented in Table 6 showed the logistic regression coefficients, Wald test, and odds ratios for each of the predictor variables. As shown in Table 6, the predictor variables news, sports, drama, action and adventure, gender(1), and race(3) were either statistically significant or marginally statistically significant. The six predictors made unique significant contributions to the prediction of high life satisfaction.

News, sports, drama, action and adventure, gender(1), and race(3) showed a strong relationship to high life satisfaction. The strongest predictor of high life satisfaction was action and adventure programs, significant at $p = 0.020$. It recorded an odds ratio of 1.060, indicating that when holding all other predictors constant, as in action and adventure program increases by one standard deviation, the dependent variable life satisfaction increases 1.060 times. Hence, individuals who watched international action and adventure programs as means to perceive themselves as global citizens tended to be highly satisfied with their lives.

Another strong predictor of high life satisfaction was news programs, significant at $p = 0.030$. It recorded an odds ratio of 1.050, indicating that when holding all other predictors constant, as in news programs increase by one standard deviation, the dependent variable life satisfaction increases 1.050 times. Individuals who watched international news programs, as means to perceive themselves as global citizens, tended to be highly satisfied with their lives.

Drama programs also had a statistically significant impact on consumer life satisfaction, $p = 0.040$. It recorded an odds ratio of 0.960. However drama programs worked differently. The results indicated that as the drama program index increased by a value of 1, a decrease in life satisfaction variable (odds ratio = 0.960, $B = -0.041$) was observed, meaning that individuals who watched drama programs as a means to perceive themselves as global citizens tended to be less satisfied with their lives.

Sports programs had a marginally statistically significant impact on life satisfaction, $p = 0.095$. It had an odds ratio of 1.042, indicating that when holding all other predictors constant, as in sports programs increases by one standard deviation, we have an increased on the dependent variable life satisfaction of 1.042 times. Hence, individuals who watched sports programs as a means to perceive themselves as global citizens tended to be highly satisfied with their lives.

For demographic variables, the Indian ethnic group race(3) had a marginally statistically significant impact on life satisfaction, $p = 0.092$, as compared to Malays, Chinese, and other ethnic groups. It recorded an odds ratio of 1.814. When controlling for other predictors in the model, the results indicated that in comparison to other ethnic groups (Malays, Chinese, and others), the Indian ethnic group tended to be more satisfied with their lives (odds ratio = 1.814, $B = 0.595$).

In terms of gender, males gender(1) had a marginally statistically significant impact on consumer life satisfaction, $p = 0.099$. It recorded an odds ratio of 0.765. When controlling for other predictors in the model, the results indicated that in comparison to females, males tended to be less satisfied with their lives (odds ratio = 0.609, $B = -0.268$). This finding corroborates with a study on life satisfaction conducted by Blanchflower and Oswald (2004), who found that women generally reported higher levels of happiness or life satisfaction than men.

Overall, based on the analysis above, the null hypothesis developed for the study (which stated that individuals who watched various international program genres, as a means to perceive themselves as global citizens, exhibit no differences in life satisfaction) was rejected. The results from the regression analysis indicated that the alternate hypothesis (which stated that individuals who watched various

international program genres, as a means to perceive themselves as global citizens, exhibit differences in life satisfaction) was accepted.

Kensaku (2010) studied the sense of satisfaction viewers felt toward life and daily routines. In his study, those with the highest scores on the "lifestyle inactivity" factor were referred to as the "pessimist" group, while those scoring high on positive factors were referred to as the "optimist" group. It was found that TV viewers of news and sports genres were generally optimistic toward life.

Although the present study has not identified which specific type of international news, sports, or action and adventure programs viewers were more likely to watch, it does provide indications that individuals who watched international news, sports, and action and adventure programs tended to be more satisfied with their lives, as they received gratification from using this form of mass media. Giulianotti and Robertson (2007) further indicated that transnational social relations are commonly witnessed in many areas, and one of the areas includes sports. Soccer, for example, has become a global game, and its significance to the globalization process continues to intensify (Giulianotti and Robertson 2007).

The result obtained in this study with regard to the relationship between individuals who watched international drama programs and their life satisfaction corroborates with a study conducted by the University of Rhode Island in 2010. The study, which surveyed students ranged in age from 18 to 31, examined how TV viewing was likely to make individuals feel dissatisfied with their lives. The results indicated that watching television with a heavy dose of medical content in drama tended to reduce a person's satisfaction with life. Kensaku (2010) provided further evidence that viewers who were not satisfied and who were more pessimistic toward life tended to watch more foreign drama programs.

12 Discussion and Conclusion

The central aim of this study was to investigate an approach whereby adults' interaction with various international television genres produces positive psychological outcomes. Many studies have been conducted to investigate the real motives behind television viewing. While some studies reported positive outcomes, many other studies had discussed its negative consequences as well.

The information presented in this chapter suggests some generalizations supported by reasonably adequate evidence and others which are more speculative and require additional research. This study investigated whether individuals' consumption of various international television genres, as a global citizen gratifier, could significantly predict their life satisfaction.

The approaches to understand the manner in which viewers use television media and the gratification they obtained from the medium resulted in the uses and gratification theory. The consumption of various international genres by individuals acted as a global citizen gratifier.

The present study found positive significant correlation between viewers of various international television genres and life satisfaction. Importantly, this study suggests that individuals who watched certain international television genres, as a means to perceive themselves as a global citizen, tend to be contented. The distinction is especially noticeable in this study among individuals who watched international news, sports, and action programs. Using regression analysis, the hypothesis developed and tested in this study was supported. Individuals who watched various international genres as a means to perceive themselves as global citizens tended to exhibit differences in their life satisfaction.

From a television behaviour point of view, individuals who watch some specific international television genres as a means to perceive themselves as global citizens may tend to be contented, because viewers think the programs are useful and they can learn from them. It could also be possible that individuals who watch various programs tend to be contented with their lives, because the content brings a sense of security for them. Furthermore, individuals could be satisfied with their lives by watching those international programs because they may perceive it as useful for their hobbies. The international programs could contain stories and characters which individuals can relate to and empathize with, and it could also be that the programs show successful approaches to living and are emotionally moving. Some programs may not only entertain them (e.g. action movies programs) but also cheer them up (e.g. sports programs) and at the same time give them some information or knowledge (e.g. news). This in turn would have an implication on their general views and perception of life. These results may also suggest that, as viewers' relationship with society often weakens for various reasons, such as being busy with work and other activities, they may expect television to make them feel that they are abreast of what is going on in the world.

From a consumer socialization point of view, live broadcasts such as news programs may provide satisfaction to individuals. As television has become as integral a part of daily life as family members and friends, live broadcasts may create a dependence on television. Viewers may turn their feelings—which they might otherwise have focused on family members or friends—toward live television where people appear and talk in a natural way with no editing involved and in which viewers can share their time with those in the TV studio.

Sandıkcı et al. (2016) conducted a study to understand the complex relationship between globalization, marketization, religion, and quality of life. In their study, it was found that consumers regarded the benefits of globalization as manifested in global brands as improving their overall life satisfaction. Prior research showed that developing country consumers associated global brands with high quality and saw them as a "passport to global citizenship" (Askegaard 2006; Holt et al. 2004; Strizhakova et al. 2008). On the other hand, the study by Sandıkcı et al. (2016) showed that the positive meanings associated with global brands and the sense of being part of the developed world contributed to an increase in satisfaction with life.

A study by Hessami (2009) provided evidence that globalization has a significantly positive effect on well-being across various groups of individuals and has an economically significant effect on well-being. A study by Tsai et al. (2011) also

attempted to evaluate the influences of micro-level globalization in subjective well-being. Their study concluded that people who were more globalized tended to be more satisfied with their job and life.

The present study extended previous studies by showing that the positive meanings associated with watching international television programs and the sense of being part of the global world also contribute to an increase in satisfaction with life.

Several avenues for future research are possible. Clearly, there is a need for better understanding of the nature of television influence on life satisfaction. We need to understand the communication processes involved in the transmission and acquisition of certain values produced by television and how these vary by socio-demographic characteristics.

However, although the hypothesis of this present study was supported, careful interpretations of the results are needed, as alternative mechanisms to study the influence of television on life satisfaction may provide different findings. This is especially so given that many empirical studies have found that people who watch a great deal of television are usually unhappy (e.g. Gui and Stanca 2009), though it could be because unhappiness leads people to watch TV.

Given that the content of program genres may vary, future studies could examine the specific content of program genres that are broadcasted to determine if it has any implication on the life satisfaction of viewers. These issues need to be further addressed because, as observed in this study, certain program genres (e.g. drama) could lead to a decrease in life satisfaction, and this is possibly due to their content.

The study is limited to several urban areas in the west coast of Peninsular Malaysia. Future samples should include adults from rural areas as well. The places used to gather data from respondents in the Klang Valley region of Malaysia were chosen unintentionally for the sake of the researcher's convenience. The instrument was also designed with close-ended questions, and the respondents were limited from providing free expression of opinions, especially as to why they prefer watching specific television genres. Furthermore, the majority of respondents in the survey appeared to be young adults. It would be a complete study if further research conducted could use panel data and include greater number of older adults.

References

Agyar E (2013) Life satisfaction, perceived freedom in leisure and self-esteem: the case of physical education and sport students. Procedia Soc Behav Sci 93:2186–2193

Ahad AD, Anshari M (2017) Smartphone habits among youth: uses and gratification theory. Int J Cyber Behav Psychol Learn 7(1):65–75

Alejandro J (2010) Journalism in the age of social media. Reuters Institute Fellowship Paper, University of Oxford

Allen RB, Jayachandran J (2016) Determinants of life satisfaction in Canada: a causal modeling approach. SHS Web of Conferences, p 26. Article available online at https://www.shs-conferences.org/articles/shsconf/pdf/2016/04/shsconf_erpa2016_01073.pdf

Alsridi H (2018) Uses and gratifications of online news among young adults in Bahrain. Athens J Mass Media Commun 4(1):63–79

Argyle M (1987) The psychology of happiness. Methuen, London

Askegaard S (2006) Brands as a global ideoscape. In: Schroeder JE, Salzer-Mrling M (eds) Brand culture. Routledge, London, pp 91–101

Baldus B, Voorhees C, Calantone R (2015) Online brand community engagement: scale development and validation. J Bus Res 68:978–985

Basilisco R, Kyung Jin C (2015) Uses and gratification motivation for using Facebook and the impact of Facebook usage on social capital and life satisfaction among Filipino users. Int J Softw Eng Appl 9(4):181–194

Basu K (2016) Globalization of labor markets and the growth prospects of nations policy research working paper. World Bank Group

Benjamin M (2017) Is its age of expansion at an end? Free Trade. Business Researcher, Sage

Blanchflower DG, Oswald AJ (2004) Well-being over time in Britain and the USA. J Public Econ 8:1359–1386

Butt MS (2014) Globalization, its impact on mass media. The Nation. Article available online at https://nation.com.pk/24-Feb-2014/globalization-its-impact-on-mass-media

Castells M (2000) The rise of the network society of the information age: economy, society, and culture, 2nd edn. Wiley Blackwell, Oxford

Chalaby JK (2016) Television and globalization: the TV content global value chain. J Commun 66 (1):35–59

Charles ST, Reynolds CA, Gatz M (2001) Age-related differences and change in positive and negative affect over 23 years. J Pers Soc Psychol 80(1):136–151

Churchill GA (1979) Paradigm for developing better measures of marketing constructs. J Mark Res 16:64–73

Conrad KM, Dowd J, Abuljadail M, Saud Alsulaiman S, Adnan Shareefi A (2015) Life-span differences in the uses and gratifications of tablets: implications for older adults. Comput Hum Behav 52:96–106

Corcoran M (2012) The impact of new media technologies on social interaction in the household. Electron Cult Soc Chang 3–47

Cornali F, Tirocchi S (2012) Globalization, education, information and communication technologies: what relationships and reciprocal influences? Procedia Soc Behav Sci 47:2060–2069

Davies J (2007) The uses and dependency of entertainment television among Mormons young adults. J Media Relig 6(2):133–148

Depp CA, Schkade DA, Thompson WK, Jeste DV (2010) Age, affective experience, and television use. Am J Prev Med 39(2):173–178

Didino D, Taran EA, Gorodetski K, Melikyan ZA, Nikitina S, Gumennikov I, Korovina O, Casati F (2018) Exploring predictors of life satisfaction and happiness among Siberian older adults living in Tomsk Region. Eur J Ageing 15(2):175–187

Diener E, Emmons RA, Larsen RJ, Griffin S (1985) The satisfaction with life scale. J Pers Assess 49:71–75

Dolan R, Conduit J, Fahy J, Goodman S (2016) Social media engagement behaviour: a uses and gratifications perspective. J Strateg Mark 24:261–277

Donnan S (2017) Globalisation in retreat: capital flows decline since crisis. Financial Times

Dreher A (2006) Does globalization affect growth? Evidence from a new index of globalization. Appl Econ 38(10):1091–1110

Erdogan B, Bauer TN, Truxillo DM, Mansfield LR (2012) Whistle while you work a review of the life satisfaction literature. J Manag 38:1038–1083

Fors HC (2014) Social globalization and child labor: a cross-country analysis. Dev Econ 52:125–153. https://doi.org/10.1111/deve.12041

Freire T, Gabriela Ferreira G (2016) Health-related quality of life of adolescents: relations with positive and negative psychological dimensions. Int J Adolesc Youth 23(1):11–24

Frey BS, Benesch C, Stutzer A (2007) Does watching TV make us happy? J Econ Psychol 28:283–313

Giulianotti R, Robertson R (2007) Recovering the social: globalization, football and transnationalism. Global Netw 7(2):166–186

Goryakin Y, Lobstein WT, James PT, Suhrckebe M (2015) The impact of economic, political and social globalization on overweight and obesity in the 56 low and middle income countries. Soc Sci Med 133:67–76

Grable B (2005) Black and White racial comparisons of TV uses and gratifications on life satisfaction. Paper presented at the annual conference of the Association for Education in Journalism and Mass Communication

Grissa K (2017) How the 'uses and gratifications' theory explains the usage of professional networking sites: comparison between individual members and companies members. In: International conference on social media, wearable and web analytics (Social Media). https://ieeexplore.ieee.org/document/8057359/

Gui M, Stanca L (2009) Television viewing, satisfaction and happiness: facts and fiction. Working paper series, University of Milano-Bicocca, Department of Economics, p 167

Gülnar B, Balcı S (2012) The relationship between life satisfaction, interpersonal communication and media using among foreign students. Conference Paper. International Journal of Arts & Science (IJAS)

Gummerus J, Liljander V, Weman E, Pihlström M (2012) Customer engagement in a Facebook brand community. Manage Res Rev 35:857–877

Hassi A, Storti G (2012) Globalization and culture: the three H scenarios. Intech Open Science, London

Hessami Z (2009) Globalization's winners and losers evidence from life satisfaction data, 1975–2000. Munich Personal RePEc Archive. University of Konstanz, Department of Economics

Holt DH, Quelch JA, Taylor EL (2004) How global brands compete. Harv Bus Rev 82(9):68–75

Ifinedo P (2016) Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: perspectives from the Americas. Int J Inf Manage 36(2):192–206

Karancan E, Ergin E (2011) Economic, social and political dimensions of globalization and welfare: a worldwide research. In: Şiriner I, Neničk L (eds) Globalisation: dimensions & impacts: global studies. IJOPEC, London

Kaul V (2012) The changing world of media & communication. J Mass Commun J 2:116

Kensaku S (2010) Older people and television viewing in Japan. J NHK Broadcast Stud 6(8):63–94

Keohane RO, Nye JS (2000) Globalization: what's new? What's not? (and so what?). Foreign Policy 18:104–119

Kojo Y (2018) Global issues and business in international relations: intellectual property rights and access to medicines. Int Relat Asia Pacific 18(1):5–23

Kubey R, Csikszentmihalyi M (2013) Television and the quality of life how viewing shapes everyday experience, 1st edn. Routledge, New York

Kuykendall L, Tay L, Ng V (2015) Leisure engagement and subjective well-being: a meta-analysis. Psychol Bull 141:364

Lachmann B, Rayna Sariyska R, Kannen C, Konrad Błaszkiewicz K, Trendafilov B, Andone I, Eibes M, Markowetz A, Li M, Kendrick KM, Montag C (2018) Contributing to overall life satisfaction: personality traits versus life satisfaction variables revisited-is replication impossible? Behav Sci 8(1):1

Lee PS (2014) Television and quality of life. In: Michalos AC (ed) Encyclopedia of quality of life and well-being research. Springer, Dordrecht

Legare CH (2017) Cumulative cultural learning: development and diversity. Proc Natl Acad Sci USA 114:7877–7883

Liebes T, Katz E (1989) On the critical abilities of television viewers. In: Seiter E, Borchers H, Kreutzner G, Warth EM (eds) Remote control: television, audiences, and cultural power. Routledge, New York, pp 204–222

Loewe N, Bagherzadeh M, Araya-Castillo L, Thieme C, Batista-Foguet JM (2014) Life domain satisfactions as predictors of overall life satisfaction among workers: evidence from Chile. Soc Indic Res 118:71–86

Mahutga MC, Roberts A, Kwon R (2017) The globalization of production and income inequality in rich democracies. Soc Forces 96(1):181–214

Malhotra NK (2004) Marketing research: an applied orientation, 4th edn. Prentice Hall, Upper Saddle River

McQuail D (1983) Mass communication theory. Sage, London

Meena AK (2017) Globalization and human rights. In: Sieh E, McGregor J (eds) Human dignity. Palgrave Macmillan, London

Mehrad J, Tajer P (2016) Uses and gratification theory in connection with knowledge and information science: a proposed conceptual model. Int J Inf Sci Manage 14(2):1–14

Mroczek DK, Kolarz CM (1998) The effect of age on positive and negative affect: a developmental perspective on happiness. J Pers Soc Psychol 75(5):1333–1349

Muntinga D, Moorman M, Smit E (2011) Introducing COBRAs exploring motivations for brand related social media use. Int J Advert 30:13–46

Nemati S, Maralani FM (2016) The relationship between life satisfaction and happiness: the mediating role of resiliency. Int J Psychol Stud 8(3). https://doi.org/10.5539/ijps.v8n3p194

Newman DB, Tay L, Diener E (2014) Leisure and subjective well-being: a model of psychological mechanisms as mediating factors. J Happiness Stud 15:555–578

Potrafke N (2013) Globalization and labor market institutions: international empirical evidence. J Comp Econ 41(3):829–842

Raikhana SK, Moldakhmet M, Ryskeldy M, Alua M (2014) The interaction of globalization and culture in the modern world. Procedia Soc Behav Sci 122:8–12

Ralf M (2014) Globalization and law: law beyond the state law and social theory. In: Banakar, Travers (eds) Law and social theory. Hart Publishing, Oxford

Robertson R (1992) Globalization: social theory and social culture. Sage, London

Rubin AM (1983) Television uses and gratifications: the interactions of viewing patterns and motivations. J Broadcast Electron Media 27(1):37–51

Sánchez-Álvarez N, Extremera N, Fernández-Berrocal P (2015) Maintaining life satisfaction in adolescence: affective mediators of the influence of perceived emotional intelligence on overall life satisfaction judgments in a two-year longitudinal study. Front Psychol 6:1892

Sandıkcı O, Mark Peterson M, Ekici A, Simkins T (2016) Development and quality of life in Turkey: how globalization, religion, and economic growth influence individual well-being. J Macromark 36:304–320

Schau H, Gilly M (2003) We are what we post? Self-presentation in personal web space. J Consum Res 30:385–404

Schroeder R (2018) Social theory after the internet: media, technology and globalization. UCL Press, London

Servaes J (2008) Communication for development and social change. Sage, New Delhi

Simons N (2015) TV drama as a social experience: an empirical investigation of the social dimensions of watching TV drama in the age of non-linear television. Communications 40 (2):219–236

Şiriner I, Nenička L (2011) Globalisation: dimensions & impacts: global studies. IJOPEC, London

Smith S (2015) A study on life satisfaction and television dependency among urban women in Chennai. IOSR J Humanit Soc Sci 20(11):64–71

Stavrositu CD (2014) Does TV viewing cultivate meritocratic beliefs? Implications for life satisfaction. J Mass Commun Soc 17(1):148–171

Strizhakova Y, Coulter RA, Price LL (2008) Branded products as a passport to global citizenship: perspectives from developed and developing countries. J Int Mark 16(4):57–85

Subanti S, Hartatik AR, Hakim A, Setiawan R (2018) Communication and transportation as quality of life determinants based on cities in Central Java Province and Special Region of Yogyakarta. J Phys Conf Ser 983(1):012070

Sundaram JK, Schwank O, Arnim R (2010) Globalization and development in sub-Saharan Africa. DESA Working Paper No. 102

Tanta I, Maja Mihovilović M, Sablić Z (2014) Uses and gratification theory – why adolescents use Facebook? Medij Istraž 20:85–110

Tsai MC, Heng-Hao Chang HH, Wan-chi Chen W (2011) Globally happy: individual globalization, expanded capacities, and subjective wellbeing. Social indicators research. Springer, New York

University of Rhode Island (2010) TV viewing likely to make you feel dissatisfied and fear illness, researcher warns. Science Daily. www.sciencedaily.com/releases/2010/09/100930121005.htm

Vale L, Fernandes T (2018) Social media and sports: driving fan engagement with football clubs on Facebook. J Strateg Mark 26(1):37–55

Webb D, Kohlbacher F, Prieler M (2017) Life satisfaction in Japan: the role of hedonic values, advertising and watching TV. Soc Bus 7(2):155–175

Whiting A, David Williams D (2013) Why people use social media: a uses and gratifications approach. Qual Mark Res Int J 16(4):362–369

Wilczek B (2018) Media use and life satisfaction: the moderating role of social events. Int Rev Econ Springer Happiness Econ Interpers Relat 65(2):157–184

Wu XY, Han LH, Zhang JH, Luo S, Hu JW, Sun K (2017) The influence of physical activity, sedentary behavior on health-related quality of life among the general population of children and adolescents: a systematic review. PLoS One 12(11):e0187668

Zaglia M (2013) Brand communities embedded in social networks. J Bus Res 66:216–223

Aspects of Globalization: Spotlight on Latin America

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Abstract Globalization is the process of interconnection of the world. Latin America embraces cultures and territories of different nations. Therefore, these countries are connected in multidimensional way since the 1980s, which is the initiation time of globalization of Latin America. The components of multidimensionality include language, religion, culture, eating habit, sports, trade, etc. The positive effects of globalization include trade, production, labour market, and demographic improvement, while the negative effects comprise of divergence of communities, increased transitional, cross-border and rural–urban migration, and infrastructural deficit. However, in recent times, Latin America has been facing the reduction of the benefit of globalization for various reasons. This backwardness can be mitigated by filling up the gap between policy formulation and that of implementation. A snapshot of globalization of Latin America is described in the rest of the chapter.

1 Bird's-Eye View of Latin America

1.1 Origin

What is known as Latin America is the southern part of America, which was influenced by Latin European culture. There are controversies about which countries

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are in Latin America, but normally, these include the countries of South America, Central America, Mexico, and sometimes the Caribbean Islands where Spanish and Portuguese are spoken. Another view is that Latin America includes all American countries where people speak Spanish and Portuguese and French Latin America.

The term 'Latin America' derives from two words 'Latin' and 'America'. 'Latin', on the one hand, is a classical language of the Italic branch of the Indo–European languages, which was originally spoken in Italy. This language became dominant through the power of Roman Republic. 'America', on the other hand, derives from the 'Americas', which include the totality of territories in North America and South America. The Roman-speaking countries such as Spain and Portugal, upon their possessions of some parts of South America, influenced the culture, religion, language, and genetic contribution to the population. Therefore, Latin America refers to a group of territories and countries in America that were, once upon a time, part of Spain and Portugal, and where Romance languages were spoken. More specifically, Latin America is that part of the Americas where the Spanish and Portuguese languages are present. The term 'Latin America' itself was first used in 1856 by two Latin American intellectuals, in two independent works. The Chilean politician Francisco Bilbao first mentioned the term in 1856, at a conference in Paris ("América Latina o Sudamérica" 2005). The conference was titled 'Initiative of America. Idea for a Federal Congress of Republics', while the Colombian writer José María Torres-Caicedo also used the term in his poem 'The Two Americas' in the same year. It was their direct reaction to events connected with US policies which were hostile towards Latin American countries, and both intellectuals asked for the union of all Latin American countries as the only way to defend their territories against further foreign US interventions. This term, Latin America, was also used in 1861, by French scholars, in *La revue des races latines*, a magazine dedicated to the cause of Pan-Latinism (Phelan 1968). Napoleon III, the French emperor, is often credited with its naming. However, in France the term was used with the intention of including France among the countries having influence in the Americas and of excluding anglophone countries, as well as of transforming France into a cultural and political leader of the area (Chasteen 2001).

1.2 Location

Latin America is located in the Western Hemisphere, south of the United States. It lies between the Atlantic Ocean and the Pacific Ocean. Across more than 85° of latitude, Latin America covers Mexico, Central America, the Caribbean Islands, and South America. It includes 20 sovereign states and several territories. These are Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Falkland Islands, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, and Venezuela. The location of these countries is south of the US–Mexico border, starting with Mexico in North America, extending through Central America and parts of the Caribbean and down into the southernmost tip of South America—the region known as *Tierra del*

Fuego. It covers an area of approximately 19,197,000 km^2 (7,412,000 sq. miles), almost 13% of the Earth's land surface area. Latin America encompasses a vast and very diverse area of the world. The Pampa grasslands of the southern cone, the Andean mountain range, the Amazonian rainforest, the forests and volcanoes of Central America, and some of the tropical islands of the Caribbean are the main natural features of the region.

1.3 Socio-economic and Other Aspects of Latin America at a Glance

Latin America, where most people are Roman Catholic, with a variety of ancestries, ethnic groups, and races, being one of the most diverse regions in the world, had an overall population of 633.02 million people in 2015, according to the World Bank. The average rate of growth of population is 1.1%, where the birth and death rates per 1000 people are 17 and 6, respectively. The average life expectancy in Latin America is 75 years old, whereas Chile presents the highest average (81 years old) and Guyana the lowest (66 years old). Regarding the land area, about 35.7% is agricultural, and 21% of the total population lives in rural areas. Latin America had a combined nominal GDP of US$5,573,397 million. The average per capita income in Latin America is US$9095, and the unemployment rate is 6.3% (Black and Janis Van Der 2004). The social development indicators, such as health, education, and sanitation facilities, are also presented in the recently published World Bank and CIA Factsheet data. The data reveals that the percentage of government health expenditure in Latin American countries is 8.6% of its total budget. About 81% of the population of Latin America is reported as having improved sanitation facilities, and the literacy rate of 15+ years population, in both sexes, is 92%. According to a UNESCO report, of 2013, there has been an uptick in the region's public spending on education—from 4.5% of GDP in 2000 to 5.2% in 2010 (Almeida et al. 2014). On the one hand, the major exported commodities of Latin America are soybeans, petroleum and gas, sugar, bananas, coffee, copper, apparel, and automobiles, among others. On the other hand, the imported commodities are raw materials, petroleum and petroleum products, agricultural machineries, transport equipment, and chemical products, to name a few. To get an in-depth overview of the different indicators of these countries, see Appendix A. The next section will focus on the summarization of globalization in trade, culture, and political perspectives in Latin America.

2   Doorway of Globalization in Latin America

Globalization is the process of moving to a more interconnected world. It can be distinguished between historical globalization and 'ultramodernist' globalization (Lloyd 2000). Historical globalization processes started being applied from the fifteenth century, when the capitalist world economy began, and there was geographic expansion of division of labour, access to raw materials, industrial production, and the circulation of capital. Since 1492, it has been the forces of historical globalization that, almost exclusively, have been giving shape of Latin America's development (Cardoso 1982). In contrast to this, there came in 1980 ultramodernist globalization, with its multidimensional concepts of, for instance, the reorganization of production and distribution, the spread of financial markets, the interpenetration of advanced producer services, and the rise of key cities as command and control centres of global capital (Appadurai 2003).

2.1   Globalization: Blessings or Curse on Local Identity

Positive Effects
Since the 1980s, Latin America has embraced globalization. The positive impacts of globalization in Latin America are stated below:

- Globalization replaced the state control over resources, production, and services with privatization strategies, deregulated and reformed financial markets, and shifted from inflexible labour markets to flexible ones, from closed domestic markets to open and free trades, and from restrictive institutions to more innovative management approaches. Reductions in the state power provided a more technical, disciplined, and flexible national economy, with significant local, regional, national, and supra-national variations (Gwynne and Kay 2004).
- The sectoral employment as a percentage of the labour force was coming from an agricultural dominance in the 1960s, and it shifted to a quaternary dominance (service, information, transportation, marketing, finance, etc.) in the 1990s. In Brazil and Mexico, for example, 55% of the labour force worked in the tertiary and quaternary sectors in the 1990s, while 55% of the labour force worked in agriculture in the 1960s (Gwynne and Kay 2004). According to the World Bank report of 2000, over 50% of the economically active populations of the seven highest-income countries in Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Venezuela, and Uruguay) were involved in tertiary and quaternary employment, whereas the percentage of the labour force engaged in traditional industry continued to show a deterioration.
- Under the welfare of globalization, remarkable demographic improvements are observed. In the early twenty-first century, overall population growth rates continue to decline in this region, with reductions in fertility rates, increases in contraceptive prevalence, improvement in female literacy, better healthcare, and a

greater female participation in the workforce as key contributing factors. Life expectancies have increased throughout Latin America. Estimates suggest that, in Latin America, people over 65 years old now represent 25% of the dependent population, up from less than 10% in 1975.

- The globalization has expanded the trade and investment relationships of Latin America. Non-manufacturing exports such as agriculture, mining, fishing, forestry, and ranching have increased. Primary products continued to dominate the mix of total merchandise exports in the majority of Latin American countries during the 1990s. Only Mexico (23%) and Brazil (45%) recorded values below 50% (Keeling 2004).

Negative Effects

The observed negative effects of globalization on Latin America are discussed below:

- Globalization is the reason behind the growing differentiation of people and communities within Latin America, both across the entire region and within individual countries. Social polarization increased due to globalization. Between 1975 and 1995, the gap between the six poorest countries in Latin America and six selected core economies is shown in Table 1.
- Globalization has fostered the expansion of democratization. The paradoxical term which comes with that is 'limited democratization'. Neoliberalism has given most economic decision-making powers to the market, to corporations, and to newly emerging global or regional institutions (WTO, GATT, NAFTA, MERCOSUR, etc.).
- The migration and labour flow process of Latin America is an opportunistic one, where the flow is towards the advanced capitalist countries. Transnational migration, cross-border migration, and rural–urban migration are affected by significant political, economic, and social conflicts. In addition, transitional communities of Latin America, as well as international tourists, visit various Latin American

Table 1 Latin American development and the globalization imperative

PCI of six core economies		PCI of the top six Latin American economies in GNP	PCI of the bottom six Latin American economies in GNP	Ratios		
Year	A (US$)	B (US$)	C (US$)	A:B	B:C	A:C
1975	7899	1602	676	4.9:1	2.4:1	11.7:1
1995	27,870	4105	917	6.9:1	4.4:1	30.4:1
2002	26,497	4273	1038	6.2:1	4.1:1	25.5:1

Source: Gwynne and Kay (2004) (Polarization in the World Economy 1975–2002)
PCI = per capita income
A = United States, Japan, Germany, Britain, France, and Italy
B = Argentina, Brazil, Chile, Mexico, Uruguay, and Venezuela
C = Bolivia, Ecuador, Guatemala, Haiti, Honduras, and Nicaragua
2002 data calculated using the World Bank Atlas Method of Gross National Income

countries (e.g., El Salvador, the Dominican Republic, Jamaica) as visitors, and they demand both national and international tourism packages, which include migration in the tourism sector (Maimbo and Ratha 2005, pp. 311–312).

- Latin America faces two serious crises, in accessibility and mobility, due to the region's tremendous infrastructural deficit, resulting in Latin Americans suffering from inadequate accessibility and mobility, in terms both of their ability to access new opportunities and services and their physical mobility in rural or urban environments.

2.2 Current Scenario of Globalization in Latin America

Latin America has been going through adverse events since the year 2013. This region has been shaken by a new wave of political developments taking place in advanced countries, characterized by the promotion of a reduction of globalization since mid-2016. The Brexit phenomenon, in the United Kingdom, started this new trend, and the presidential election in the United States cemented it.

The changes in the global political and economic scenario will affect the region through (1) a likely increase in international interest rates, (2) an increased US protectionism, and (3) a greater degree of uncertainty about the evolution of the main economic variables, including the exchange rates between major currencies. As the external scenario has gradually become more unfavourable since 2013, even before the US presidential election, capital flows to Latin America had been declining, even at low interest rates. There was a significant drop in commodity prices, coexisting with a reduction in capital inflow, but the impact was not so strong because, as international interest rates remained low, the market liquidity was broad.

But, if international interest rates increase, the region may now face serious problems like (1) a reduction of capital flows, (2) a deterioration of terms of trade, and (3) an increase in the cost of financing for the public and private sectors (Latin America in a new global political and economic scenario 2017).

Apart from these critical aspects, globalization has produced different aspects in Latin America. Because of globalization, there has been a change in diet as well as the nutrition status that has changed, which decreases physical activities and increases diseases (Lajolo 2002). The eating habits have changed since the 1960s. The consumption of fats, meat, animal products, and sugar has increased, while the consumption of cereals, fruits, some types of vegetables, carbohydrates, and fibre has declined rapidly (Bermudez and Tucker 2003). Brazil, the largest country of Latin America, was the host of the 2014 FIFA World Cup and the 2016 Olympic Games. These international sports events were treated by the host cities and countries as an opportunity to enhance their local and foreign image (Black and Janis Van Der 2004). The very successful event of the World Cup was a good chance for Brazil to show the world that its economy was developing and steady (Almeida et al. 2014). Moreover, sports events will affect Latin American countries and the capital of the United States. For instance, the largest sports company, Nike, has its headquarters in Washington D.C., and it was a sponsor in the FIFA World Cup. Similar to Nike,

Adidas, which promotes Asian child labour, also sponsors FIFA. At the time of the Games, people will buy jerseys, thus increasing trade. Moreover, Latin American TV channels show those Games, which are also seen abroad. Sports events also lead to mutual enjoyment among fans. Therefore, globalization is affecting the world through sport. Latin America has not only flourished with such cultural additions but has also been playing a dominant role in trade. For example, on the one hand, Chile, containing great mineral wealth, produces over 5% of global supplies of copper. The world's largest copper mine, Escondida, is in Chile. Copper mining makes up 60% of exports (Mining in Chile copper solution 2013). On the other hand, Argentina is the country with the second highest Human Development Index in Latin America, with a rating of 'very high' because of its stability, market size, and growing high-tech sector (Human Development Report 2016). Furthermore, the world's largest exporter of coffee is Brazil, and it played an important role in the International Coffee Agreement (ICA). Brazil could increase and maintain the price of coffee, by exporting coffee worldwide (Jarvis 2012).

3 Conclusion

Globalization is an inevitable trend in this new era. In general, globalization has advantages and disadvantages. In the countries where globalization works, the main concern should be that of how to use it most reasonably (Zhaofeng 2016). Like in Latin America, governments embraced the ideologies of globalization uncritically and enthusiastically and incorporated them into national policy. Globalization can bring benefits for Latin America and rebrand the image of the countries, if the gap between policy formation and policy implementation is filled up.

Appendix

Table 2 Demographic profile of Latin American countries

Country	Population (thousand)	Population density (per sq. ml of land area)	Population growth rate	Life expectancy
Brazil	207,847,528	25	0.9	75
Chile	17,948,141	24	1.0	82
Argentina	43,416,755	16	1.00	76
Peru	31,376,670	25	1.3	75
Ecuador	16,144,363	65	1.5	76

Table 3 Economic profile of Latin American countries

Country	GDP	GDP per capita (US$)	Unemployment (% of total labour force)	Income share by highest 10%	% of population living below the poverty line	Major import commodities	Major export commodities
Brazil	0.1	15,162	11.5	40.7	21.4	Machinery, electrical and transport equipment, chemical products, oil, automotive parts, electronics	Transport equipment, iron ore, soybeans, footwear, coffee, automobiles
Chile	1.9	21,980	6.6	41.47	14.4	Petroleum and petroleum products, chemicals, electrical and telecommunications equipment, industrial machinery, vehicles, natural gas	Copper, fruit, fish products, paper and pulp, chemicals, wine
Argentina	0.5	22,400	6.6	30.8	30	Machinery, motor vehicles, petroleum—natural gas, plastics, organic chemicals	Soybeans and derivatives, petroleum and gas, vehicles, corn, wheat
Peru	2.4	11,438	4.9	33	25.8	Petroleum and petroleum products, chemicals, plastics, machinery, vehicles, TV sets, power shovels, front-end loaders, telephones and telecommunication equipment, iron and steel, wheat, corn, soybean products, paper, cotton, vaccines and medicines	Copper, gold, lead, zinc, tin, iron ore, molybdenum, silver; crude petroleum and petroleum products, natural gas; coffee, asparagus and other vegetables, fruit, apparel and textiles, fishmeal, fish, chemicals, fabricated metal products and machinery, alloys
Ecuador	3.7	10,849	5.4	35.2	25.6	Industrial materials, fuels and lubricants, nondurable consumer goods	Petroleum, bananas, cut flowers, shrimp, cacao, coffee, wood, fish

Table 4 Cultural and political aspects of Latin American countries

Country	Form of government	Language (official)	Major religions	Major ethnic groups
Brazil	Federal presidential republic	Portuguese	Roman Catholic, Protestant	White, mulatto (mixed white and black), black
Chile	Presidential republic	Spanish	Roman Catholic, Evangelical, or Protestant	White and nonindigenous, Mapuche
Argentina	Presidential republic	Spanish	Roman Catholic	White (mostly Spanish and Italian)
Ecuador	Presidential republic	Spanish	Roman Catholic, Evangelical	Mestizo (mixed Amerindian and white), Montubio Amerindian, and white

References

Almeida B, Marchi Júnior W, Pike E (2014) The 2016 Olympic and Paralympic games and Brazil's soft power. Contemp Soc Sci 9(2):271–283

América Latina o Sudamérica, Bandeira LAM, de Clarín DM (2005). http://www.clarin.com/ediciones-anteriores/america-latina-sudamerica_0_BkHMQbYJCYl.html. Retrieved 9 Aug 2017

Appadurai A (2003) Globalization. Duke University Press, Durham

Bermudez OI, Tucker KL (2003) Trends in dietary patterns of Latin American populations. Cad Saude Publica 19:S87–S99

Black D, Janis Van Der W (2004) The allure of global games for "semi-peripheral" polities and spaces: a research agenda. Third World Q 25(7):1195

Cardoso F (1982) Dependency and development in Latin America. In: Alavi H, Shanin T (eds) Introduction to the sociology of developing societies. Monthly Review Press, New York, pp 112–127

Chasteen JC (2001) "Progress" born in blood and fire: a concise history of Latin America. W. W. Norton, New York, p 156. ISBN: 978-0-393-97613-7

Gwynne RN, Kay C (2004) Latin America transformed: globalization and modernity, 2nd edn. Arnold, London

Human Development Report (2016) Statistical Annex, Table 1, UNDP

Jarvis LS (2012) The welfare implications of Brazil's coffee export price subsidies during the ICA. Agric Econ 43:19–32

Keeling DJ (2004) Latin American development and the globalization imperative: new directions, familiar crises. J Lat Am Geogr 3(1):1–21

Lajolo FM (2002) Functional foods: Latin American perspectives. Br J Nutr 88(S2):S145–S150

Latin America in a new global political and economic scenario: What does it mean for the region? https://www.brookings.edu/opinions/latin-america-in-a-new-global-political-and-economic-scenario-what-does-it-mean-for-the-region/. Retrieved 9 Aug 2017

Lloyd C (2000) Globalization: beyond the ultra-modernist narrative to a critical realist perspective on geopolitics in the cyber age. Int J Urban Reg Res 24(2):258–273

Maimbo SM, Ratha D (eds) (2005) Remittances: development impact and future prospects. The World Bank, Washington, DC

Mining in Chile copper solution (2013) The Economist. https://www.economist.com/news/business/21576714-mining-industry-has-enriched-chile-its-future-precarious-copper-solution. Retrieved 9 Aug 2017

Phelan JL (1968) Pan-latinisms, French intervention in Mexico (1861–1867) and the genesis of the idea of Latin America. Universidad Nacional Autonónoma de México, Mexico City

Zhaofeng L (2016) Analysis on globalization in Brazil. Cross Cult Commun 12(5):30–34

A Small- and Medium-Sized Enterprise (SME) Owner-Manager's Job Theoretic Review Under Globalization

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Abstract In a constantly changing global competitive world, it is crucial for organizations to understand their proper role. The global business environment has increased in complex trades between players as boundaries break down. In order to obtain competitive advantages from this environment, managers simply assume that their organization needs to go global. But these misconceptions and narrow views about globalization can lead managers to seek something that they do not really know what it is. Despite the importance of small- and medium-sized enterprises (SMEs), the question of the owner-manager's job is generally handled intuitively and disassociated to their characteristics. This chapter examines the relationship between globalization and the SME owner-manager's job, with a focus in developing economies. Based on a theoretic review, an attempt has been made to show a snapshot of the subject through a systematic mapping study. The results of this theoretic review enhance the importance to analyze the owner-manager's job at a SME perspective and its multiple parts and layers, such as specificities, personal characteristics, and previous experience of his/her owner-manager. An understanding of SME owner-manager's job can help practitioners to better assess the SME's readiness to go global.

1 Introduction

For each statement that is published in the Internet, written on newspapers, or broadcasted in television shows how the world is becoming less and less bigger under globalization. Very often emerges questioning about the trueness of this assumption. These questions seem to be back and forth throughout time, since globalization itself started to take form in economic, societal, cultural, and political structures and processes.

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Several researchers started to raise some important questions about how global we really are and how global we are not. That is an important research gap and can lighten up researches on globalization, as we see many dangerous misconceptions and narrow views about globalization. Ghemawat (2011, 2017a, b) and Kali and Reys (2007) show that these misconceptions and narrow views tend to inflame fears and doubts at country level and force managers at organizational level to seek something that they do not really know what it is.

Therefore, it is not difficult to see the relevance between manager's job and globalization. A simple yet illustrative example comes from *Harvard Business Review* (HBR) magazine. The May to June 2017 edition discussed what great CEOs do differently in their behavior that makes them distinguished from others. The very next edition of HBR, the July to August 2017 edition, discussed the contemporary state of the art of globalization after Brexit in the United Kingdom, Trump government in the United States, and the rise of European nationalism events.

Both themes, manager's job and globalization, interact in a complex system, involving the contemporary organizations. As globalization is the growing interdependence of regional and national economies, involving consumers, producers, suppliers, and governments in different countries (Knight 2000), it is more than relevant to include this subject into businesses researches.

Due to the relevance of these themes and its interaction, this chapter presents a theoretic review, based on literature, on small- and medium-sized enterprise (SME) owner-manager's job in developing economies, focusing the impact of globalization at the organizational level. Some question can be raised, such as:

- Are researchers on SME perceived changes in SME manager's job under globalization in international business?
- And if so, are there any tasks that managers of SME should do in their daily management routine practice?

To fulfil this chapter's proposal, a systematic mapping study was designed, based on Kitchenham (2004) and Kitchenham et al. (2007) to understand the state of the art on SME owner-manager's job.

The systematic mapping study was conducted in *Thomson Reuters Web of Science*™ database. Complementary researches were included to enlighten discussion, obtained from previously analyzed researches of systematic mapping study and classical authors.

2 Manager's Job in the Economic Global Scale

What is the impact of globalization to organizations and their manager's job? Theodore Levitt, in the early 1980s of the last century, was one of the first researchers to discuss the link between globalization and managers. The most impact conclusions were that preferences and behaviors inside organizations are constantly

shaped and reshaped; therefore, what constitutes globalization is the interaction between existing organizations in market that changes things (Levitt 1983).

Despite all those passed years since Levitt's research, and some outdated points of view from developing countries, for example, a description of a wild Brazil, full of huts and "sacrificial offerings of fruit and fresh-killed chickens to macumban spirits by candlelight," Abdelal and Tedlow (2003) agree with Levitt (1983) that global market is not solely what organizations finds but what organizations make of it.

Although the beginning of the twenty-first century was defined by an explosive market growth, few changes in organizational structures were seen (Kumar and Puranam 2011). If it is a fact that no organizational structure is perfect or permanent, Kumar and Puranam (2011) point that great managers can recognize that trade-offs are necessary as economic climate or competitive context changes.

Ghemawat (2017a) noticed a clear difference in international and domestic business relationship scale. While international organization interactions are non-negligible, they are significantly less intense than domestic interactions (Ghemawat 2017a, b). Therefore, from a strategically managerial point of view, this perception should be taken as a warning sign: there is a reason why most business remains at a domestic scale (Ghemawat 2011, 2017a).

Most of the time, managers tend to seek business scale by asking where their organization can expand. According to Ghemawat (2011), they really should ask if their organization should be going abroad at all. This conclusion comes from Indian market, where researches show that Indian organizations have higher margin profits in domestic business than international ones (Ghemawat 2011; Okada 2004).

When managers are interviewed about their job and organizational structure, 95% of them have doubts about if their organization has the right operating model, in which organizational structure is part of. This finding shows that most organizations are simply trying to fit a global operation into an existing structure, explaining, in part, why it is so hard to take advantage of an international business profit (Kumar and Puranam 2011).

Classical studies, such as Koontz and O'Donnell (1972), showed that part of manager's job is based on planning, direction, controlling, and, specially, having in mind, clearly, what are the organization goals. Shapero (1977) and Stewart (1976) discussed that manager's job in organizations was surrounded by doubts, chaos, and unpredicted situations. If we stop to think about it, this is not so far from contemporary every day global organization's routine description.

More recently, Kotter (1999) presents two essential dilemmas that must be considered regarding manager's job: (1) the understanding of the job itself, due to the large number of relevant and available information within an uncertainty environment that involves contemporary organizations, and (2) delivering and carrying out certain tasks due to the little or no direct control of all players in the processes.

Stewart and Fondas (1992), emphasizing organizational strategy, discuss the manager's jobs from three fundamental aspects: (1) division of time spent with people and contacts, (2) focus on the job itself, and (3) decision-making. A key feature from the research is the vision of the manager's job as dynamic, as a result of the great changes observed in the world economic scenario, with strong and decisive

impacts to organizations, and definitely in the manager's job. Kanter (1989) pointed out that manager's job was passing through an important concept change coming from increasing of competitiveness between organizations, demanding more flexible strategies and structures.

Researchers like Kanter (1989), Kotter (1982), Stewart (1976), and Stewart and Fondas (1992) in the last decades of the twentieth century were already seeing the rise of a new commercial reality: the emergence of global markets for products on a previously unimagined scale of magnitude. Corporations geared to this new reality benefit from economic integration with borderless and relatively free flow of production factors, achieving more consumers in international businesses (Abdelal and Tedlow 2003; Coulibaly et al. 2018).

It is interesting to observe that Katz and Niehoff (1998) point out that owner-controlled and manager-controlled organizations have different goals, impacting strategic choices that increasingly differ when made by owners or managers, including perceived risks impacting the organization differently. By taking this finding about relationship between management and ownership to the small- and medium-sized enterprises (SMEs), it is relevant to understand the SME owner-manager's job as an important research gap.

3   SME Owner-Manager's Job in the Economic Global Scale

Children are not "little grown-ups," stated Dandridge (1979). Through this analogy, the researcher establishes that SME cannot be fully understood by an organization theory view. Welsh and White (1981) describe the SME paradigm in which their size is treated only as a stage before their growth or closure of activities.

Albuquerque et al. (2016) point that it was believed that the SME phenomenon was just a large organizations that had not yet grown, establishing the paradigm. These traditional studies based on SME paradigm tended to investigate them by organization theory view, based on processes, operations, and financial results, resulting in an incomplete understanding of SME (Ha-Brookshire 2009).

Studies throughout the years have shown that SME requires a different way of facing and comprehending the problem, since SME has some characteristics that are unique (Julien 1993; Torrès and Julien 2005; Torres and Watson 2013). Dandridge (1979) advocates the development of a specific theory of SME, focused on its characteristics and specificities, by taking off an "organizational glasses." This would help researchers to really see and understand the SME phenomenon.

The importance of the SME is described in the literature by different aspects, like economical, social, and technological development (Barrett and Rainnie 2002; Blackburn and Kovalainen 2009; Blackford 1991; Bruce et al. 2009; Julien and Lafrance 1983; Preuss 2011; Torrès and Julien 2005).

Deep changes were observed at the end of the last century in industry, economy, and even in society. Most of these changes were driven by globalization, such as service sector growth, flattening of organizational structure, downsizing, and virtual enterprises. Day (2000) and Winter (1995) stated there are clear indications that SME will continue to be part of the world economy, becoming even more prosperous in a contemporary capitalist model. Two key aspects of SME discussed in literature show its relevance as a research theme:

1. Job creation, technological innovations, and growth of national economies (Barrett and Rainnie 2002; Blackburn and Kovalainen 2009; Bruce et al. 2009; Day 2000; Okeyo et al. 2014; Robbins et al. 2000; Stone 2011; Titus et al. 2013; Torres and Watson 2013)
2. Specificity of SME and, consequently, the owner-manager's job (Curran 2006; de Oliveira et al. 2015; Florén 2005, 2006; Florén and Tell 2003; James 1999; Maes et al. 2005; Torrès and Julien 2005)

For too long, the assumption was that SME, and especially its owner-manager's job, could be described by the principles of organizations, only in a smaller scale (Welsh and White 1981). Part of this assumption can be understood by the fact that organizations have a great amount of mature researches, both on theory and empirical bases. After all, during the twentieth century, organizations and the manager's job were the main theme of business researchers, such as Drucker (1985, 1987), Kanter (1989), Koontz and O'Donnell (1972), Kotter (1982, 1999), Mintzberg (1971, 1973, 1975), Nadler and Tushman (1980), and Stewart (1979).

Throughout the years, the search for SME understanding has been perceived through the description, analysis, and discussion of their specificities, as presented in researches from Barrett and Rainnie (2002), Boocock and Shariff (2005), Carland et al. (1984), Curran (2006), D'Amboise and Muldowney (1988), Gumpert and Boyd (1984), Hurst and Pugsley (2011), James (1999), Julien (1993), Krauss et al. (2005), Kuratko et al. (2001), and Torrès and Julien (2005), including from developing economic context such as Malaysia, Romania, and South Africa.

In the context of SME owner-manager's job, focusing on their managerial roles, managerial skills, and management processes, several researches found out opportunities and constraints in his/her daily routine, such as Andersson and Tell (2009), Davila (2005), Florén and Tell (2012), Fuller-Love (2006), Gray and Mabey (2005), Johnsen and McMahon (2005), Merz and Sauber (1995), O'Gorman et al. (2005), and Steyn and Steyn (2006).

This understanding of SME owner-manager's job is fundamental to improve the performance of SME, reflecting in gains to the local economies (Kuratko et al. 2001; Lane 1998; Maes et al. 2005), especially in developing economies (Okada 2004; Polsa and Fan 2011; Tokatli and Eldener 2002). Empirical researches conducted in development countries, like Malaysia, Kenya, and Nigeria, for example, attest the importance and relevance of SME in local economy (Boocock and Shariff 2005; Memba et al. 2012; Titus et al. 2013).

Battisti and Perry (2011) present the important relationship between SME, represented by its owner-manager, and a positive influence in the local economic

where SME operates. Haque and Azmat (2015) emphasize the existence of an inner corporate social responsibility of owner-managers that can be defined as an internal obligation that motivates themselves to use part of their resources to improve local site, beyond the pursuit of profit. In a global economy, even corporations taste an intense pressure to act in a socially responsible manner, as discussed by Sethi (2003). But, otherwise from owner-managers, the organizations move toward social responsibility as part of a market-competitive condition.

But, what is the genesis of the SME as part of local economy? Traditionally, enterprises start their activities from family control, in the strict sense of starting a business, before external capital contribution that tends to dilute the family composition of ownership and controlling (Hamelin 2013). Gartner (1985), analyzing the SME genesis, highlights four organizational specificities: (1) the owner-manager that interacts with (2) the environment, (3) the processes, and (4) the SME itself. Beaver and Prince (2004) emphasize the importance of the owner-manager to understand the SME. Therefore, management in SME cannot be dissociated from motivations and actions carried out by its main actor. Entrepreneurial skills and skills derived from ownership in the SME context assume distinct characteristics, but, both coexisting with regular skills (Beaver 2003; Beaver and Prince 2004).

The simple characterization of SME by the number of employees leads to misunderstandings of owner-manager's job: an enterprise with low-skilled employees and a start-up with highly educated employees constitute divergent enterprises and, consequently, different managerial roles and skills required of those owner-managers (Marta et al. 2008). In addition, SMEs can be found in multiple countries and industrial sectors and can also be constituted by a single owner-manager or multiple partnership and hundreds of employees in a full hierarchical business model (Stone 2011). These aspects are fundamental to guiding the discussion of SME owner-manager's job in a global-scale economy.

O'Gorman et al. (2005) present two fundamental contributions to SME discussion: (1) empirical evidence of owner-manager's job, confronting him/her with the manager's job in organizations, and (2) perception that the managerial work of SME's owner-manager is conducted through their experiences, personal strategic vision, and personal aspects.

Fassin et al. (2011) emphasize that the owner-manager has great power over SME, and, as a corollary, has a great opportunity to shape it according to his/her vision. Therefore, the SME can walk the route of ethical, corporate, and social responsibility issues of his/her owner-manager. Marta et al. (2008) discuss the ethical aspects that involve the SME owner-manager's job, highlighting the scarcity of researches addressing this approach. Authors see that this scarcity contributes to the usual assumption that owner-managers perform their daily activities more ethically than managers in organizations. Personal characteristics such as idealism and social responsibility do not characterize the intentions of the owner-manager; the ethical behavior is only based on the decision-making that he/she performs when under situations in which the ethical character stands out in relation to other characteristics (Marta et al. 2008).

For Richbell et al. (2006), the individual characteristics of owner-managers can be divided into two groups: (1) from the psychological characteristics and (2) from the previous experience and training. Findings show that approximately 50% of the owner-managers analyzed had a business plan, which is directly influenced by his/her individual characteristics. Through the analysis of the business plan, the authors seek to understand the essence of the SME owner-manager's job.

Based on a literature review, Stone (2011) identifies three groups of personal goals usually reported by owner-managers: (1) growth-oriented management, (2) focus on achievement of objectives, and (3) an intent for reconciliation between professional goals and personal and family goals.

Raymond et al. (2013) emphasize that management in SME is conducted in a very close manner with vision, personal history, and individual characteristics of its owner-manager, in a greater relevance compared with technical or academic aspects of measurement performance. Jumpponen et al. (2008) characterize planning in SME as traditionally simple, incremental, informal, and unsophisticated or detailed. Based on this finding, authors seek to obtain from owner-managers their perception regarding weaknesses versus potential (internal environment) and threats versus opportunities (external environment) of their business.

As a good example of the search for the understanding of SME through its owner-manager's job, Veiga et al. (1995 apud Jumpponen et al. 2008, p. 120) conclude that young Russian owner-managers have less authority management characteristics when compared to older Russian owner-managers. In addition, business planning among these younger owner-managers tends to focus on the long term, unlike older owner-managers who prefer short-term planning. The authors argue that younger SME owner-managers need constant information for their daily management, while older owner-managers tend to guide their management by their personal background and previous experience.

Owner-manager's job relates to personal skills and characteristics; in this way, according to Fuller-Love (2006), the management of SME is directly linked to its owner-manager. Author emphasizes, however, that usually these owner-managers do not have formal education in business or management. Therefore, owner-managers tend to conduct SME by their experience and a certain general common sense (Fuller-Love 2006).

Delmar and Wiklund (2008) confirm that the individual managerial characteristics of SME, as well as the age, size, and sector of the enterprise, directly influence its owner-manager's job. Lesakova (2010) analyzes the influence of the previous experience of the owner-managers in the process of decision-making, especially related to the internationalization of the enterprise. The author emphasizes that the mental maps developed by owner-managers have significant importance as it acts as a connection between previous experience, including the managerial, and also about risk-taken perception and strategies needed for decision-making.

However, Johnsen and McMahon (2005) analyze the performance and growth of the SME based on the owner-manager's education and gender. Among several results, it can be seen that gender, when confronted with other variables such as geographic aspects, has little relation to the financial performance of the SME.

Nevertheless, Sarfaraz and Faghih (2011) observe some restrictions that women face in business entrepreneurship, like formal education as undergraduate students and accessing credit facilities. This gender gap exists in Iran, including in both national and international SME business activity (Sarfaraz and Faghih 2011).

Liu and Abdalla (2013) analyze the SME management by measuring its performance, efficiency, and effectiveness. From the data collected through questionnaires from 100 SME owner-managers in China, authors propose new ways of measuring management performance, with a focus on knowledge and information. At the external level, the globalization measure should be achieved by implementation of international standards to improve competitive advantage. Using the Global Innovation Index - GII, Faghih and Sarfaraz (2014) analyzed Qatar's seeking transition from a "resource-based" to a "knowledge-based" economy. Although results show a great rank score, with a better GII performance than some developed countries, it indicates the challenge that developing economies will have to face to improve their indicators, such as education, knowledge diffusion, communications, computer and information services, imports and exports, and creative goods and services exports.

Martin (2005) highlights the importance of the Internet in owner-manager's job, from the use of e-mail to attention to the enterprise's website, including marketing of products through e-commerce/e-business, and also the implementation of management tools—a similar approach proposal conclusion by Liu and Abdalla (2013), based on the influence of technology on management and decision-making processes. Elliott and Boshoff (2007) also analyze the influence of technology in the performance of SME owner-managers.

Colombo et al. (2012) and Lee et al. (2012) point out SME constraints related to the difficulty in research and development (R&D) strategy implementation and attraction of external investments (especially in the first years of operation) for production and commercialization of products and technologies. In this sense, owner-manager's job must be focused in creation of networks and alliances, including with other SME, in order to break up with its liability of smallness (Colombo et al. 2012).

Through a multiple case study conducted in Brazil, Escrivão Filho et al. (2017) discuss the relation between SME mortality factors and its owner-manager's job throughout the SME's life cycle stages. The findings show that purchase and selling abilities are still relevant, as stated by previous literature, but also brought three new emerged abilities described by Brazilian owner-managers as relevant: finance knowledge, IT knowledge, and negotiating ability with suppliers.

An important aspect in SME owner-manager's job literature rests on the personal characteristics that motivate him/her to start an activity and carry it on. But, a complementary question often rises: after all, is every owner-manager also an entrepreneur?

Filion (1996) tried to answer this question through 116 case studies with owner-managers from different countries, including developing economies, like Bangladesh, Brazil, Estonia, India, Malaysia, Slovenia, and Thailand. Two specific management models emerged: entrepreneurs and operators. While entrepreneurs tend to be visionary and spend much of his/her time on strategic planning, operators

tend to focus his/her time on operational tasks. In this way, Mitchelmore and Rowley (2010) state that entrepreneurial competencies are characterized by the ability to identify and define a viable market, to develop products that meet the needs of this market, and to recognize and design strategies that can take advantage of existing opportunities. Entrepreneurs tend to behave more intuitively and less analytically than operators (Armstrong and Hird 2009).

Stewart et al. (1999) point out that SME owner-managers tend to have a behavior that makes it closer to those managers in organizations when compared to entrepreneurs. The authors emphasize that not only entrepreneurs have a different behavior from managers in organizations but also diverge from the behavior and characteristics of SME owner-managers. In this way, Krauss et al. (2005) discuss the difference between entrepreneurs and owner-managers from their personal and psychological characteristics, such as personal initiative, autonomous orientation, and risk-taken tolerance. In the research, the authors compare the entrepreneurial orientation with SME performance (Krauss et al. 2005).

Van der Merwe and Swardt (2008) seek the perception of SME owner-managers related to entrepreneurial aspects of their management and the factors that led them to start the business. Authors stated, based on a South African sample, that (1) entrepreneurs tend to work more daily hours than managers in organizations, (2) financial capital is the most important factor in start-up enterprises, and (3) entrepreneurs have to deal with a great amount of stress in daily management, which, sometimes, ends up in health problems. Aspects that led them to start the business are related to job satisfaction; sense of independence, not necessarily financial; and the possibility of using creative skills in their own SME.

Wagener et al. (2010) raised some questions, from several research hypotheses (H_n), if, for example, (H_1) entrepreneurs have a bigger independence than owner-managers, (H_2) greater risk-taken tolerance, (H_3) self-sufficiency, (H_4) major skills toward innovation, and (H_5) leadership. All hypotheses were proved to be true, except H_3. Research conducted by De Jong (2013) indicates that the entrepreneur's decision to start a small innovation-driven enterprise goes far from just aspects as interest in the subject or technical skills. Characteristics such as (1) attitude; (2) external pressure perception, which is usually noticed by employees of organizations that perform their functions beyond formal processes; and (3) available resources and personal skills, partly based on the belief that he/she has these tools, besides postponing the existence of possible obstacles and difficulties that exist, are decisive in the entrepreneurial formation.

Torres and Watson (2013) discuss aspects of owner-managers' self-efficacy, entrepreneurial motivation, and SME performance. The research makes use of constructs presented by Chen et al. (1998), focused in a five model characteristics or individual factors of entrepreneurial foresight: (1) marketing, (2) innovation, (3) management, (4) risk-taken tolerance, and (5) financial control. These characteristics are called "entrepreneurial self-efficacy." The results, based on Mexican sample, reveal that owner-managers associate their tasks and managerial activities according to their own perception of complexity or difficulty of each particular

situation and not in major areas of established formal knowledge, as marketing, finance, or management, for example (Torres and Watson 2013).

Lofstrom et al. (2014) emphasize that the owner-manager's personal characteristics, such as technical skills, formal education, or finance knowledge, although important, are not the main reason that an entrepreneur starts a business. According to the authors, the business sector of the SME plays a primordial role in the characteristic of owner-manager's job. There are two fundamental types of business sector: high barrier and low barrier. Therefore, owner-managers acting in low barrier sector have a greater capacity to exert a good management, and when launching in a high barrier sector, technical skills and formal education transform into important fuel for their job.

The geographic location of the SME is discussed by Watson et al. (2011) research. The authors relate the existing influences in owner-manager's job of US and Mexico SMEs using Hofstede's cultural dimension research. Findings show that owner-managers from countries with an individualist culture tend to value and search for aspects related to strategy setting, improvement of internal processes, and quality management, while proximity of owner-managers and employees, flexibility in management performance, open communication, and setting common goals tend to be more perceived in owner-managers of countries with a collectivist culture (Watson et al. 2011).

Ellegaard (2009) discusses the influence of the external environment from the perspective of activities of purchase of raw material and the relationship with suppliers. The author points out that although owner-managers spend a great part of their time with purchasing activity, they do not see it as a formal or systematic aspect of their job. In this context, the owner-manager is represented as a self-taught person, without specific training in the purchasing or business area and also with limited ability to develop practices and tools that improve processes or even negotiated prices with suppliers (Ellegaard 2009). The relationship between SME owner-manager and suppliers tends to (Ellegaard 2009; Escrivão Filho et al. 2017) (1) focus on the minimum amount of products only to keep the production unit operating (2) and problem-solving, (3) but with a lack of technical knowledge related to supplier management, or supporting logistics software, and (4), based on loyalty, with a few suppliers, although it occurs online, through contacts by telephone and e-mail.

Social and environmental responsibilities, as a contemporary aspect in international discussions in global economies, related to SME owner-manager's job, are research subject for Burton and Goldsby (2009), Roxas and Coetzer (2012), and Yoon et al. (2018). All studies highlight the fact that few studies discuss the development and application of social and environmental practices in SME, especially in developing countries. In this context, the managerial characteristics associated with the external aspects of environmental regulation play a decisive role in the environmental behavior of the SME (Roxas and Coetzer 2012) and international performance (Yoon et al. 2018).
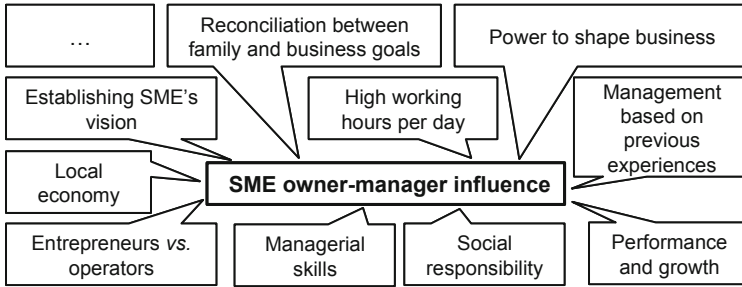
Fig. 1 Owner-manager's job influence in SME. Source: author's own figure

All these understandings, although presented in separate parts, cannot be seen as reductionist knowledge. The SME owner-manager's job in the economic global scale is a well-rounded wall. Figure 1 tries to gather these bricks.

The line of this research has converged into a perception about the relevance of owner-manager's characteristic in his/her daily job. An important part of contemporary studies on SME and its practice under globalization shows a construction of SME internationalization through an understanding of its owner-manager. The findings suggest that SME international business follows the perceptions, previous experiences, and managerial skills of his/her owner-manager and not by a driven economic globalization force. Nevertheless, it is important to not debunk globalization forces. Japanese industrial subcontracting has played an important role in SME rise and going global, for example (Mutalemwa 2015). But, especially in developing countries, this practice is not yet widespread.

4 Conclusion

SME, entrepreneurship, and owner-manager's job are complex phenomena that require multiple parts and layers of analysis. Therefore, to explore such open fields, researchers tend to focus in just one part of the phenomenon. One of the problems is that research displays a tendency to oversimplify globalization, as discussed by Rittenhofer (2015).

In a provocative sense, Mintzberg (2009) says that if a researcher wants to be famous in the management world, all he/she has to do is to focus in one aspect of management and ignore all other aspects. But how can we see the full picture of SME owner-manager's job in a global-scale economy in developing countries when it is surrounded by so many multiple parts and layers? Mintzberg (2009), somehow, also provides the answer: all researchers are wrong because they are all right. Therefore, the SME owner-manager's job in a global-scale economy in developing countries is not just one of the parts previously shown, but all of them.

If globalization positively affected SME by allowing transnational and international activities, including exports and foreign investment, it also forced a drastic

shift toward a knowledge-based model business (Foghani et al. 2017; Smeral 1998). However, SME has specificities that cannot be forgotten in this global-scale economy. Researchers, like Abdelal and Tedlow (2003) and Coulibaly et al. (2018), see benefits of this new borderless and free flow of products, but, due to its liability of smallness (Colombo et al. 2012), not every SME can profit from a scope and scale business model. This specificity enlightens why some organizations have higher profit margins in their home markets than abroad, as shown by Ghemawat (2017b).

Tokatli and Eldener (2002) state that the influence of globalization goes far beyond the penetration of global products and trades. Just as organizational theory researchers saw by the last decades of the twentieth century, a new commercial reality rises, and also for SME. But this new reality, in Turkey, for example, shows a few SMEs that still thrive to fit in the global environment, and other SMEs are left behind because of their vulnerability toward this changing environment (Tokatli and Eldener 2002). Yet, Yoon et al. (2018) observed that the stronger the network build by SMEs, the greater are their international performance. In South Korean market, SMEs saw an opportunity to "go global" through networks with stakeholders, not only other SMEs but universities, industries, and techno parks.

However, it is important to contextualize that not so long ago, the use of the Internet in daily owner-manager's job was still a studied part, as presented by Martin (2005), Lituchy and Rail (2000), and Elliott and Boshoff (2007). More recently, researches from Fassin et al. (2011), Colombo et al. (2012) and Polsa and Fan (2011) also highlighted restrictions and limitations that SMEs are surrounded by, including financial. These restrictions and limitations are important to understand SME's weaknesses competition in a global-scale economy. Mutalemwa (2015) presents several stumbling blocks that prevent African SME from going global.

But, if discussion on SME must be conducted from multiple parts and layers, if we take into account the location, a new important part appears that should not be neglected. Kali and Reys (2007) show that some developing countries are more integrated in the international trade network, such as Brazil, Malaysia, Mexico, Russia, and South Africa. This maybe indicates why systematic mapping study conducted to build the theoretic review of this chapter brought researches from and within these countries.

Therefore, geographic SME location plays an important part in understanding owner-manager's job as well as the SME itself, from the cultural aspect, pointed by Watson et al. (2011), to the isolation of the enterprise, as shown by Young (2010). Previously, discussion in this chapter stated the importance of the owner-manager in SME performance, but Young (2010), although through a research conducted in Canada, observes that network connections are frequently made "by accident," in an unintentionally way. Future researches on SME owner-manager's job should deepen into these network construction connections in developing countries, such as those discussed by Yoon et al. (2018) in South Korean SMEs.

Another relevant part of discussion is the gender influence in developing countries. Sarfaraz et al. (2014) show that, in 2012, the highest and the lowest rates of female entrepreneurship were observed in Zambia, with 40% participation, and Pakistan, with only 1% participation. Therefore, there is no possible statement

between female entrepreneurship and the level of economic development. The findings of Sarfaraz et al. (2014) show no correlation between SME stages and gender, suggesting that gender itself does not lead to more women entrepreneurship.

Escrivão Filho et al. (2017) and Fuller-Love (2006) emphasize the existence of different management styles that the owner-manager performs according to the life cycle stages of the SME. Fuller-Love (2006) described that it starts with a directive supervision by the owner-manager and then a supervised supervision, coordinated delegation, and professional management, and, at a stage of organizational and production decentralization, the owner-manager adopts a role of "watchdog"— present and attentive but waiting to act only when necessary.

Understanding the SME owner-manager's job is an important part of understanding the SME itself, as a crucial component for economic growth of any country, yet specially in developing economies. We tried to show that a great number of researchers and researches have tackled the issue and identified several characteristics and also internal and external factors that influence owner-manager's job. Instead of simply showing a large and long list, relied heavily on a theoretic review, our statement shows an integrated discussion, focused on the SME owner-manager's job.

Finally, this research has several limitations and, thus, room for further researches. First, we did not examine other database besides *Thomson Reuters Web of Science™*, implying a narrow point of view. Second, an empirical approach on quantitative methods should be conducted in order to explore and validate some international findings of developed countries in SMEs and owner-managers from developing countries.

References

Abdelal R, Tedlow RS (2003) Theodore Levitt's 'The globalization of markets': an evaluation after two decades. Harvard NOM Working Paper, No. 3–20, pp 1–30

Albuquerque AF et al (2016) A change in the importance of mortality factors throughout the life cycle stages of small businesses. J Global Entrep Res 6(8):1–18

Andersson S, Tell J (2009) The relationship between the manager and growth in small firms. J Small Bus Enterp Dev 16(4):586–598

Armstrong SJ, Hird A (2009) Cognitive style and entrepreneurial drive of new and mature business owner-managers. J Bus Psychol 24(4):419–430

Barrett R, Rainnie A (2002) What's so special about small firms? Developing an integrated approach to analysing small firm industrial relations. Work Employ Soc 16(3):415–431

Battisti M, Perry M (2011) Walking the talk? Environmental responsibility from the perspective of small-business owners. Corp Soc Responsib Environ Manag 18:172–185

Beaver G (2003) Small firms: owners and entrepreneurs. Strateg Chang 12:177–183

Beaver G, Prince C (2004) Management, strategy and policy in the UK small business sector: a critical review. J Small Bus Enterp Dev 11(1):34–49

Blackburn R, Kovalainen A (2009) Researching small firms and entrepreneurship: past, present and future. Int J Manag Rev 11:127–148

Blackford MG (1991) Small business in America: a historiographic survey. Bus Hist Rev 65 (1):1–26

Boocock G, Shariff MNM (2005) Measuring the effectiveness of credit guarantee schemes – evidence from Malaysia. Int Small Bus J 23(4):427–454

Bruce D et al (2009) (Small) business activity and state economic growth: does size matter? Reg Stud 43:229–245

Burton B, Goldsby M (2009) Corporate social responsibility orientation, goals, and behavior a study of small business owners. Bus Soc 48(1):88–104

Carland JW et al (1984) Differentiating entrepreneurs from small business owners: a conceptualization. Acad Manag Rev 9(2):354–359

Chen CC, Greene PG, Crick A (1998) Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? J Bus Ventur 13(4):295–316

Colombo MG et al (2012) Small business and networked innovation: organizational and managerial challenges. J Small Bus Manag 50(2):181–190

Coulibaly SK, Erbao C, Mekongcho TM (2018) Economic globalization, entrepreneurship, and development. Technol Forecast Soc Chang 127:271–280

Curran J (2006) 'Specificity' and 'denaturing' the small business. Int Small Bus J 24:205–210

D'Amboise G, Muldowney M (1988) Management theory for small business: attempts and requirements. Acad Manag Rev 13:226–240

Dandridge TC (1979) Children are not "little grown-ups": small business needs its own organizational theory. J Small Bus Manag 17:53–57

Davila T (2005) An exploratory study on the emergence of management control systems: formalizing human resources in small growing firms. Acc Organ Soc 30:223–248

Day J (2000) The value and importance of the small firm to the world economy. Eur J Mark 34:1033–1037

de Jong JPJ (2013) The decision to exploit opportunities for innovation: a study of high-tech small-business owners. Entrep Theory Pract 37(2):281–301

de Oliveira J et al (2015) What do small business owner-manager do? A managerial work perspective. J Global Entrep Res 5(19):1–21

Delmar F, Wiklund J (2008) The effect of small business managers' growth motivation on firm growth: a longitudinal study. Entrep Theory Pract 32(3):437–457

Drucker PF (1985) Entrepreneurial strategies. Calif Manag Rev 27(2):9–25

Drucker PF (1987) Social innovation – managements new dimension (reprinted form the Frontiers of management – where tomorrows decisions are being shaped today). Long Range Plan 20:29–34

Ellegaard C (2009) The purchasing orientation of small company owners. J Bus Ind Mark 24 (3–4):291–300

Elliott R, Boshoff C (2007) The influence of the owner-manager of small tourism businesses on the success of internet marketing. S Afr J Bus Manag 38(3):15–27

Escrivão Filho E et al (2017) Identifying SME mortality factors in the life cycle stages: an empirical approach of relevant factors for small business owner-managers in Brazil. J Global Entrep Res 7 (5):1–15

Faghih N, Sarfaraz L (2014) Dynamics of innovation in Qatar and its transition to knowledge-based economy: relative strengths and weaknesses. QSci Connect 23:1–13. http://www.qscience.com/doi/abs/10.5339/connect.2014.23. Accessed 30 Jun 2018

Fassin Y, Rossem AV, Buelens M (2011) Small-business owner-managers' perceptions of business ethics and CRS-related concepts. J Bus Ethics 98:425–453

Filion LJ (1996) Differences in managerial systems of owner-managers – small-business entrepreneurs and small-business operators. Can J Adm Sci 13(4):306–320

Florén H (2005) Managerial work and learning in small firms. Ph.D. thesis (Project Management) – Chalmers University of Technology, Göteborg

Florén H (2006) Managerial work in small firms: summarising what we know and sketching a research agenda. Int J Entrep Behav Res 12(5):272–288

Florén H, Tell J (2003) What do owner-managers in small firms really do? Replicating Choran, Mintzberg and Kurk & Aldrich. In: Proceedings 16th annual conference of Small Enterprise Association of Australia and New Zealand

Florén H, Tell J (2012) Chapter 13. Managerial behavior in small firms: does it matter what managers do? In: Tengblad S (ed) The work of managers: towards a practice theory of management. Oxford University Press, Oxford, pp 245–263

Foghani S, Mahadi B, Omar R (2017) Promoting clusters and networks for small and medium enterprises to economic development in the globalization era. SAGE Open 7:1–9

Fuller-Love N (2006) Management development in small firms. Int J Manag Rev 8(3):175–190

Gartner WB (1985) A conceptual framework for describing the phenomenon of new venture creation. Acad Manag Rev 10(4):696–706

Ghemawat P (2011) World 3.0: a global prosperity and how to achieve it. Harvard Business Review Press, Boston, MA, p 691

Ghemawat P (2017a) Market and management failure. Capital Soc 12(1):1–27

Ghemawat P (2017b) By far a tardy journey: India should become better connected with other countries in a globalised world. Outlook Magazine, New Delhi, 2 Oct 2017. https://www.outlookindia.com/magazine/story/by-far-a-tardy-journey/299349. Accessed 30 Jun 2018

Gray C, Mabey C (2005) Management development: key differences between small and large businesses in Europe. Int Small Bus J 23(5):467–485

Gumpert DE, Boyd DP (1984) The loneliness of small-business owner. Harv Bus Rev 62(6):18–24

Ha-Brookshire JE (2009) Does the firm size matter on firm entrepreneurship and performance? US apparel import intermediary case. J Small Bus Enterp Dev 16(1):132–146

Hamelin A (2013) Influence of family ownership on small business growth. Evidence from French SMEs. Small Bus Econ 41(3):563–579

Haque MZ, Azmat F (2015) Corporate social responsibility, economic globalization and developing countries: a case study of the ready made garments industry in Bangladesh. Sustain Account Manag Policy J 6(2):166–189

Hurst E, Pugsley BW (2011) What do small businesses do? Brook Pap Econ Act 43:73–142

James HS Jr (1999) Owner as manager, extended horizons and the family firm. Int J Econ Bus 6:41–55

Johnsen GJ, McMahon RGP (2005) Owner-manager gender, financial performance and business growth amongst SMEs from Australia's business longitudinal survey. Int Bus J 23(2):115–142

Julien PA (1993) Small Businesses as a research subject: some reflections on knowledge of small business and its effects on economic-theory. Small Bus Econ 5:157–166

Julien PA, Lafrance C (1983) Towards the formalization of 'small is beautiful' – societal effectiveness versus economic efficiency. Futures 15(3):211–221

Jumpponen J, Ikavalko M, Pihkala T (2008) Management and change in turbulent times: how do Russian small business managers perceive the development of their business environment? J Bus Econ Manag 9(2):115–122

Kali R, Reys J (2007) The architecture of globalization: a network approach to international economic integration. J Int Bus Stud 38:595–620

Kanter RM (1989) The new managerial work. Harv Bus Rev 67:85–92

Katz JP, Niehoff BP (1998) How owners influence strategy – a comparison of owner-controlled and manager-controlled firms. Long Range Plan 31(5):755–761

Kitchenham B (2004) Procedures for performing systematic reviews. Technical Report TR/SE-401, Keele University and NICTA

Kitchenham B, Mendes E, Travassos GH (2007) A systematic review of cross – vs. within – company cost estimation studies. Eval Assess Softw Eng 2:45–52

Knight G (2000) Entrepreneurship and marketing strategy: the SME under globalization. J Int Mark 8(2):12–32

Koontz H, O'Donnell C (1972) Chapter 3. The functions and authority of the manager. In: Principles of management: an analysis of managerial functions. McGraw Hill, New York, pp 46–57

Kotter JP (1982) The general managers. Free Press, New York, 221 p

Kotter JP (1999) What effective general managers really do. Harv Bus Rev 77(2):145–159

Krauss SI et al (2005) Entrepreneurial orientation: a psychological model of success among southern African small business owners. Eur J Work Organ Psy 14(3):315–344

Kumar N, Puranam P (2011 October) Have you restructured for global success? Harv Bus Rev 89 (10):123–128

Kuratko DF, Goodale JC, Hornsby JS (2001) Quality practices for a competitive advantage in smaller firms. J Small Bus Manag 39(4):293–311

Lane C (1998) European companies between globalization and location: a comparison of internalization strategies of British and German MNCs. Econ Soc 27(4):462–485

Lee Y, Shin J, Park Y (2012) The changing pattern of SME's innovativeness through business model globalization. Technol Forecast Soc Chang 79:832–842

Lesakova D (2010) Managerial decision in the internationalization of small and medium businesses. Ekon Cas 58(10):1026–1038

Levitt T (1983) The globalization of markets. Harv Bus Rev 61(3):92. https://hbr.org/1983/05/the-globalization-of-markets. Accessed 30 June 2018

Lituchy TR, Rail A (2000) Bed and breakfasts, small inns, and the internet: the impact of technology on the globalization of small businesses. J Int Mark 8(2):86–97

Liu Y, Abdalla AN (2013) Evaluating the managerial behaviour of managing knowledge in Chinese SMEs. Inf Technol Manag 14(2):159–165

Lofstrom M, Bates T, Parker SC (2014) Why are some people more likely to become small-businesses owners than others: entrepreneurship entry and industry-specific barriers. J Bus Ventur 29(2):232–251

Maes J, Sels L, Roodhooft F (2005) Modelling the link between management practices and financial performance. evidence from small construction companies. Small Bus Econ 25:17–34

Marta J, Singhapakdi A, Kraft K (2008) Personal characteristics underlying ethical decisions in market situations: a survey of small business managers. J Small Bus Manag 46(4):589–606

Martin L (2005) Internet adoption and use in small firms: internal processes, organizational culture and the roles of the owner-manager and key staff. N Technol Work Employ 20(3):190–204

Memba SF, Gakure WR, Karanja K (2012) Venture capital (VC): its impact on growth of small and medium enterprises in Kenya. Int J Bus Soc Sci 3(6):32–38

Merz GR, Sauber MH (1995) Profiles of managerial activities in small firms. Strateg Manag J 16:551–564

Mintzberg H (1971) Managerial work: analysis from observation. Manag Sci 18(2):B-97–B-110

Mintzberg H (1973) The nature of managerial work. Harper & Row, New York, 298 p

Mintzberg H (1975) Managers job – folklore and fact. Harv Bus Rev 53(4):49–61

Mintzberg H (2009) Managing. Barret-Koehler Publishers, San Francisco, p 306

Mitchelmore S, Rowley J (2010) Entrepreneurial competencies: a literature review and development agenda. Int J Entrep Behav Res 16(2):92–111

Mutalemwa DK (2015) Does globalisation impact SME development in Africa? Afr J Econ Manag Stud 6(2):164–182

Nadler DA, Tushman ML (1980) A model for diagnosing organizational behaviour. Organ Dyn 9 (2):35–51

O'Gorman C, Bourke S, Murray JA (2005) The nature of managerial work in small growth-orientated businesses. Small Bus Econ 25:1–16

Okada A (2004) Skills development and interfirm learning linkages under globalization: lessons from the Indian automobile industry. World Dev 32(7):1265–1288

Okeyo WO, Gathungu J, K'Obonyo P (2014) The effect of business development services on performance of small and medium manufacturing enterprises in Kenya. Int J Bus Soc Res 4 (6):12–26

Polsa P, Fan X (2011) Globalization of local retailing: threat or opportunity? The case of food retailing in Guilin, China. J Macromark 31(3):291–311

Preuss L (2011) On the contribution of public procurement to entrepreneurship and small business policy. Entrep Reg Dev 23(9–10):787–814

Raymond L et al (2013) Dimensions of small business performance form the owner-manager's perspective: a re-conceptualization and empirical validation. Entrep Reg Dev 25:468–499

Richbell SM, Watts HD, Wardle P (2006) Owner-managers and business planning in the small firm. Int Bus J 24(5):496–514

Rittenhofer I (2015) The reflexive case study method: a practice approach to SME globalization. Int J Entrep Behav Res 21(3):410–428

Robbins DL et al (2000) An empirical assessment of the contribution of small business employment to U.S. state economic performance. Small Bus Econ 15:293–302

Roxas B, Coetzer A (2012) Institutional environment, managerial attitudes and environmental sustainability orientation of small firms. J Bus Ethics 111(4):461–476

Sarfaraz L, Faghih N (2011) Women's entrepreneurship in Iran: a GEM based-data evidence. J Global Entrep Res 1(1):45–57

Sarfaraz L, Faghih N, Majd AA (2014) The relationship between women entrepreneurship and gender equality. J Global Entrep Res 2(6):1–11

Sethi SP (2003) Globalization and the good corporation: a need for proactive co-existence. J Bus Ethics 43:21–31

Shapero A (1977) What management says and what managers do. Interfaces 7(2):106–108

Smeral E (1998) The impact of globalization on small and medium enterprises: new challenges for tourism policies in European countries. Tour Manag 19(4):371–380

Stewart R (1976) To understand the manager's job: consider demands, constraints, choices. Organ Dyn 4(4):22–32

Stewart R (1979) Research managerial agendas - reactive or proactive? Organ Dyn 8(2):34–47

Stewart R, Fondas N (1992) How managers can think strategically about their jobs. J Manag Dev 11 (7):10–17

Stewart WH Jr et al (1999) A proclivity for entrepreneurship: a comparison of entrepreneurs, small business owners, and corporate managers. J Bus Ventur 14(2):189–214

Steyn E, Steyn TFJ (2006) Managerial competencies among first-line newsroom managers at small to medium-sized mainstream media enterprises in South Africa. South Afr J Econ Manag Sci 9 (3):322–340

Stone G (2011) Let's talk adapting accountants' communications to small business managers' objectives and preferences. Account Audit Account J 24(6):781–809

Titus OA, Tochukwu OR, Chidi OT (2013) Relevance of small and medium enterprises in the Nigerian economy: a benchmarking analysis. Int J Manag Sci 1(5):167–177

Tokatli N, Eldener YB (2002) Globalization and the changing political economy of distribution channels in Turkey. Environ Plan 34:217–238

Torrès O, Julien PA (2005) Specificity and denaturing of small business. Int Small Bus J 23:355–377

Torres JLN, Watson W (2013) An examination of the relationship between manager self-efficacy and entrepreneurial intentions and performance in Mexican small businesses. Contaduría y Administración 58(3):65–87

van der Merwe SP, Swardt G (2008) Small business owner-managers' perceptions of entrepreneurship in the Emfuleni district. South Afr J Econ Manag Sci 11(4):449–464

Veiga JF, Yanouza JN, Buchholtz AK (1995) Emerging cultural values among Russian managers: what will tomorrow bring? Bus Horiz 38(4):20–27

Wagener SL, Gorgievski MJ, Rijsdijk SA (2010) Businessman or host? Individual differences between entrepreneurs and small business owners in the hospitality industry. Serv Ind J 30 (9):1513–1527

Watson W et al (2011) Managerial characteristics, operational observations, and small business performance: a comparison of US and Mexican ventures. Int J Intercult Relat 35(5):604–613

Welsh JA, White JF (1981) A small business is not a little big business. Harv Bus Rev 59(4):18

Winter SG (1995) Small and medium-size enterprises in economic development – possibilities for research and policy. The World Bank Policy Research Working Paper, No. 1508, Washington, DC

Yoon J, Kim KK, Dedahanov AT (2018) The role of international entrepreneurial orientation in successful internationalization from the network capability perspective. Sustainability 10 (1709):1–14

Young N (2010) Globalization from the edge: a framework for understanding how small and medium-sized firms in the periphery 'go global'. Environ Plan 42:838–855