DOI 10.2478/sbe-2021-0058

SBE no. 16(3) 2021

THE DETERMINANTS OF INTERNATIONAL COMPETITIVENESS

ȚÎMBALARI Carolina

Lucian Blaga University of Sibiu, Romania

Abstract:

The dynamics of the competitiveness in today's economic environment has received increasing attention focusing on continuous and consistent consideration, requiring more in-depth scientific research. This topic highlights new challenges for competitiveness, at any level, by identifying and analyzing its own determinants. The present paper aims to develop a proposal model for the international competitiveness, starting from the determinants identified in the literature review. The 8-D model of international competitiveness integrates investment, economic freedom, corruption, global knowledge, culture, business performance, innovation and digital economy, and sustainability at the country level. Considering this conceptual model 8-D, the study aims to present an in-depth analysis of the top 5 most developed countries on each determinant proposed during 2019-2021 according to the international reports and ranks.

Key words: competitiveness, 8-D conceptual model, developed economies, Covid-19

1. Introduction

The concept of competitiveness is very often used in today's economic environment, even if it is a very complex concept. Its comprehensiveness offer in most of the cases the tools for comparability between countries, industries, or companies. The literature highlights several determining factors for which one country are competitiveness than others. But what determinants establish these competitiveness? In order to comprehend the concept of competitiveness, over time, have recommended definitions as comprehensive as possible from the perspective of economic practice, but also to investigate strategies for quantifying this phenomenon using indicators, features, or determinant components. This paper highlights a conceptual model for the international competitiveness 8-D and will present the top developed economies according to the international reports and ranks from these viewpoint.

2. Theoretical background

Recently, the interest and concern of researchers in this field can be noted, to highlight the specific features of growth and stimulation of competitiveness. We may define

competitiveness in the broadest sense as a phenomenon relating to a country's capacity, in comparison to others, to create and maintain an economic climate that promotes the rapid production of added benefit. Scott Bruce R. (1985) described it as: "the ability of countries to produce, distribute and sell goods and services in the world economy, and to make profits leading to an increase in the standard of living." The notion of competitiveness has various meanings, on multiple levels. When referring to the development of a country, the concept of competitiveness offers the possibility to compare the performances obtained, but also the growth potential in the future. International competitiveness has evolved from the perception of a "dangerous obsession" (Krugman, 1994) to "the performance of a nation measured in terms of its ability to provide high standards of living" (WEF, 2017).

However, as a follow-up to prior studies, Porter (1998) introduces the latest concept of "competitive advantage" which emphasizes the critical value of national economy productivity. As a conclusion, the concept of competitiveness began to have new significance and meanings: "the only complete indicator that defines the concept of competitiveness at national level is national productivity" (Porter, 1998).

The European Competitiveness Report (2000) describes the term of competitiveness as: "an economy is competitive if its population enjoys high living standards and a high degree of sustainable employment. More precisely, the level of economic activity should not cause an unsustainable external balance to compromise the well-being of future generations". Karl Aiginger (2006) also tried to define the term competitiveness in a simple way, namely: "competitiveness means creating well-being". The World Economic Forum (WEF, 2018) describes competitiveness as: "the set of institutions, policies and factors that determine the level of productivity of a country. In turn, the level of productivity establishes the sustainable level of prosperity that can be achieved by an economy".

Thus, competitiveness is an important concern for developed countries and emerging world economies. The literature illustrates the global competitiveness index's durability, as well as the fact that competitiveness analysis, both as a concept and as an applicable methodology, will continue to be a work in progress (Kolluru & Suresh 2020). According to Camargo (2021) "international competitiveness is a crucial topic of interest for academics, policymakers, and firm managers, particularly in cases of (de)globalization that impact the competitive landscape".

The theoretical approach of the concept of competitiveness continue to be one of the future research interests due to the components influencing international economic development. For this purpose, a good knowledge and study of the determinants which establishing that international competitiveness is important.

3. Key determinants of international competitiveness and conceptual 8-D model

Competitiveness is considered a multidimensional concept, and in recent decades it has become an important concern in the global economy increasingly open to long-term and interrelated integration (Ogrean & Herciu, 2010). Some authors have been concerned

with the causes that determine the competitiveness of a nation, an industry / sector of activity and a company. Thus, each researcher has his own vision, some approach in terms of key determinants of competitiveness we can see in Table 1.

Table 1. Key determinants of international competitiveness

Authors	Key determinants of international competitiveness
Tongzon, J. (2007)	Determinants of Competitiveness are: quality of management and services; investments in human and physical infrastructure; exchange rates; government and prices policies; political stability; and other components that put the country ahead of its competitors.
Siudek, T., & Zawajska, A. (2014)	Determinants of competitiveness at the macroeconomic level (monetary and financial policy, the law, and the consistency of social and political structures build general conditions that allow for greater corporate competitiveness) Determinants of competitiveness at the microeconomic level (operational complexity, investment plan, quantity and quality of production factors, technology and innovation, and support in industries and clusters that are connected).
M. Herciu (2016)	Determinants of competitiveness are: direct investment flows; economic freedom; knowledge economy and culture.
Medeiros, Godoi & Teixeira (2019)	They classify the determinants of international competitiveness into 3 groups: <ul style="list-style-type: none"> • determinants of the <i>economic system</i> (infrastructure, investments and government subsidies, fiscal, institutional, social, international policies) • determinants of <i>economic structure</i> (open trade and foreign direct investment (FDI), market (geographical distribution), configuration of industries and access to international products) • determinants of the <i>corporate</i> (human capital costs, degree of education, research and development through innovation)
Sigue (2020)	The main determinants of international competitiveness are: GDP, inflation, foreign trade tax, economic openness, financial development, foreign direct investment rate, domestic absorption and quality of institutions
Nogueira, M., & Madaleno, M. (2021)	To determine international competitiveness we need analyses twelve variables: „GDP, macroeconomic environment, institutions and infrastructure, health and primary education, higher education and training, labor market, financial market and goods market performance, market size, business culture, technology and innovation”.

Source: adapted by author from Tongzon, J. (2007); Siudek, T., & Zawajska, A. (2014); Herciu M. (2016); Medeiros, Godoi & Teixeira (2019); Sigue (2020); Nogueira, M., & Madaleno, M. (2021).

Therefore, we can conclude that national and international competitiveness is generated by a series of determinants, as varied as possible, as important for the nation, for social welfare.

According to the literature, we found that there are various approaches to the determinants of competitiveness, including: investment (foreign direct or capital), culture, foreign trade, economic freedom, government subsidies and fiscal policies, the level of corruption, the level of education, the knowledge-based economy, human and intellectual capital expenditures, the size and share of the domestic economy, the business climate, business success, innovation and technology, social responsibility, etc.

After studying the literature, from my point of view, the determinants of international and national competitiveness are presented in the 8-D conceptual model (investment, economic freedom, corruption, global knowledge, culture, business performance, innovation and digital economy, and sustainability) presented in Figure 1.

Figure 1. Conceptual model 8- D

Source: Author proposal

Investments

The driving force behind the process of economic growth is investment, which ensures the functioning, improvement, and development of the economy. Thus, we can define investments as a determining factor of international competitiveness, or as defined in the economic literature and dictionary “the total allocation of capital in order to obtain a subsequent profit” (Financial dictionary, 2020). The need to attract investment is particularly evident in the categories of developing and least developed countries, which are needed to support industrialization, economic diversification, and export promotion. Accelerating the development of the national economy strengthens the market position, either by raising capital or by raising living standards.

Investments fall into several categories, but one category of investment, namely direct investment, is a stimulus for increasing national and international competitiveness in several respects, as presented below:

- They are complementary to public sources of financing providing the capital necessary for the development of an economy.
- Provides resources such as: technology, knowledge, specialists in various fields
- There are long-term factors.

Global direct investment (FDI) flows will be severely hampered in the coming years because of the COVID-19 pandemic, according to the World Investment Report (WIR 2020). Investment flows from developing countries will notice a significant reduction, as export-oriented and commodity-related investments are among the worst affected. This health crisis, on the other hand, could serve as a stimulus for a systemic restructuring in international production and an incentive for greater sustainability, but this would be contingent on the ability to capitalize on the current industrial revolution and resolve rising economic nationalism.

In Global Investment Report (WIR, 2021) we identify the global outlook for FDI (foreign direct investment), namely:

Figure 2. FDI inflows, top 5 host economies, 2019 and 2020

Source: author's adaptation after <https://unctad.org/>

According to UNCTAD's director of investment and enterprise, James Zhan: "The rapid FDI revival and the optimistic perspective cover up the growing discrepancy in FDI flows between developed and developing economies. In addition, uncertainties remain ample." UNCTAD expects some increases in global FDI flows in 2021 recovering with an increase of 10–15 per cent, also new investments in productive assets, especially in technology and healthcare – two industries affected differently by the Covid-19 crisis (UNCTAD, 2020).

The pandemic is seen as a collapse to supply, demand, and foreign direct investment. Current investment plans are delayed by blockade circumstances. Regardless of the dramatic decrease in foreign investment flows (FDI) during the pandemic crisis, the international supply structure will maintain to have a important role in economic growth and progress.

Economic freedom

Adam Smith considered freedom as a fundamental right no matter what phenomenon or individual it refers to (Smith, 1937).

The Heritage Foundation (2020) related that any "human being has the inherent right to manage his or her own job and property". Economic freedom stimulates a constant process of change and development and increase prosperity more evidently and sustainably than is possible for any government-directed mechanisms that simply readjust wealth. Countries that have supported economic freedom have accomplished productivity, innovation, and economic growth. (Highlights of the 2021 Index of Economic Freedom).

The Heritage Foundation has proposed an index that measures economic freedom, the direct association between several social and economic goals. So, the index include 12 pillars of economic liberty were divided into four sections, as seen in the figure 3.

Figure 3. Pillars of economic freedom (EFI)

Source: The Economic Freedom Index 2021 https://www.heritage.org/index/pdf/2021/book/index_2021.pdf

Each of the 12 pillars measures on a scale from 0-100 and represents the level of economic freedom of a country and in which category it is classified. An analysis in this regard, we can see in the figure below, a top 5 free countries.

Figure 4. Analysis of economic freedom of 2019-2021 countries

Source: author's adaptation after The Economic Freedom Index 2019-2021 <https://www.heritage.org>

As we can see in the figure 4, the 5 freedom countries remained in the top during 2019-2021. However, Hong Kong from the top 1 position in 2019 in 2021 is no longer in the category of the freest countries.

From those 178 economies analyzed in the Index of Economic Freedom 2021, 5 of them are considered free countries as we see in the table above, and another 92 are considered mostly free (33) or moderately free (59). At the other end of the table, 63 economies are considered "mostly unfree" and 18 repressed "without freedom".

The Economic Freedom Index study for 2021 reaffirms the conclusion that economic freedom values are closely linked to social security, stable economies, safer

cities, per capita income, human growth, democracy, and poverty eradication, in other words, economic freedom is inextricably linked to international competitiveness.

Corruption

Over the years, corruption has remained one of the persistent problems of the nations, affecting the credibility of related countries and society towards institutions. Every country in the world struggles with corruption, and no country has a perfect ranking. In the view of the author Ulman, “corruption is a mode of action of public institutions, which will influence and affect economic results, being materialized in the decline of international competitiveness” (Ulman, 2014). This suggests that international competitiveness influences living conditions, job rates, growth, trade balance, flexibility, and the capacity to maintain economic efficiency, all of which are determined by the definition of the comprehension of practices and strategy behaviors of public institutions.

According to Transparency International (2021) corruption “erodes trust, weakens democracy, hampers economic development and further exacerbates inequality, poverty, social division and the environmental crisis.”

Transparency International's Corruption Perceptions Index (CPI) is the most used measure corruption in the world. The CPI measures the perception of corruption among businesspeople, financial market observers, and government institutions. The index varies between 0 (high corruption) and 100 (small corruption / clean corruption) and results from the accumulated data from different opinion polls (Ogrean & Herciu, 2006).

The top 5 countries with low corruption, according to the 2019-2020 Corruption Perceptions Index, can be observed in Figure 5:

Figure 5. Top 5 countries freest countries in 2019-2020

Source: author's adaptation after <https://www.transparency.org>

As we can see, in 2019-2020, New Zealand was in the top of nations with the lowest corruption. At the same time, 2020 confirmed to be one of the difficult years in recent years, with the impact of the global COVID-19 pandemic and its overwhelming

consequences. The tension generated by COVID-19 pandemic identified considerable problems in health systems and institutions.

Corruption, as a method of public agency action, would influence economic outcomes, manifesting as a drop in economic growth, stability, well-being, and quality of life. To summarize, corruption has a negative impact on a nation's growth and well-being, raises injustice and suffering, and causes distrust, frustration, and uncertainty on all levels: social, economic, technological, political, and cultural.

Global Knowledge

In a world of the 21st century represented by significant and irreversible transformations in the economic, political, social, cultural, and technological environment. People, nations, and economies are more connected than ever. Today, the desire for knowledge has made phenomenal progress and great interest, becoming an important component for economic development.

In the literature, the concept of “knowledge economy - KE” is often associated to some concepts such as “knowledge economy” or “knowledge society”. According to UNCTAD (2019), the knowledge economy (KEI) is “an economic growth phenomenon in which creativity and access to information contribute to improved productivity”.

That is why the World Bank, through the Knowledge for Development program (K4D, 2007), has expressed its interest in researching the term knowledge. Its aim is to encourage economic players to combine global and local knowledge to highlight the competitive advantage, as well as to explore the competitive opportunities offered by knowledge-based management organizations.

Knowledge4All has developed the Global Knowledge Index (GKI) as a substitute to the known Knowledge Economy Index offered by World Bank in 2012. The aim of the GKI is to include the complexity sense of knowledge and offer support to researchers in their achievements to promote “knowledge-based societies”. The GKI include economic aspects and encompasses the specific factors (Figure 6).

Figure 6. The Global Knowledge Index (GKI)

Source: author's adaptation after <https://knowledge4all.com/>

The Global Knowledge Index (GKI) providing important and predictable data that can help countries and decision makers to understand and respond to related challenges more efficiently. The COVID-19 pandemic increased the digitization in our lives, changing ways of communication towards a virtual world. The 2021 edition of the Global Knowledge Index is presented in an era where knowledge progressively presents like a credible source of welfare and development. The index GKI develop in the middle of a pandemic crisis that has put the entire globe on extreme alert, influencing nations to work together on the common aim of encouraging the consequences of the covid-19 (K4all, 2021). The GKI is a guideline for the sustainable development of nations. It provides countries define forward-thinking programs and policies to develop knowledge and prepare it as a principal component in building a stronger knowledge economy while establish sustainable development. According to GKI, we can examine the evolution of 5 top countries during 2019-2021 in the Figure 7.

Figure 7. GKI 2019-2021 (top 5 countries)

Source: author's adaptation after <https://knowledge4all.com/>

We conclude that the trend remains the same during 2020-2021. But, according to the report of the GKI 2019, Switzerland and Finland maintained their number-one and number-two ranks, followed by United States, Singapore, and Luxembourg. It seems that the top countries have changed for 2 years. We will follow and in the next year this trend will show. It's important this research to assists country leaders in preparing their citizens for the future knowledge challenges.

For a country with a great potential for knowledge, economic and social development is grounded and stimulates the increase of competitiveness, through efficient use of resources.

Culture

Today there are many concerns about how economic development is influenced. In most situations, economic development is determined by various exogenous or endogenous factors. Various studies aimed at comparing the national competitiveness of

different countries / regions and the performance of the business environment have identified many determining factors, and one of them is national culture.

The culture according to Hofstede is: “as a collective phenomenon, which is shared with people from the same social environment, so it is learned and developed over time, in the environment in which it exists, distinguishing -the human nature and the personality of the individual” (Hofstede, 2012).

Over time, several cultural models have developed, some of them are model of Hofstede, Trompenaars, GLOBE, and others, each model has the same purpose: to determine the level of cultural dimensions that directly influence economic productivity. Herciu (2006) related that: „a country development may be influenced by its culture, but there is no cultural model that can assure the success, that means that there is no possible combination of Hofstede's cultural dimensions, which applied can guarantee the country development”.

Hofstede (1980) was the first researcher expressed his desire and interest in cultural differences. He conducted one of the most comprehensive studies: how culture influences workplace values.

In our study, we presented the Hofstede's cultural model (Figure 8), which is one of the major frameworks for understanding a nation's culture. So, in the figure below we presented an overview of cultural dimension 6-D (power distance - PDI, individualism - INV, masculinity – MAS, uncertainty avoidance – UAT, long term orientation – LTO and indulgence -IND) according to Hofstede model of some countries that ranked in top of international competitiveness according to The World Competitiveness Yearbook (WCY, 2021).

Figure 8. Cultural dimensions from Hofstede's model

Source: author's adaptation after <https://www.hofstede-insights.com/product/compare-countries/>

In the figure 8, we can observe the national culture of Switzerland, Sweden, Singapore, USA, and Finland.

All countries except Singapore expresses the less powerful members of institutions, an independent society, with equal rights and superiors accessible. Singapore, with historically background is based on unequal connections between people. The similar situation we identified in the next dimension – individualism when Singapore is considered a collectivistic society and other countries analyzed are individualistic societies oriented to management of individuals. The Nordic countries Sweden and Finland, but also Singapore are focused on “working in order to live” and caring for others, dimension specific to feminine society. Switzerland and USA are oriented to “live in order to work”, to performance and competition typical to masculine society. Because of low UAI (uncertainty avoidance) score, the societies like USA, Singapore and Sweden maintain a more flexible attitude where people believe there should be no more rules than are needed. In the Switzerland and Finland culture are ambiguous, the essential norms are punctuality and precision, all decisions are taken after rigorous examination of all data. With a low score of LTO (long term orientation) Finnish and Americans are normative culture, with great respect to traditions and norms and prefer to maintain them. On the other hand, the pragmatic culture as Switzerland, Singapore, and Finland they encourage achievements in contemporary education as method to get ready for the future.

The indulgence, is it not possible to establish a preference of Singapore’s because ranked an intermediate score of 46, the other societies (Switzerland, Sweden, Finland, and USA) are indulgence, like to enjoy the life, satisfied the desires and give importance to leisure time.

This study is a preliminary one, being necessary to analyze the interrelationship between the cultural dimensions and the competitiveness index. Certainly, Hofstede’s perception to national culture and cultural model continue to be the most practiced framework in cross-cultural business studies. Moreover, a country’s culture can influence its political, economic, and social environment (Hofstede 1980; Gelfand et al. 2011). Regarding these we can also add health influence, a particularity in the context of health crisis that shocked the world economy. So, studying exogenous factors that influence national culture in the context of covid 19 is crucial to see a cross-cultural overview (Gupta, et.al. 2021). In conclusion, a nation is stronger culturally and competitively if it pays more attention to the development of the elements that define it and is educated at the conscious level from the individual at the nation level how important culture is to generate economic performance. Nations need to maximize their benefits and minimize their disadvantages. Those that attract, maintain, and motivate human resources from diverse cultures can claim a high level of competitive advantage, thus explaining the interconnection between culture and competitiveness, generating mutual benefits.

Company performance or business performance

A company's performance is an important determinant of international competitiveness. It will highlight the relationship between the microeconomic and macroeconomic environment, namely how the company's results are reflected in international competitiveness.

We found several financial metrics that can be evaluated to assess a business's performance in the literature. Profits, return on equity, return on investment, profit margin, rise in revenue, liquidity ratio, and share values are only a few examples. Financial results reviews can fluctuate depending on the sector in which the organization operates. For example, net unit revenues, asset return, and inventory revenue may be key reports to track in a production business, while stock costs, cash flow, revenue, and operating income may be key reports to monitor in a financial institution essential to keep an eye on. The relative importance of a company's financial metrics in comparison to rivals in the same sector is another significant factor in evaluating its results.

Since 2003, Forbes has been making top global companies, result of sales value, net income (profit), assets, and market capitalization of the company. The annual world ranking demonstrates the scope and effects of economic development, as well as a forewarning of further problems to come in the months ahead. Even if not all businesses are adversely impacted by the COVID-19 pandemic, we should appreciate the current context created by the health crisis. In addition to Forbes, there are other institutions or publications that annually try to offer a ranking of the best performing companies, such as: Fortune 500, Bloomberg, Statista, PricewaterhouseCoopers (PwC), etc.

Our research will focus on Global 2000 top 5 best performing companies, the list of the world's biggest companies was published by Forbes on May 13, 2021 (Table 2).

Table 2. Top 5 best performing companies 2019-2021

Company	2019				Company	2020				Company	2021			
	Sales	Profit	Assets	Market value		Sales	Profit	Assets	Market value		Sales	Profit	Assets	Market value
ICBC	175.9	45.2	4034.5	305.1	ICBC	177.2	45.3	4322.5	242.3	ICBC	190.5	45.8	4914.7	249.5
JPMorgan Chase	132.9	32.7	2737.2	368.5	China Construction Bank	162.1	38.9	3822	203.8	JPMorgan Chase	136.2	40.4	3689.3	464.8
China Construction Bank	150.3	38.8	3382.4	225	JPMorgan Chase & Co	142.9	30	3139.4	291.7	Berkshire Hathaway	245.5	42.5	873.7	624.4
Agricultural Bank of China	137.5	30.9	3293.1	197	Berkshire Hathaway	254.6	581.4	81.7	455.4	China Construction Bank	173.5	39.3	4301.7	210.4
Bank of America	111.9	28.5	2377.2	287	Agricultural Bank of China	148.7	30.9	3697.5	147.2	Saudi Arabian Oil Company	229.7	49.3	510.3	1897.2

Source: author's adaptation after <https://www.forbes.com/lists/global2000/>

In the table 2, we notice that top 5 performing companies during 2019-2021 according to Global 2000 are represented by China, USA, and Saudi Arabia. In 2021, the USA has 575 companies on the Global 2000 list, up 16 from 559 (2020) and China adding 18 companies this year.

Financially, ICBC was in first place for the ninth consecutive year. Sales have continuously increased since 2019, and we see an even more significant growth of assets in 2021. Instead, the market value has decreased. JP Morgan Chase maintained its 2nd position in the top during the 2019-2021.

Innovation and the digital economy

The global economy is changing rapidly as progress spreads through new digital technologies and innovation. The growing need for digitalization and innovation in both economies and societies creates new means for global challenges. Global economic growth seems to be losing momentum, and economic uncertainty seems to be considerable.

Among the models for measuring innovation, we identified the Global Innovation Index Model (GII) which become an essential tool of economic management. The annual report of the Global Innovation Index (GII) designs the top of the most innovative countries in about 132 economies worldwide. The top 5 most innovative countries during 2019-2021, we can see in the Figure 9.

Figure 9. The most innovative 5 countries according GII

Source: author's adaptation after https://www.wipo.int/global_innovation_index

Currently, the importance and role of innovation has been recognized, it is found in all areas of the economy, not only in companies specializing in technology or in specific technology sectors.

Thus, the top in 2019-2021 (Figure 9) showed that Switzerland, Sweden, and the USA are the top 3 most innovative countries. In 2021, the top 5 world's most-innovative economy is Switzerland followed by Sweden, the United States of America (USA), the United Kingdom (UK) and Republic of Korea. Innovation environment in many emerging economies will need to be encouraged by aimed strategies. Some sectors such as ICT, software and pharmaceuticals have increased contribute on research and development in 2020, others such as tourism and hospitality, or auto industry, have reduced their investments.

While the crisis has inspired interest in innovative health-care solutions, it has also developed other areas, such as working from home, distance learning, e-commerce, and mobility applications.

The pandemic, covid-19 has already increased digital ways of working, living, while developing technology trends and challenges all over the world. In the new world where technology, innovation are even more crucial for the global economy, the global innovative index will continue to have an important role in government and enterprise policies.

New technologies contribute to the performance of the goals of innovation and sustainable development. Technological advance and innovation must be adapted to sustainable results of governments in partnership with civil society, business and academia. Technology not only affects the performance of businesses, but also how economies work and prepare for the future.

The digital revolution has transformed our lives and societies in an unexpected way, while providing challenges and opportunities for the digital economy. According to Bukht & Heeks (2017), “the digital economy is like a part of the economic production derived exclusively or mainly from digital technologies with a business model based on digital goods or services”. One of the important strategy of the national governments’ related policies worldwide is the digital technologies (Gupta et. al., 2021).

According to United Nations conference on Trade and Development (UNCTAD, 2019) “the digital economy involves the latest technological trends such as: big data, internet of things, artificial intelligence, blockchain, 5G technology”. So, for our point of view, digital economy is digital competitiveness denotes the same concept.

The IMD World Digital Competitiveness (WDC, 2021) annual ranking evaluates the measure of countries which embrace and survey digital technologies encouraging to change in government strategies, business practices and nation. The methodology of the WDC ranking outlines digital competitiveness into three main factors: - Knowledge – Technology – Future readiness. These factors are classified into 9 such sub-factors and comprise 52 criteria consist of 19 new indicators which are only used in the calculation of the world digital competitiveness ranking. Finally, the results of the 9 sub-factors makes the total combination, which determine the overall ranking of the WDC. Regarding this, the top 5 digital economy during 2019-2020 we can observe in figure 10.

Figure 10. The top 5 digital economy during 2019-2021

Source: author's adaptation after <https://www.imd.org/>

In the figure 10, we see that for the fourth year running the USA is in the tops of IMD World Digital Competitiveness in the first place. Hong Kong in 2021 is in the 2nd position, followed by Sweden, Denmark, Singapore, and Switzerland.

Digital information technologies could be valuable in multiple ways, “such as tracking, screening for infection, contact tracing, quarantine and self-isolation, and clinical management” (Whitelaw et al. 2020)

In conclusion, digital rankings support governments and organizations to identify where needed their resources and what could be best strategies and policies when launching digital transformation especially in the context of the global pandemic crisis of the last 2 years.

Sustainability

Sustainable development is needed to increase social welfare, the necessity of the alpha generation without embarrassing the future generations to their necessities. Panta N. (2019) describe sustainability like “a development that should be able to provide solutions on issues that affect the quality of life in the long run and integrate elements of social, economic, environmental and technological nature by relying on social learning and calling for change at all levels”.

The United Nations Development Program (UNDP, 2021) define sustainable development “as a call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.” International Institute of Sustainable Development (2021) has been explained the concept of sustainability in many manners, but the most commonly definition is “sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities”.

According to the international sustainability consultancy Sol Ability (2020), sustainable is “the ability to produce and retain income, without compromise potential ability to maintain or raise current levels of wealth.” The same organization in 2021 related that: “sustainability is about basing decisions on a better-informed foundation: looking deeper and looking wider”. The Global Sustainability Index (GSCI) evaluates competitiveness of countries based on 131 factors, quantitative indicators derived from credible sources, such as the World Bank, the IMF, and various organizations. The GSCI is the most robust indicator of a country's long-term competitiveness grouped into 5 sub-indexes: Natural Capital, Resource Efficiency, Intellectual Capital, Governance Efficiency, and Social Capital.

The GSCI is the most recognition index of the sustainability of nation-states and their future potential.

The Global Sustainable Competitiveness Report of the top 5th countries during 2019-2021, is represented in the Table 3:

Table 3. The top 5 sustainable countries

Country	TOP 2019	GSCI score	NC index	RE index	IC index	GE index	SC index	TOP 2020	GSCI score	NC index	RE index	IC index	GE index	SC index	TOP 2021	GSCI score	NC index	RE index	IC index	GE index	SC index
Sweden	1	60.6	63.7	63.8	66.1	51.1	58.3	1	62.1	63.1	63.7	69.5	52.5	61.6	1	61.2	60.2	58	67.9	57.6	62.4
Finland	2	59.5	62.3	55.6	59.3	61.3	58.8	4	60.4	60.5	55.3	64.3	60.3	61.6	2	60.7	59.8	50.6	64.3	66.3	62.3
Iceland	3	57.3	58	56	55.4	58.6	58.4	3	60.7	63.8	52	61.3	61.2	65.4	6	59.8	65.2	43	62.5	64.1	64.1
Denmark	4	57	46.8	59.8	64.3	59.3	55.3	2	61	51.4	65.6	67	63.1	57.8	4	60.2	53.2	56.4	66.8	64	60.4
Switzerland	5	56.9	47	57.4	62.1	60.5	57.8	5	59.4	49.8	63.1	64.7	60.7	61	3	60.4	55.4	61.8	62.7	62.2	59.8

Source: author's adaptation after <http://solability.com/the-global-sustainable-competitiveness-index/the-index>

According to Table 3, the top 5 sustainable countries in 2021 are European countries, there are: Sweden, led by other Scandinavian nations Finland, Iceland, Denmark, and Switzerland. The United States of America, the world's biggest economy, is ranked 30th. The United States scores are exceptionally poor in terms of resource productivity and social resources, indicating that it will be unable to safeguard its global capacity in the future.

With a ranking of 49.3 on sustainable competitiveness, Singapore, the most competitive nation according to the WEF 2019 and IMD 2020, is ranked 48th out of 180 nations (GSCI).

Sustainable development is a long-term direction to increase productivity. Therefore, there are various concerns on this subject from the Millennium Alliance for Humanity and the Biosphere (MAHB), WEF and others. One conclusion is certain, measuring sustainable development is not just a measure of current economic output, but a measure of the elements that facilitate sustainable results, in other words, a holistic alternative to GDP.

In that case, the pandemic influenced the evolution of sustainability, we can observe to score 2019-2021 reflected in the table presented. According to UNDP (2021) research the pandemic could enhance the number of people living in extreme poverty by 44 million in 2030. The same analysis explain that uncertainties are manifold and the long-term social and economic impact of the COVID-19 pandemic is establish to multiply the crack between people living in rich and poor societies. So, for the agenda 2030 we will see some important policies and standards for recovering and improving life being.

4. Conclusions

The research of this topic relates to the field of management in a variety of ways, both directly and indirectly. This research paper substantiates the concept of competitiveness as well-being, prosperity and performance in terms of approaching the literature. As we noted in the research paper, the idea of competitiveness is nuanced, and requiring study frequently and understanding of new data and facts.

Following the literature reviews, this study proposes a methodological model for determining the competitiveness factors - 8D. The study also represented an in-depth analysis of the top 5 most developed countries on each determinant proposed by the model in the period 2019-2021.

According to the 8-D model, taking into account the countries that were at the top of most determinants of competitiveness, it results that the most developed countries are:

USA, China, Switzerland, Sweden, the Netherlands, Finland, Singapore and Denmark. This list is a random one, but according to IMD's competitiveness ranking in 2021, we notice that they are at the top of the ranking. Thus, the 2021 IMD ranking is as follows: Sweden (1), Switzerland (2), Denmark (3), the Netherlands (4), Singapore (5), China (8), USA (10) and Finland (11). The best performing economies are characterized by investment in innovation, various economic activities and supportive government policies, according to experts from the World Competitiveness Center.

In conclusion, this paper has been developed to have a better understanding of the determinants of international competitiveness and profiles of developed countries, as well as to present some important data that provide a coherent picture of why these nations are in the international competitiveness rankings and how they act in the economic environment, especially in the context of the pandemic crisis.

Our future research will focus on determining the interrelationship between competitiveness and each proposed determinant, a more in-depth analysis in the context of the covid-19 crisis, we will diagnose the top performing countries using these analysis and interpretations.

5. References

- Aiginger, K. (2006), *Competitiveness: From a Dangerous Obsession to a Welfare*
- Bukht, R., & Heeks, R. (2017). *Defining, conceptualising and measuring the digital economy*. Development Informatics working paper, (68).
- Camargo, M. I. B. (2021). Institutions, institutional quality, and international competitiveness: Review and examination of future research directions. *Journal of Business Research*, 128, 423-435.
- Financial dictionary, 2020, [online/website]. Accessed August 10, 2021, <https://financial-dictionary.thefreedictionary.com/Economic+investment>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., ... & Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *science*, 332(6033), 1100-1104.
- Gupta, M., Shoja, A., & Mikalef, P. (2021). Toward the understanding of national culture in the success of non-pharmaceutical technological interventions in mitigating COVID-19 pandemic. *Annals of Operations Research*, 1-18
- Herciu, M. (2006). *The influence of culture on the economic freedom and the international business*, MPRA Paper 1686, University Library of Munich, Germany
- Herciu, M. (2016) *Business international competitiveness: determinants, challenges, constraints*, Habilitation Thesis
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values* (Vol. 5). Sage Publications, Incorporated
- Hofstede G., Hofstede G.J., Minkov M., trad. Zografi M., (2012), *Culturi și organizații: Softul mental: cooperare interculturală și importanța ei pentru supraviețuire*. București, Humanitas
- Hofstede, G. 2021, September. "Compare countries." [Tool/website]. Accessed September 20, 2021. <https://www.hofstede-insights.com/country-comparison>
- IMD World Competitiveness Yearbook (2021).[online/website]. Accessed December12, 2021, <https://www.imd.org/centers/world-competitiveness-center/rankings/world-competitiveness/>
- International Institute of Sustainable Development (2021), [online/website]. Accessed September 12, 2021, <https://www.iisd.org/about-iisd/sustainable-development>

- Kolluru, M., & Suresh, V. (2020). A Cluster Analysis on Sustained Global Competitiveness for European Countries. *Economics*, 8(1), 7-22.
- Krugman, P. (1994). Competitiveness: a dangerous obsession. *Foreign Aff.*, 73, 28.
- Medeiros, V., Godoi, L. G., & Teixeira, E. C. (2019). Competitiveness and its determinants: a systemic analysis for developing countries. *CEPAL Review*.
- Nogueira, M., & Madaleno, M. (2021). New evidence of Competitiveness based on the global competitiveness index. *Econ. Bull*, 41, 788-797.
- Ogorean, C. & Herciu, M., 2006. Competitiveness and Corruption in Romania - Forecasting in the Context of the Romanian Integration into the European Union, *Journal for Economic Forecasting*, Institute for Economic Forecasting, vol. 3(2), pages 72-88, June.
- Ogorean, C. (2010). National competitiveness between concept and reality. Some insights for Romania. *Revista Economica*, 49(1-2), 59-72.
- Ogorean, C., & Herciu, M. (2010). Globalization and the dynamics of competitiveness—a multilevel bibliographical study. *Studies in Business and Economics*, 5(1), 126-138.
- Panța, N. D. (2019). Clashing perspectives on sustainable development. *Studies in Business and Economics*, 14(1), 181-190.
- Porter, M. E., & Porter, M. E. (1998). The competitive advantage of nations: with a new introduction.
- Sigue, M. (2020). The determinants of the global competitiveness of the economy: a dynamic panel approach applied to the WAEMU country.
- Siudek, T., & Zawojka, A. (2014). Competitiveness in the economic concepts, theories and empirical research. *Acta Scientiarum Polonorum. Oeconomia*, 13(1).
- Scott, B. R., Lodge, G. C., & Bower, J. L. (1985). *US competitiveness in the world economy*. Harvard Business School Press.
- Smith, A. (1937). *The wealth of nations* [1776].
- Sustainability consultancy Sol Ability (2020), [online/website]. Accessed September 20, 2021, <http://solability.com/the-global-sustainable-competitiveness-index/the-index>
- The European Competitiveness Report (2000), [online/website]. Accessed August 10, 2021, https://ec.europa.eu/growth/content/european-competitiveness-report-2000-0_mt
- The Heritage Foundation (2020), [online/website]. Accessed August 20, 2021, https://www.heritage.org/index/pdf/2020/book/2020_IndexofEconomicFreedom_Highlights.pdf
- The Heritage Foundation (2021), [online/website]. Accessed August 20, 2021, https://www.heritage.org/index/pdf/2021/book/index_2021.pdf
- Transparency International (2020), [online/website]. Accessed November 10, 2021, <https://www.transparency.org/en/cpi/2020/index/nzl>
- Tongzon, J. (2007). Determinants of competitiveness in logistics: implications for the ASEAN region. *Maritime Economics & Logistics*, 9(1), 67-83
- Ulman, S. R. (2014). The impact of the national competitiveness on the perception of corruption. *Procedia Economics and Finance*, 15, 1002-1009.
- United Nations Development Program (UNDP, 2021), [online/website]. Accessed August 18, 2021, <https://www.undp.org/sustainable-development-goals>
- Whitelaw, S., Mamas, M. A., Topol, E., & Van Spall, H. G. (2020). Applications of digital technology in COVID-19 pandemic planning and response. *The Lancet Digital Health*.
- World Economic Forum (2017, 2018, 2019), [online/website]. Accessed October 12, 2021, <https://www3.weforum.org/>
- World Investment Report (2019, 2020, 2021), [online/website]. Accessed October 12, 2021, <https://unctad.org/topic/investment/world-investment-report>
<https://www.forbes.com/lists/global2000/>
<https://www.k4dp.org>
<https://knowledge4all.com>

<https://www.heritage.org/>

<https://www.globalinnovationindex.org/gii-2019-report#>

<https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/>

<https://www.odi.org/publications/5693-knowledge-economy-framework>

<https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>

<https://unctad.org>

<https://www.transparency.org>

https://www.wipo.int/global_innovation_index/en/