

EMPIRICAL EVIDENCE OF ROMANIA'S COMPETITIVENESS WITH A FOCUS ON EDUCATION AND R&D. EVOLUTION AND RECOMMENDATIONS

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Abstract: Competitiveness reveals a nation economic health. Due to the concept's complexity and precision in building a country's performance, the theory is nowadays a sine-qua-non-objective among policymakers, scientists and businesses. The present paper illustrates Romania's competitiveness performance for the aggregated 2007-2019 period. The results were obtained by adopting a quantitative approach. Data were extracted from the World Bank Database, covering the years 2008-2018, and the IMD World Competitiveness Online Database, covering the 2010-2019 period. Further, based on the obtained results, the author proposes recommendations to stimulate the country's competitiveness level. According to the analysis, Romania recorded a stable increase in competitiveness' evolution starting with 2014. In 2017, the country was positioned behind Spain, Italy, Poland and Hungary, and registered a better performance than Croatia. Regarding the total public expenditure on education per student, Romania is placed at the end of the European top, together with Ukraine, Bulgaria, Croatia, and Greece. Moreover, Romania is largening the European gap concerning Research and Development (R&D). On top are countries such as Sweden, Finland, Switzerland, and Austria, while at the opposite pole, there are the following nations: Romania, Cyprus, and Ukraine. Balanced growth is supported by the collaboration of governments, research institutions, universities, and the private sector. Investments must be orientated towards education, R&D, efficiency in production, education, the country's openness, and attractiveness for foreign markets. Considering the circumstances of the worldwide chaos caused by the COVID-19 pandemic, it is vital for Romania's economy to strengthen its competitiveness performance to safeguard sustainable long-run economic growth.

Keywords: competitiveness, education, research & development, Romania, Europe

JEL classification: D2, D6, E2, I2

1. Introduction

Competitiveness is among every nation's "wishing list," regardless country's development stage. The concept is present among governments, companies, entrepreneurs, policymakers, and equally individuals' interests. Throughout time, the principle has advanced, and several theories and indicators have been proposed to both measure and advocate for competitiveness, indicators that are found under a continuous streamlining process.

The term originates from the classical Latin word "petere," meaning to seek, attack, desire, aim at, and the Latin prefix "con-" which means together. Despite its initial meaning, the word is often interpreted as a win or lose in a zero-sum game. Those who stimulate their competitiveness will stand out in performance and be better off than those who step behind. However, economists also argue about competitiveness, who perceive competition as a win-win game for all parties involved (notably Porter (1990)).

Robert Z Lawrence stated that "competitiveness, particularly with reference to an entire economy, is hard to define. Indeed, competitiveness, like love or democracy, actually has several

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meanings." Lawrence (2003) The concept rises to appraise the economics of foreign trade and its contribution to national and international wellbeing.

2. Literature Review

From a historical point of view, the competitiveness concept has comprised different perspectives from classical theories of mercantilism to the theories of comparative and competitive advantages and up to neoclassical assessments. Notwithstanding, there is a lack of the theory's exact meaning. (Figure 1)

In the beginning, the mercantilism ideology supported the economic dimension of nationalism. This philosophy promoted the governmental regulation of the nation's economy with the aim of increased state power. LaHaye (2008) The theory considered political, military, and trade supremacy as critical welfare factors and legitimate policy goals. In mercantilism ideology, welfare resulted in winners and losers, and international trade was considered a vital source for national prosperity, being perceived as a zero-sum game played at the international level.

In terms of policies, the mercantilism era was defined by interventionism, self-sufficiency, and protectionism. It was assumed that trade balance must be "favorable," meaning an excess of exports over imports, protecting monopolies and cartels against foreign and internal competition. Later on, mercantilism was severely criticized by the advocates of laissez-faire, which argued that there was no difference between domestic and foreign trade, claiming that all trade was beneficial both to the public and trader. The concept has lost its power nowadays, but policies are still enforced to encourage export and productivity gains.

In 1776, Adam Smith, in his *Wealth of Nations*, refuted the mercantilist theory. The author claimed that it would be less likely for all nations to get simultaneously wealthier by following protectionist trade policies, considering that one nation's exports inevitably represent imports of the other(s). Smith (1776)

Smith's perspective attributed a nation's wealth to the goods and services produced inbound. At present, the concept is known as the Gross National Product (GDP). Furthermore, opposite to the mercantilist vision, the way to maximize a nation's welfare was not to impede the nation's productive capacity but instead to set it free.

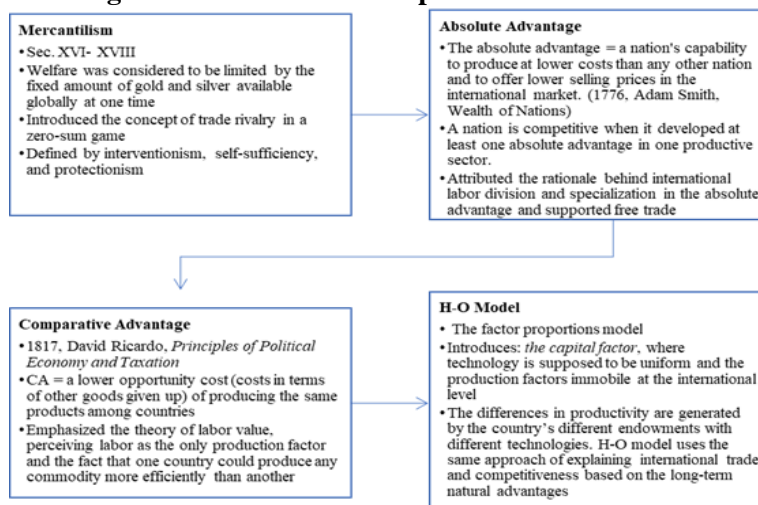
From a macroeconomic perspective, Adam Smith's absolute advantage concept states that a nation's competitiveness is safeguarded if the nation developed at least one absolute advantage in one productive sector. However, a limit of the theory is that competitiveness has a static interpretation of a single rigger of trade, specifically pre-existent factor endowments. Moreover, Smith's theory cannot entirely explain the modern and complex international trade flows (e.g., vertical integration, global value chains, trade between countries that do not present any absolute advantage in their productive sectors). Lastly, even if Adam Smith signed against trade protectionism and encouraged a laissez-faire approach, the absolute advantage theory cannot clearly explain how an enhanced international specialization can be attained without any governmental intervention.

The British economist David Ricardo first developed the Comparative Advantage principle in his 1817 book – *Principles of Political Economy and Taxation*. As Ricardo stated, what truly matters is not the absolute production ability but the capacity to produce one good relative to another. According to the economist Paul Samuelson, when asked by mathematician Stanislaw Ulam, the comparative advantage theory is both universally true but not apparent. Boudreaux (2008)

In comparison with Adam Smith, who attributed the rationale behind international labor division and specialization in the absolute advantage, David Ricardo attributed it to the relative advantage, perceived as a lower opportunity cost of producing the same products among countries. Ricardo's argument was not against international trade. The author emphasized the theory of labor value, perceiving labor as the only production factor which allows a country to produce any commodity more efficiently than another. Therefore, countries will specialize in producing products that involve lower opportunity costs than other trading partners, trading the commodities that involve a comparative

advantage.

Figure 1: Origins of international competitiveness of economies concept



Source: Author's interpretation considering the results of the research (2021)

In terms of the competitiveness concept, the comparative advantage has its implications. Since every nation has at least one comparative advantage with at least one product, it must be internationally competitive. However, there are still critiques addressed to the comparative advantage concepts, similar to those directed towards Adam Smith's theory of absolute advantage: the comparative advantage is a static model and does not explain the existence of comparative advantages between industrial economies.

In the 1920s, Eli Heckscher and Bertil Ohlin proposed the factor proportions model to determine specialization and trade patterns. The idea behind the concept is that a country with positive labor to capital ratio will likely export those labor-intensive goods and vice versa.

Unlike previous Ricardo's model, which was based on labor productivity, the Heckscher- Ohlin (H-O) Model introduces an additional factor: the capital, where technology is supposed to be uniform and the production factors immobile at the international level. Therefore, the differences in productivity at the international level are generated by the country's different endowments with diverse technologies. However, similar to previous theoretical models, the H-O model uses the same approach of explaining international trade and competitiveness based on the long-term natural advantages. At the same time, it fails to explain factors such as economies of scale, size of the domestic market, business environment, and product differentiation, contributing to international competitiveness.

Considering the topmost competitive countries worldwide, the fact that competitive advantage is not dependent on technological advancement is debatable. Schwab (2019) Moreover, not all countries equally benefit from free trade. Compared with developed countries, developing countries may worsen since the technological gap continues to deepen in the long term.

Ohlin demonstrated that international and interregional trade occur because goods can move more quickly than capital, labor, and land. Consequently, it is advisable for a country with a relatively abundant production factor to export the goods that are intensively used in the production process and import those products that intensively use the relatively scarce factor. However, later, economists demonstrated that this theorem is valid only for a world with just two goods - Leontief's Curve. Wassily Leontief developed the input-output model to represent the interdependencies between different sectors of a national or regional economy.

The international competitiveness concept has been intensively argued in the academic literature since it focused on the policy arguments in the late 1980s and early 1990s. Michael Porter and Paul Krugman are two famous critiques against the country's competitiveness. Porter (1990) alludes that competitiveness is an amorphous concept, and economic prosperity is valid only at the country level.

According to Michael Porter, both states and companies should be regarded equally, as international trade is not a zero-sum scheme and states cannot be competitive in all the economic activity branches. Porter (1990) The author has proved it is insufficient to interpret only the classical production factors to explain a region or a country's economic success. Economic success is influenced by a dynamic interaction of several factors – known as the "Diamond of Porter": demand conditions; firm strategy, structure, and rivalry; factor conditions; related and supported industries.

Paul Krugman's former differentiation of competitiveness as both a "dangerous obsession" (only productivity matters) and the insignificant concept continues to be a good starting point for the debate. Krugman (1994) Most competitiveness definitions combine the external balance with the domestic circumstances and define the concept as the ability to produce internationally competitive goods and services, including the capability to safeguard an adequate and growing standard of living. Moreover, Krugman defines what un-competitiveness theory is: "when we say that a corporation is uncompetitive, we mean that its market position is unsustainable - that unless it improves its performance, it will cease to exist" Krugman (1994: 31)

Grace to the continuous evolution of the competitiveness concept, nowadays, there is no unitarian approach to interpret national competitiveness as a concept and determine its role in national development.

Table 1: Modern definitions of competitiveness concept

Author(s)	Definition
Scott and Lodge	Competitiveness is a "country's ability to create, produce, distribute and/or service products in international trade while earning rising returns on its resources. Scott & Lodge (1985)
Krugman Paul	The author attributes competitiveness to productivity and claims that the concept is "wrong and dangerous definition" if it applies to international competitiveness. Krugman (1995)
The Competitiveness Advisory Group	Competitiveness involves "elements of productivity, efficiency, and profitability." Competitiveness, nevertheless, "is not an end in itself or a target... [but] a powerful means to achieve rising living standards and increasing social welfare- a tool for achieving targets." International competitiveness is achieved, "by increasing productivity and efficiency in the context of international specialization, [this is so because] competitiveness provides the basis for raising peoples' earnings in a non-inflationary way." The Competitiveness Advisory Group (1995)
IMD	The international competitiveness of a country is the capacity "to create added value and thus increase national wealth by managing assets and processes, attractiveness and aggressiveness, globality and proximity and by integrating these relationships into an economic and social model". IMD (2000)
European Commission	Competitiveness "sustained rise in the standards of living of a nation and as low a level of involuntary unemployment as possible". European Commission (2004)
OECD	International Competitiveness is „the degree to which it can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the longer term.” OECD (1992)
The World Economic Forum	"The set of institutions, policies and factors that determine the level of productivity of a country". The World Economic Forum (2016)

Source: Author's data selection considering the results of the research (2021)

Competitiveness is a vivid subject among researcher's studies. Ülengin, et al. (2011), Harzing & Giroud (2014), Mulatu (2016) and Milovic, et al. (2021) analyzed the competitiveness concept in general and its entanglements. Herciu & Ogorean (2014), Thore & Tarverdyanb (2016) and Cincikaite & Meidute-Kavaliauskiene (2021) introduced a very present factor nowadays - sustainable competitiveness. More in-depth, Dou et al. (2021) studied the manufacturing sector's competitiveness in a selection of G20 countries, while Falciola, et al. (2020) discussed competitiveness at the company level.

Jovan & Bradić-Martinović (2014) evaluated competitiveness for selected SEE countries, while Özer, et al. (2012) and Albayrak et al. (2018) proposed a comparison in terms of competitiveness for Spain and Turkey in the tourism sector.

At the industry and country level, the literature is abundant with worldwide addressed studies. For instance, numerous researchers considered Romania's competitiveness through different perspectives: Bleotu (2012), Herciu (2013), Rusali (2014), Drumea & Mirela (2015), Cojanu (2016).

Moreover, the factors that influence competitiveness have a primordial role in assessing and defining a competitiveness strategy. Simionescu, et al. (2021) mentioned the general factors affecting competitiveness Sergi, et al. (2021) – logistic performance index Abd Aziz & Samad (2016) and Sener & Delican (2019) – the role of innovation; Pilinkiene (2015), Kiselakova, et al. (2018), Kim & Choi (2020) – Research and Development (R&D), and Nistor & Deaconu (2012), Sekuloska (2014), Yeravdekar & Tiwari (2014), Krsti'c, et al. (2020) – role of education quality.

3. Methodology

The present research applied a quantitative approach to address the research questions. There have been employed two different databases to depict a broader perspective of Romanian competitiveness status compared to other European countries. Based on the conclusions, the author proposes several recommendations to stimulate Romanian's competitive position among the European rank.

The GCI index was selected out of The World Bank Database (<https://tcdata360.worldbank.org/>). On the one hand, there were selected 8 European countries for the comparative analysis, and it was analyzed the Global Competitiveness Index for the 2007-2017 period (2017 including the latest available data). On the other hand, the GCI includes a weighted average of different components, each measuring a different aspect of competitiveness. For the present study, for the 2008-2018 period, there were selected the following components: Imports as a percentage of GDP, Extent of Market Dominance, Quality of overall infrastructure, Quality of the education system, Capacity of innovation, Availability of latest technologies, Company spending on Research & Development, University-Industry Collaboration in Research & Development and Global Competitiveness Index.

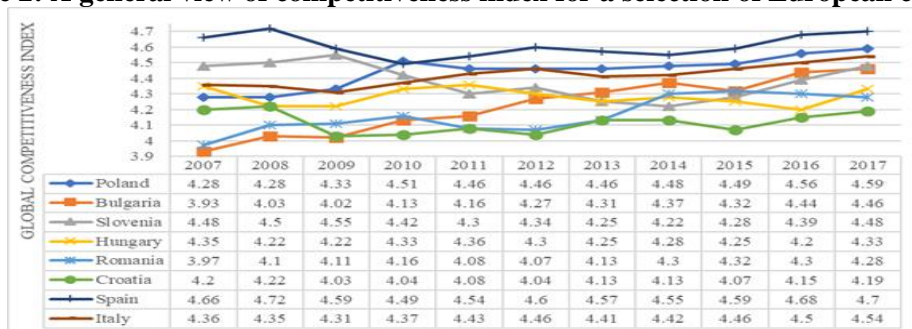
The second part of the research included data extracted from the IMD World Competitiveness Online Database, and there two indexes were selected (<https://worldcompetitiveness.imd.org/>). The first index reflects the total public expenditure on education per student, reflecting the data collected from UNESCO, Eurostat October 2020, and national sources for 2012-2018. The index included government expenditure in educational institutions (current and capital), while it neglects transfers to private entities such as subsidies to students and households, but it introduces expenditure funded by transfers from international references to government. The second index suggests a general perspective of the total expenditure on R&D (%) expressed as a percentage of GDP for the 2010-2019 period. The data is collected mainly from OECD Main Science and Technology Indicators, UNESCO, and National sources.

4. Findings

Figure 2 illustrates a general perspective of the competitiveness index for a selection of European countries. As the results show, starting with 2010, the top 3 most competitive countries out of the selected segment were Spain, Poland, and Italy. At the opposite pole, the rank has been changing since 2010. Croatia and Romania were among the least competitive nations for the entire period, while, since 2012,

Bulgaria's place was replaced by Hungary. Overall, for the 2007-2017 period, Romania experienced a year-on-year average growth rate of 0.76%. Notably, among the selected countries, Bulgaria has the highest year-on-year average growth rate at 1.29%, being followed by Spain with a year-on-year average growth rate of 0.09%, whereas Hungary has the lowest year-on-year average growth rate at -0.04%. Concerning the evolution of the competitiveness index of countries not included in the figure below, for the 2007-2017 period, Netherlands recorded the highest yearly average growth rate at 0.48%, whereas Sweden has the lowest yearly average growth rate at -0.04%.

Figure 2: A general view of competitiveness index for a selection of European countries



Source: Author's selection based on data extracted from The World Bank (<https://tcdata360.worldbank.org/>)

Additionally, regarding the selected competitiveness indicators, for the 2008-2018 period, Romania had registered overall a positive competitiveness balance. The indicators which generated notable advancements in competitiveness rank for Romania in the 2008-2018 period were the Capacity of innovation (3.1 -> 3.7), the Availability of latest technologies (3.6-> 4.7), and the overall Global Competitiveness Index (4 -> 4.3). On an intermediary round, among the indicators with moderate increments, there can be reminded: Quality of overall infrastructure (2.4->3.3), University-Industry Collaboration in Research & Development (2.7-> 3.1), and Imports as a Percentage of GDP (44.5 -> 45.9). Conversely, the indicators with an unfavourable evolution were the Extent of Market (3.9 -> 3.6) and Quality of the education system (3.7 -> 2.8). From a general perspective, Romania has reported notable advances in competitiveness index, although there is still a significant slowdown compared with similar nations. (Table 2)

Table 2: The evolution of Romanian competitiveness indicators (value/rank) (2008-2018)

Indicator	2008	2012	2013	2014	2015	2016	2017	2018	%Δ
Imports as a percentage of GDP	44.5/ 64	44.0/ 68	45.8/ 69	46.5/ 72	44.0/ 77	44.9/ 75	45.5/ 61	45.9/ 64	+5.5 %
Extent of market dominance*	3.9/ 56	3.6/ 74	3.4/ 92	3.56/ 88	3.8/ 61	3.6/ 71	3.8/ 63	3.6/ 76	- 16.3 %
Quality of overall infrastructure*	2.4/ 111	2.3/ 139	2.8/ 132	3.4/ 106	3.8/ 88	3.6/ 91	3.4/ 99	3.3/ 103	+39.7 %
Quality of the education system*	3.7/ 58	3.3/ 90	3.1/ 108	3.3/ 99	3.8/ 61	3.3/ 90	2.8/ 121	2.8/ 115	- 18.8 %
Capacity for innovation*	3.1/ 63	2.9/ 78	3.06/ 77	3.3/ 90	3.7/ 68	3.99/ 63	4.0/ 80	3.7/ 109	+21.5 %
Availability of latest technologies*	3.6/ 93	4.2/ 115	4.1/ 117	4.3/ 107	4.6/ 81	4.6/ 71	4.8/ 71	4.7/ 71	+9.2 %
Company spending on Research & Development*	2.9/ 89	2.8/ 87	2.9/ 87	2.8/ 104	3.1/ 65	2.9/ 94	2.8/ 111	2.8/ 110	-3.2%

University-industry collaboration in Research & Development*	2.7/ 90	3.0/ 115	3.1/ 113	3.3/ 113	3.3/ 88	3.6/ 71	3.3/ 80	3.1/ 97	-5.7%
Global Competitiveness Index	4.0/ 74	4.1/ 77	4.1/ 78	4.1/ 76	4.3/ 59	4.3/ 53	4.3/ 62	4.3/ 68	+4.1 %

Source: Author's selection based on data extracted from The World Bank (<https://tcdata360.worldbank.org/>)

Note: the corresponding year marks the rank obtained during the previous year. For instance, for 2018, the table reveals Romania's rank for 2017-2018 and so on.

*1-7 is the Best value; %Δ reflects the percentage change in value in 2018 compared to 2010

Education has an essential role in stimulating a country's level of competitiveness. Even though the quality of the education system is not spontaneously reflected in GDP and its competitiveness level, education safeguards a long-term perspective for the improved general welfare. The below table illustrates the evolution of the total public expenditure on education per student at the European level, and it depicts a percentage allocation of the budget for 2018, having as reference the country with the most significant investment in education – Switzerland.

There is a generally positive trend in the evolution of public expenditure on education, except for 2015 and 2016. On top, countries with the highest funds directed to education are in 2018: Switzerland (100%), Denmark (63%), Sweden (57%), Austria (52%), Belgium (46%), Netherlands (46%) and Finland (44%). Very close positions to the top countries are occupied by Germany (43%), France (39%) and Italy (31%). At the opposite pole, the nations which deepen the gap between the total public expenditure on education are Ukraine (5%), Bulgaria (8%), Romania (9%), Croatia (15%), Greece (15%), and Poland (16%).

Table 3: A general perspective of total public expenditure on education per student for selected European countries (spending per enrolled pupil/student, all levels) (2010-2018)

	2010	2011	2012	2013	2014	2017	2018	% λ*
Austria	-	12340	12784	11005	11262	11679	12549	52%
Belgium	10568	11171	11191	9616	9769	10277	11134	46%
Bulgaria	1413	1584	1777	1546	1466	1704	1930	8%
Croatia	3370	3350	3536	3072	3100	3350	3741	15%
Cyprus	9325	9619	8327	6489	6560	6658	7002	29%
Czech Republic	5070	5006	4968	3868	3643	4190	5464	22%
Denmark	-	14582	16617	13930	14069	14275	15326	63%
Estonia	4998	5050	5245	4811	4870	5492	6839	28%
Finland	-	11774	12317	10249	10204	10068	10597	44%
France	9833	10281	10340	8687	8684	9032	9518	39%
Germany	-	9610	10338	8931	9092	9587	10342	43%
Greece	5135	4951	4768	-	3459	3406	3759	15%
Hungary	2965	-	3581	3396	3393	3868	4333	18%
Italy	7612	7926	7874	6719	6682	6963	7531	31%
Latvia	-	-	4528	3987	3892	4375	4982	20%
Lithuania	-	3743	4008	3315	3321	3568	4124	17%
Netherlands	10955	-	-	9598	9849	10139	11068	46%
Poland	3355	3296	3526	-	-	3306	3783	16%
Portugal	5959	6234	6289	4945	4890	5059	5402	22%
Romania	-	-	-	1465	1718	1681	2146	9%
Slovak Republic	3468	3621	3947	3582	3422	3714	4218	17%
Slovenia	6518	5979	6489	5227	5230	5635	6468	27%
Spain	-	-	5831	5070	5165	5392	5763	24%
Sweden	-	14502	15249	12820	13255	13478	13937	57%

Switzerland	21936	22366	-	23993	23774	23868	24324	100%
Ukraine	-	-	1287	771	755	991	1123	5%

Source: Author's selection based on data extracted from IMD World Competitiveness Online
(<https://worldcompetitiveness.imd.org/>)

*Note: % λ represents the percentage of 2018 budget allocated on education, by country, compared with the leader in this field, Switzerland

Research and Development investments have the power to transform companies and nations. R&D is a generator of productivity, efficiency, uniqueness, and it supports a sustainable environment. There is a commonly agreed rule that companies with massive R&D investments become leaders within their market niche (e.g., Tesla, Amazon, Apple, Alibaba). At the European level, as Table 4 indicates, the countries with the highest amount of expenditure on R&D expressed as a percentage of GDP are Sweden (100%), Finland (95%), Switzerland (94%), Austria (91%), Denmark (91%) and Germany (89%). Estonia has registered the most significant surge in budget from 0.1% in 2010 to a 1.61% in 2018. At the opposite pole, the countries which are least investing in R&D are Romania (14%), Cyprus (15%), Ukraine (19%), Bulgaria (22%), Latvia (22%).




Table 4: A general perspective of total expenditure on R&D (%) (expressed as a percentage of GDP) (2010-2019)



	2010	2011	2012	2013	2014	2017	2018	2019	% λ^*
Austria	2.73	2.91	3.07	3.05	3.12	3.06	3.14	3.19	91%
Belgium	2.05	2.37	2.37	2.43	2.52	2.67	2.67	2.89	75%
Bulgaria	0.56	0.60	0.79	0.95	0.77	0.74	0.76	0.84	22%
Croatia	0.74	0.75	0.78	0.84	0.84	0.86	0.97	1.11	26%
Cyprus	0.45	0.44	0.51	0.48	0.52	0.55	0.54	-	15%
Czech Republic	1.34	1.78	1.97	1.93	1.67	1.77	1.90	1.94	54%
Denmark	2.92	2.98	2.91	3.05	3.09	3.03	3.02	2.96	91%
Estonia	0.10	2.11	1.42	1.46	1.23	1.28	1.41	1.61	45%
Finland	3.73	3.40	3.15	2.87	2.72	2.73	2.75	2.79	95%
France	2.18	2.23	2.28	2.27	2.22	2.20	2.20	2.19	68%
Germany	2.71	2.87	2.87	2.91	2.94	3.05	3.12	3.18	89%
Greece	0.60	0.70	0.83	0.96	0.99	1.13	1.21	1.27	28%
Hungary	1.15	1.27	1.35	1.35	1.19	1.33	1.53	1.50	40%
Italy	1.22	1.26	1.34	1.34	1.37	1.37	1.42	1.45	40%
Latvia	0.86	0.96	0.69	0.62	0.44	0.51	0.64	0.64	22%
Lithuania	0.78	0.90	1.02	1.04	0.84	0.90	0.94	0.99	28%
Netherlands	1.72	1.94	1.98	2.15	2.15	2.18	2.14	2.16	62%
Poland	0.72	0.88	0.94	1.00	0.96	1.03	1.21	1.34	30%
Portugal	1.53	1.38	1.29	1.24	1.28	1.32	1.35	1.40	41%
Romania	0.46	0.49	0.38	0.49	0.48	0.50	0.50	0.48	14%
Slovak Republic	0.62	0.80	0.88	1.17	0.79	0.89	0.84	0.83	25%
Slovenia	2.06	2.56	2.37	2.20	2.01	1.87	1.95	2.04	67%
Spain	1.35	1.30	1.24	1.22	1.19	1.21	1.24	1.25	38%
Sweden	3.21	3.28	3.14	3.26	3.25	3.36	3.32	3.40	100%
Switzerland	-	2.85	-	3.26	-	3.18	-	-	94%
Ukraine	0.83	0.75	0.65	0.61	0.48	0.45	0.47	-	19%


Source: Author's selection based on data extracted from IMD World Competitiveness Online
(<https://worldcompetitiveness.imd.org/>)

*Note: % λ represents the percentage of the total expenditure on R&D allocated for the 2010-2019 period, by country, compared with the leader in this field, Sweden

Table 5: Recommendations designed to stimulate Romania's competitiveness for the selected indicators based on the country's performance in the 2008-2018 period

Indicator	Country's performance (2008-2018)	Recommendations
Imports as a percentage of GDP		<p>Although trade balance is an indicator of a country's wellbeing, it does not necessarily involve registering a positive value. What is crucial, though, is following the flow of value-added inbound and outbound.</p> <p>As the recent figures published by Trend Economy (2020) show, in Romania, over 36% of the imports consisted of Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles [85] – 15.4%, Nuclear reactors, boilers, machinery, and mechanical appliances; parts thereof [84] – 12.4%; Vehicles other than railway or tramway rolling stock, and parts and accessories thereof [87] – 9.02%.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Fostering the strategic cooperation between private and public actors and among domestic producers, exporters, and policymakers; • Create a friendly domestic environment for potential exporters through strategic-connected infrastructure, easiness in regulations related to exports; • Facilitate the access to finance – mainly for small and medium enterprises (SMEs) which are decisive for export growth; • Improve and consolidate Romania's image in foreign markets (through marketing, advocacy, information provision);
Extent of market dominance		<p>The extent of the market dominance index reveals the heterogeneity of a business environment. A significant drop in the indicator's value confirms the efforts made by authorities after the communist failed in 1989 to improve the market concentration. Fair competition is always stimulating companies to streamline their production/services continuously.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Enhanced access to finance for start-ups and SMEs (for product innovation, market extension, training, technology); • Continuous supervision of the most critical players in the domestic market; • Organization of events with the scope to foster cooperation and disperse the best practices between the small and large enterprises; • Free access to quality training for top-management mainly for start-up and SMEs;
Quality of overall infrastructure		<p>Develop reliable, faster, and strategically linked transport routes and services. In advanced economies, roads, ports, airports, highways, and other forms of infrastructure have proved to be one of the main driving factors for speedier economic growth.</p> <p>Although there have been registered some progress in Romania's developing infrastructure, according to European Commission (2019), Romania's motorways and national roads account for approximately more than 20% of the road network, while some 90% of national roads have only one traffic lane in each direction, placing Romania on rank 27 at the EU level. European Commission (2020)</p>

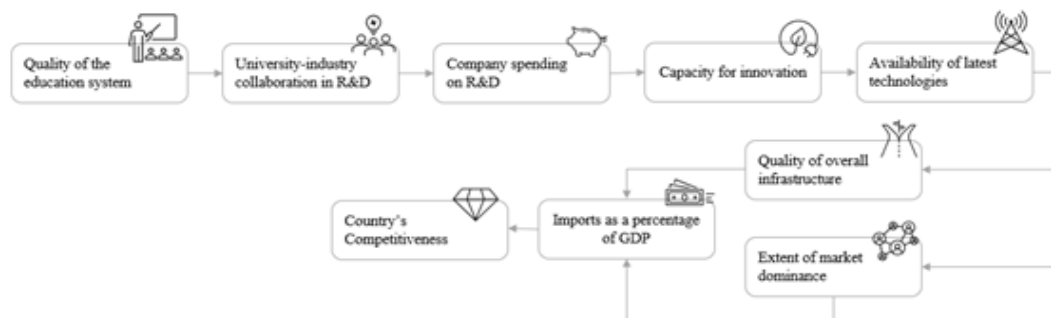
		<p>The infrastructure system directly impacts the country's overall competitiveness by assuring faster and higher-quality transportation means for people and capital.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Find or develop a cost-efficient approach to improve Romania's infrastructure system (it may involve cooperation between the private and public sector and foreign experts); • Create a quality management system bringing both national and international experts to assure an efficient and strategic transport route by connecting main border customs and top export-performing counties to international markets; • Invest in the sustainable development of renewable energies to increase savings in different forms of energy used for transportation; • Organize transparent auctions involving both the private and public sectors for each infrastructure project; • Access European grants to build a fast-charging network along core-network corridors; • Focus and budget a sustainable transport, energy, and environmental infrastructure.
<p>Quality of the education system</p>		<p>Education has been long acknowledged for improving population lives, welfare, salaries and implicitly contributing to a country's GDP. Education is the centre of building human capital and leads to efficiency, productivity, and higher-value-added activities.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Improve the quality of preschool and primary education by offering intensive training and cross-border experiences to teachers; • Periodically evaluate the teacher's quality performance and take immediate actions; • Massive investments in teacher's education and needed in-class materials; • Develop interactive teaching methods, combining both theory and practice and addressing more attention to the formation of soft skills in the early school; • Continuously adapt the educational activities to the expected needs of the labor market; • Stimulate students' interests by offering attractive scholarships, cross-border experiences, access to high-tech devices; • Create a continuous quality improvement system for the educational system;
<p>Capacity for innovation</p> <p>Availability of latest technologies</p> <p>University-industry collaboration in Research & Development</p>		<p>Innovation is a synonym for long-term growth, job creation, and an increase in life quality. Due to globalization, there are new forms of competition, and, nowadays, innovation and access to technology are critical requests for the creation and delivery of innovative products and services. As OECD states, "the capability to innovate and to bring innovation successfully to market will be a crucial determinant of the global competitiveness of nations over the coming decade." (OECD, 2007)</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Initiate measures and programs designed to transfer knowledge between businesses and R&D sectors (e.g., open periodical meetings, conferences, debates, on-site visit of university experts to companies/factories);

		<ul style="list-style-type: none"> • Ease the process of fund allocation for R&D & new technologies for the business environment; • Government should formulate research contests and organizes contests among universities; • Government should contribute through public investment in science and basic research to develop the ICT sector; • Increase the amount of available funds for education and empower entrepreneurs to start businesses more simply and exit the market more quickly in case of failed businesses; • Extent frontier technologies for the poor population, especially for those living in rural villages and implement frontier technologies for the public sector.
<p>Company spending on Research & Development</p>		<p>R&D represents a source of efficiency, opportunities and it has a direct impact on business competitiveness. Usually, a company's life cycle is severely influenced by its investments in R&D. There are several examples of experienced companies which were easily surmounted by intensive - innovative start-ups (e.g., Nokia and Waze)</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Promote cooperation between businesses to join-venture and research and development programs; • Promote and sustain cluster organization among companies; • Government should offer financial support to R&D (e.g., tax deduction, contribute to the R&D budget, other facilities); • Free access to training and special courses or accordance of grants to develop employees' digital skills; • Companies should facilitate innovation by investing in their staff and conducting their in-house R&D operations;

Source: Author's own creation (2021)

Figure 3 illustrates the author's favourable scenario regarding the relationship between the analyzed World Bank Database's indicators. As it can be easily noticed, the quality of education has a ripple effect on the performance of all the other factors. The quality of the education system will directly influence the collaboration between the university environment and industries in R&D activities. Moreover, as the industries gain access to more solutions addressing their concerns, the companies will spend more on R&D.

Figure 3: The inter-relation between the selected World Bank's indicators for the country's competitiveness



Source: Author's own creation (2021)

Consequently, the capacity of innovation will increase and unlock access to the latest technologies. All these factors may generate genuine strategies and opportunities to stimulate the economy's performance as a whole. In the above case, the first addressed issues will be the quality of overall infrastructure and the extent of market dominance. More in-depth, efficient, and optimized business environment, a close and continuous collaboration between university and industries, an increased quality of the education system will create the space for more entrepreneurs to set up a business, and it will increase the competitiveness level of actual producers. Thus, national products will become more competitive and attractive both at the local and international levels. In consequence, the country's competitiveness level is expected to escalate.

5. Conclusions

As Albert Einstein stated, "not everything that counts can be counted, and not everything that can be counted, counts." Competitiveness is created up as a combination of various factors, which cannot all be counted explicitly as a mean or exact percentage contributing to an increased level of competitiveness.

As the present research indicates, according to the Global Competitiveness Indicator, for the selection of the European countries, the top 3 most competitive countries in the 2007-2017 period were Spain, Poland, and Italy. At the opposite pole, Croatia and Romania were among the least competitive nations for the entire period. Regarding the chosen competitiveness indicators, for 2008-2018, Romania had registered overall a positive competitiveness balance. Specifically, the indicators that generated notable advancements in competitiveness rank for Romania in the 2008-2018 period were the Capacity of innovation, the Availability of the latest technologies, and the overall Global Competitiveness Index. On the contrary, the indicators with an unfavorable evolution were the Extent of Market and Quality of the education system.

In terms of allocated funds for education, there was an overall positive trend from 2010 to 2018. The leaders in investment are Switzerland, Denmark, Sweden, and Austria, while the latecomers are Ukraine, Bulgaria, and Romania. Concerning the amount of investment in R&D, the situation looks similar. The top countries that invest in R&D are Sweden, Finland, Switzerland, and Austria, while, at the opposite pole, are Romania, Cyprus, and Ukraine.

Although Romania is generating constant progress to stimulate its competitiveness, there are still gaps to be filled up in the medium and long term. Unquestionably, improvements can be added to each sector. However, the author concluded that a suggested starting point would be to address more attention to the education system where considerable investments are needed to stimulate the sector's quality. Additionally, to revitalize the business sector and become more attractive at local and international levels, it is recommended to stimulate the R&D activities and ease the companies' access to high-tech technologies.

The world economy is very fragile, and it will always be impacted by unexpected external factors such as the COVID-19 pandemic. Consequently, every nation must safeguard its competitiveness position on the global market and be orientated towards continuous progress.

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