



JEL code: F44, O03

FROM INNOVATION TO INNOVATIVE BUSINESS

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Abstract: Innovation is the process of adapting from old to new, that would mean a 100 year difference or change from yesterday to today. It is the main source of economic growth and social and technological progress. In recent years, innovation-led economic growth has been increasingly focused on technological change, digitisation and environmental sustainability, but also on a need for change generated by the Covid-19 pandemic crisis.

In this paper we aim to analyse the role of innovation and its impact on various processes, while explaining the shift to innovation business, based on various models used in some countries.

Key terms: innovation, technology, hub, fintech, economic growth, innovative business

The essential role of innovation and technology in the process of economic growth is highlighted in the context of endogenous growth models of the open economy (Schumpeter 1928, 1948, Grossman and Helpman, 1991, Rivera-Batiz, Romer, 1991, Coe and Helpman, 1995, Bloom 2002).

Innovation derives from the concept of novelty and creativity. It is a continuous process arising from the development and application of new ideas and technologies. It is the main driver of economic growth. A growing number of economists are assessing how technology and innovation have a major impact on economic growth, with a direct reflection on overall welfare (Scarpetta and Tressel, 2002, Griffith 2004; Cameron 2005). In these contexts, the ability of an economy to innovate depends on the level of R&D stock, human capital, involvement in international trade, market regulation and technology transfer. [1, p. 25] Today, innovation is underpinned by access to the internet, investment in R&D, intellectual capital and the globalisation process. It is a concern for governments, companies, universities and civil society (OECD 2016).

Innovations have several dimensions. They combine not only economic but also social and cultural aspects, some of which are abstract and not subject to economic evaluation. The indicators commonly used in empirical analysis of innovation are:

➤ Trend towards R&D - To innovate, companies need to invest in R&D to create or adopt new products or processes in the market. The percentage or share of R&D expenditure can serve as a measure of the contribution to the innovation process in the firm. However, it is not a perfect indicator, as not all R&D efforts will lead to results;

➤ Adoption of technologies - Adoption of new technologies contributes significantly to productivity growth. At the same time, new products and processes appear on the market, increasing the share of production attributed to them. A key factor is real investment in machinery and equipment;

➤ Brevetele per worker - In the Global Competitiveness Report 2002, it is pointed out that innovative economies are those countries that have at least 15 patents per million people. Competition among major economies is closely linked to the ability of these countries to innovate and win new global markets for technologically advanced



products, and all other countries are considered to have technology transfer economies.

➤ Intensity human factor skills - The close link between innovation and skilled labour is well established and documented. To assess the contribution of skilled labour to innovation, empirical analyses use the employment share of total employment of scientists, engineers and other professionals. The employment share of workers with at least a university degree in the total workforce is also used.

A comprehensive approach to innovation can be found in the Global Innovation Report, produced annually by the World Intellectual Property Organization. The Global Innovation Index is based on 81 indicators, including human and research capital, infrastructure, credit, investment, innovation and creative output. [Fig.1.1]

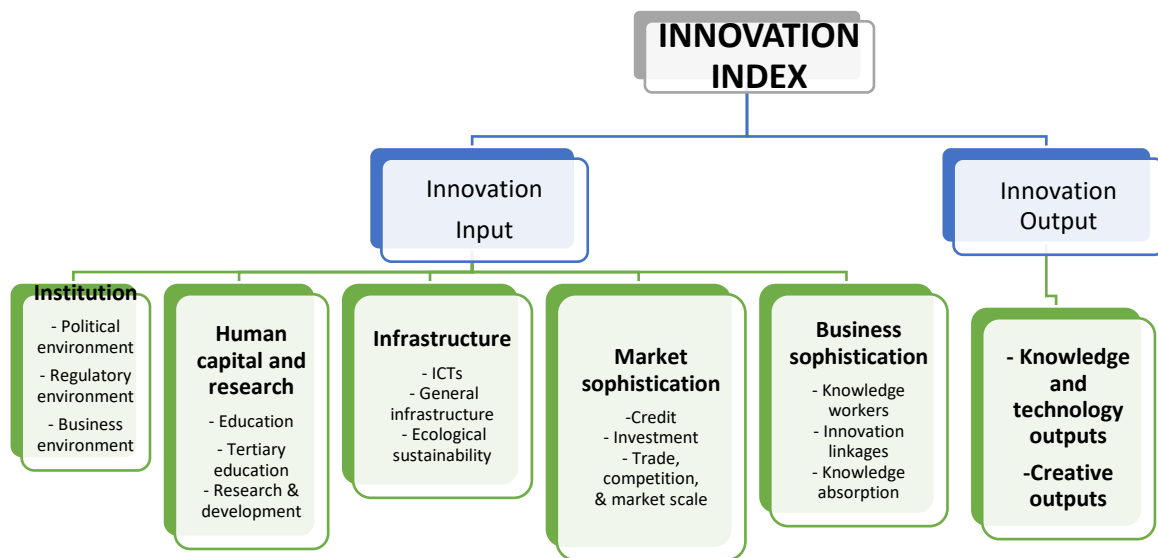


Fig.1.1 Innovation determinants

Source: *The Global Innovation Index 2016 Winning with Global Innovation*, pag. 14
http://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2016.pdf

Another approach to innovation is proposed by the Group of the World's Most Developed Countries, the G20, in collaboration with the Organisation for Economic Co-operation and Development. From their perspective, countries with high innovation potential support innovative economic growth and business through the following strategies and objectives:

- The approach common challenges through international cooperation in science and innovation;
- Growth quality of science in academia;
- Promotion national and international student mobility;
- Facilitation mobility of researchers;
- Promotion innovation collaboration between companies;
- Supporting business innovation and entrepreneurship promotion. [2]

Innovative business is the creation of new value and wealth for stakeholders with the aim of enhancing economic growth in states (Lorente et al., 1999; Miller, 1995).

The concept explores innovation and how it can create and bring value to organisations, companies or businesses.

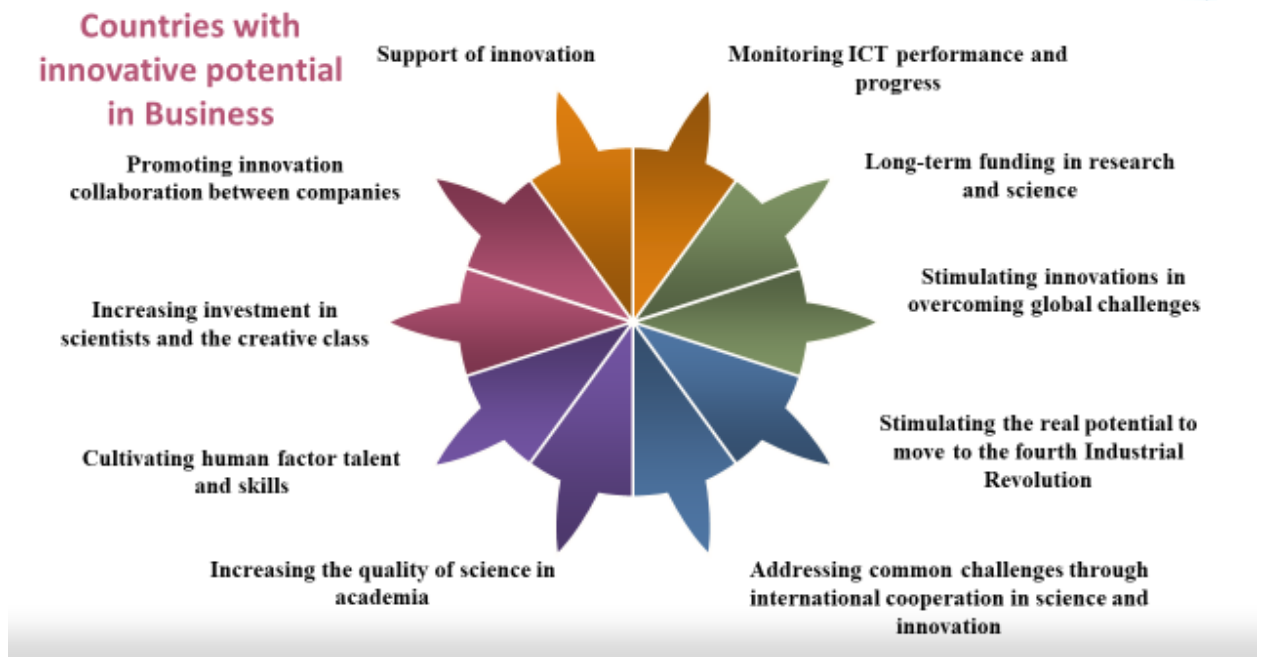


Fig.1.2 Ecosystem of the Innovative Business Concept

Source: Prepared by the author based on OECD data

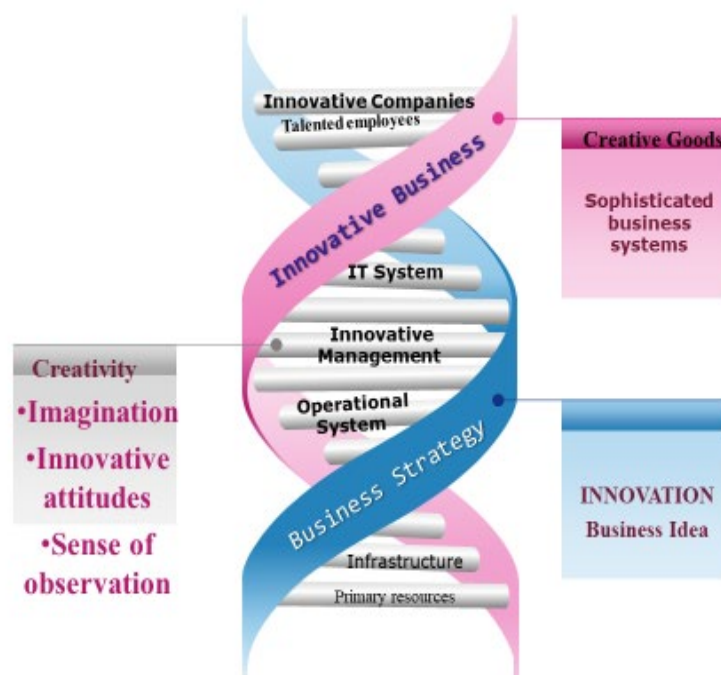


Fig.1.3 Ecosystem of the Innovative Business Concept

Source: Prepared by the author

Innovative business is the creation of substantial new value for customers and the company by creatively changing one or more dimensions of the business system (Sawhney et al., 2006). In other words, it results in the creation and adoption of something new that generates sophisticated business value. This includes new products, services or processes, such as integrated supply chain solutions (Sawhney et al., 2006).



If we make a comprehensive analysis of innovation and Innovation Business in different countries of the world, we see that the approach is individual from case to case. For example, the history of the American economy is one of enormous progress coupled with remarkable innovation. The word "scientist" had not yet been coined, but scientists such as Isaac Newton began the discovery of the scientific foundations that underpinned two centuries of practical invention. Later Americans took advantage of the Industrial Revolution, which meant an explosion of innovation, propelling them to unprecedented economic heights and setting a powerful example for other nations. In the US, innovation is seen as the creator of prosperity and "American character". [3, p.25]

The US has a highly decentralized and diverse innovation system involving many actors, institutional - government, academia, private sector and various non-profit organizations. The system combines a high level of research and development, massive investment in the human factor and the development of sophisticated business models.

According to the Global Innovation Index, compiled each year by the World Intellectual Property Organization, the US ranks in the top 10 countries with the highest innovation index. A comparative analysis of this index between 2010 and 2019 shows an increase in the Market Sophistication indicator, from 70.9 points in 2010 to 86.6 points in 2019, and in the Creative Goods chapter, which represents innovation outputs, from 43 points to 51.6 points in 2019, thus showing the deepening importance of Innovation Business in this economic system. We remain in the range of these research years, because the Covid-19 pandemic has changed the emphasis, trends and system and indicator changes have appeared in the process of innovation index analysis.

The model for promoting innovation to enhance economic growth is a complex and stepwise one, structured in a pyramid that initially envisages the development of four major blocks: innovation in education, innovation in research, smart workforce and the creation of an innovative ICT ecosystem. The next stage is market development and sophistication through innovative business and creative entrepreneurs. The last stage of the country's innovation is the focus on the development of biotechnology, nanotechnology, innovative space applications. These aspects speak to the high degree of development of the American economy. [Fig.1.4]

In order to enhance the progress of the national economy, major emphasis is placed on developing the skills, intelligence and education of the human factor. It is well known that only half of the economic growth that the US economy has experienced in the last 50 years has been due to investment in productive assets and technology, and the other half is attributed to the productivity of human capital, i.e. the increase in the productivity of the US workforce. This is without taking into account that productive assets and technology, in turn, are created with much contribution from human capital. American human capital is considered a key factor in the country's economic growth. There is confidence in the entrepreneurial capacity, motivation, energy and skill levels of Americans. In 2018 over 69% of the working population had a college degree, 88% of the population had access to the internet, and 99% owned a mobile phone, this is a direct indicator influencing Innovative Business.

Another global example of innovation and Innovative Business is Japan, which has relied on science, technology, innovation, research, robotisation and human factor



education in its economic expansion and ensuring the welfare of its population. Its science and innovation profile demonstrates its technological performance. Spending on research & development exceeded 3.56% in 2018, ranking third in the world, according to OECD data. Number of researchers in Japan

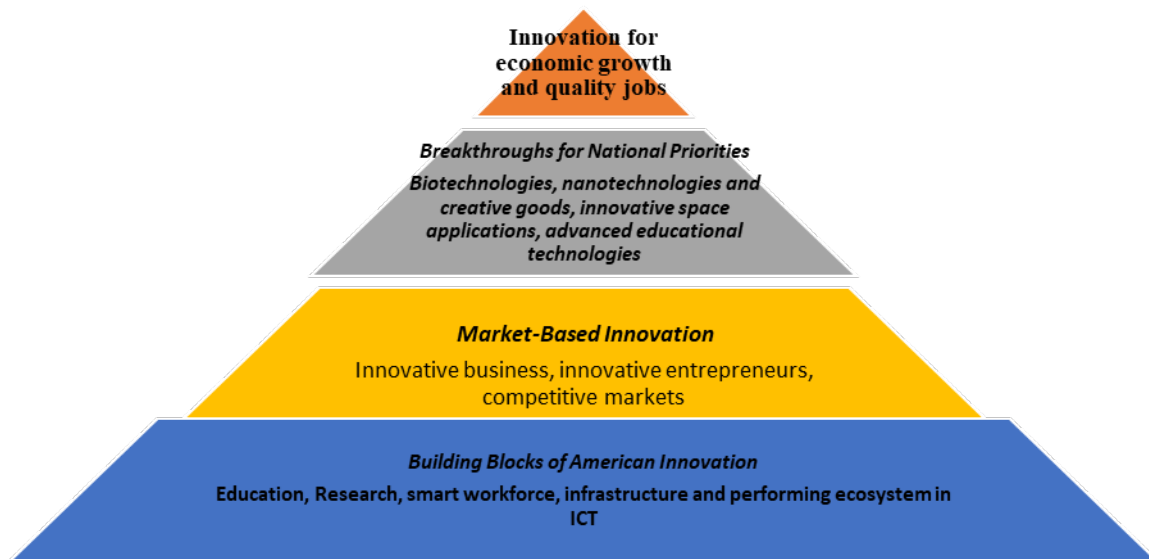


Fig. 1.4 US Innovation Pyramid

Sursa: A Strategy For American Innovation: Securing Our Economic Growth and Prosperity (2011). National Economic Council, Council of Economic Advisers, and Office of Science and Technology Policy. <https://www.whitehouse.gov/sites/default/files/uploads/InnovationStrategy.pdf>

According to the Global Innovation Index, Japan ranks in the Top 20 countries with the highest innovation index. Comparing this index between 2010 and 2019, we see a significant improvement in the Human Capital and Research indicator, from 53 points in 2010 to 58.5 points in 2019, and in Creative Assets, from 32 points to 41 points in 2019. Innovation is an important and strategic area in the Japanese economy and is addressed at the highest level by the state, with the National Council for Science, Technology and Innovation created for this purpose. In 2016, the country's Innovation Strategy The 5th Basic Plan (FY2016 to FY2020) was approved, focusing on the country's research and innovation measures until 2020, creating new types of societies "Super smart society" or "Society 5.0.", based on advanced technologies, bio/nanotechnologies, artificial intelligence and innovative business.

The role of innovation in supporting economic development in the European regional area

"Investing in innovation invests in long-term economic growth", said Francis Gurry, WIPO Director-General. The European Union countries are also committed to this idea, as innovation is vital for European competitiveness and productivity in the global economy. The EU28 is implementing policies and programmes to support the development of innovation to increase investment in research and development, goods, services and the intelligent human factor, with the aim of increasing labour productivity. Innovation in the European conception is associated with the following notions:

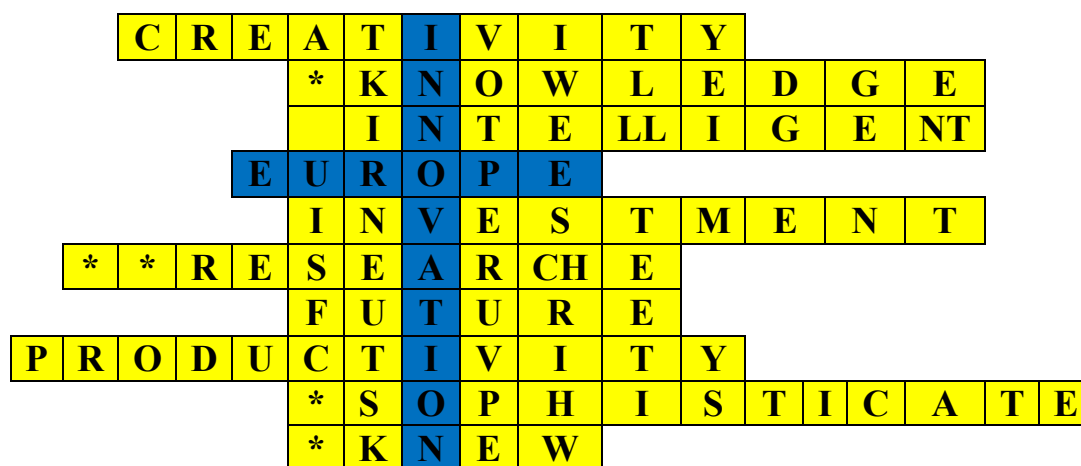


Fig. 1.5. Tackling innovation in the EU28

Source: adapted by the author from European Innovation Scoreboard 2016, <http://ec.europa.eu/DocsRoom/documents/17822>

The performance of the EU's national innovation systems is measured by the Innovation Index, which is a composite indicator obtained by taking into account an unweighted average of 25 indicators. Based on these indicators, EU countries are divided into four broad categories:

1. Innovation Leaders - includes Member States where innovation performance exceeds the European average by 20%: Denmark, Finland, Germany and Sweden which rank first in the top;
2. Strong innovators - includes Member States with a performance index between 90% and 120% of the EU average: Austria, Belgium, France, Ireland, Luxembourg, Slovenia and the UK;
3. Moderate innovators - innovation performance is between 50% and 90% of the EU average: Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia and Spain belong to this group;
4. Modest innovators - countries with the worst innovation performance, below 50% of the EU average. This includes Romania and Bulgaria.

The intelligent human factor, the high number of researchers, investments in advanced technologies, the high quality of research in educational institutions are the factors that determine the increased degree of innovation in Germany, Belgium, Ireland, Denmark, and are also the determining factors in increasing labour productivity in these economies. The UK, Spain and Latvia are the European countries with the highest rate of innovation growth in all sectors of the economy.

According to the Global Innovation Index, developed by the World Intellectual Property Organization, in 2019, seven EU28 countries were in the top 10 countries with the highest innovation index. The countries in the European community that achieved this performance are Sweden, the UK, Finland, Ireland, Denmark, and Germany. [Fig1.6]

Comparing this index between 2010 and 2019, we see an increase in most indicators, with institutions being the index with the highest score in the report, and in the last 9 years, creative goods are the area that has seen a substantial increase in most EU28 countries, with the greatest progress in Ireland, from 34.4 to 53.4 points.

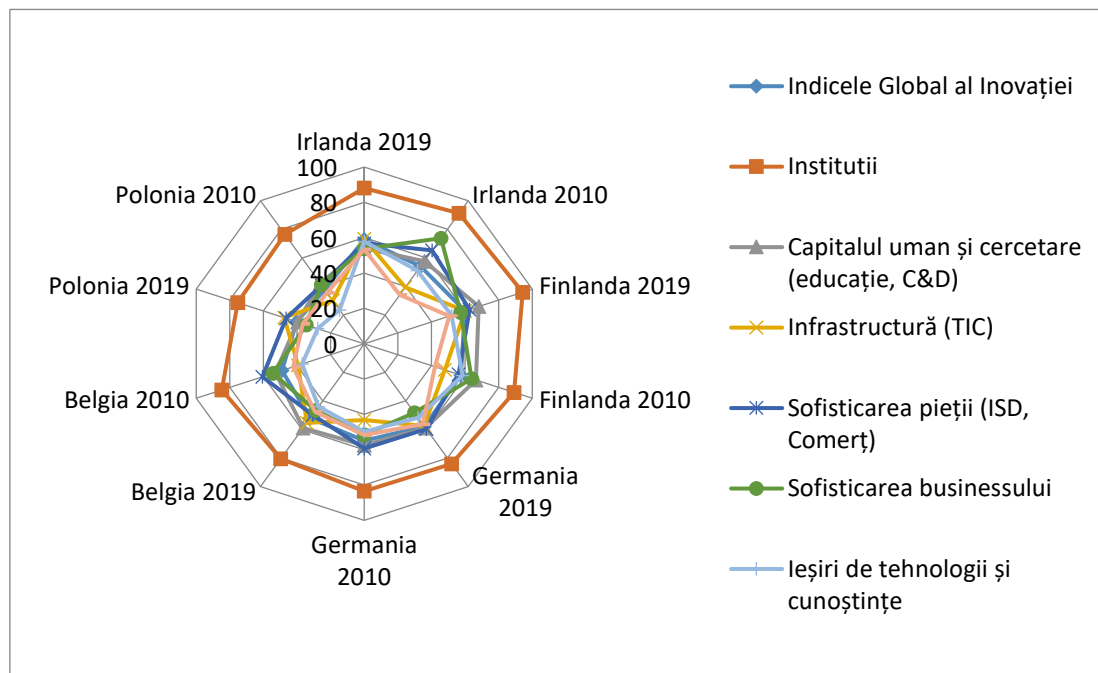


Fig. 1.6 Benchmarking the Global Innovation Index 2010/2019 in selected EU countries²⁸

Source: Prepared by the author based on data from the Global Innovation Report 2010-2011 and the Global Innovation Report 2018-2019

http://www.wipo.int/edocs/pubdocs/en/economics/gii/gii_2011.pdf

https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf

If we take a general look at business innovation through the lens of the Global Innovation Report, then we turn our attention to the Business Sophistication indicator. Business Sophistication refers to the quality of a country's overall business networks and the quality of operations and strategies used by companies, firms and enterprises. The factors that determine and influence innovative business are diverse and multiple, such as: innovative linkages, technical-scientific heritage, innovative management system, intelligent, skilled, creative and talented human factor, IT products and services, online creativity, sophisticated IT systems, creative assets (Fig.1.7).

It is very important to make a comparative analysis of the aspects of Innovative Business in the European regional area. In this context, we have selected a few countries such as Germany, Ireland, Romania, Russia and the Republic of Moldova in order to assess the situation in this chapter and to understand what stage each country in the region is at. According to the Global Innovation Report 2019, key differences can be observed in the aspects of the approach to Innovation Business. Major discrepancies are found both in terms of online creativity, but also in terms of skills and human capital skills in each country surveyed.

Germany and Ireland are the best performing countries in the EU over the last 10 years, with a close maximum score of 56 and 55.8 points respectively in 2019. At the same time, these countries stand out as leaders in clusters (75 points for Germany and 61 for Ireland), the university-private sector research duo scoring 70 points, and Ireland is notable for its strong presence in the field of online creativity. An important aspect in these countries is also the outstanding skills of the human factor, which possesses



impressive abilities in creating new business and IT models, being leaders in this field as well.

BUSINESS SOFISTICATION

Indicators that influence Innovative Business



https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf

Fig.1.7 Factors that determine Innovative Business

Source: adapted by the author after *The Global Innovation Index (GII) Conceptual Framework*, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2017-annex1.pdf

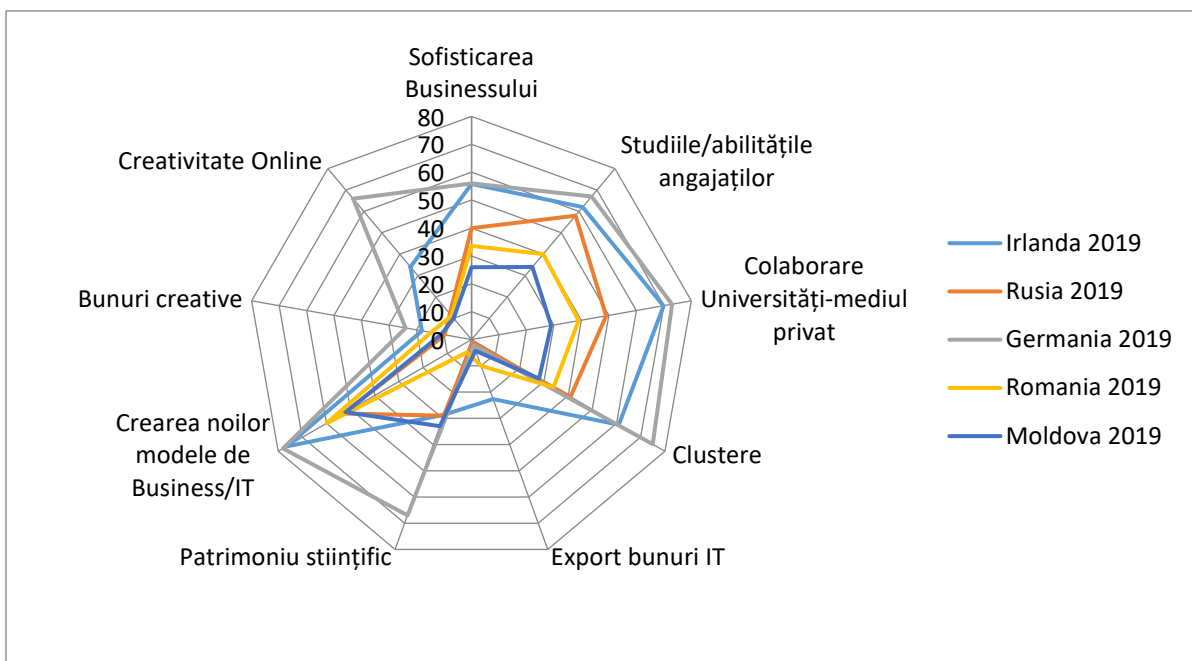


Fig. 1.8 Comparative analysis of the Business Sophistication indicator of the Global Innovation Index 2019 in some countries in the regional space

Source: Prepared by the author based on data from the *Global Innovation Report 2019-2020* https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf

Russia, the Republic of Moldova and Romania are countries at the lower end of the regional spectrum, both in terms of production and export of creative goods, but



also in terms of low potential in online creativity. Referring directly to the Republic of Moldova, it does not perform well in the field of Innovative Business, scoring only 26 points, the lowest among the countries studied. The underdeveloped level of the indicator speaks of the fact that we are at the stage of Factor driven economic development, based on factors of production. A strong erosion is also observed in indicators such as export of IT goods (4.2), scientific heritage (33), development of innovative business models (52), but also online creativity (9), or creative goods (11). The modest results in the innovation chapter in the Republic of Moldova explain that the weak level of economic development is not directly influenced by factors such as innovation, and business sophistication remains a priority sector in the national economy to be able to intervene in global development chains. The country's potential for exporting IT goods is vaguely observed, as well as its capacity for creating innovative business types, and this fact must be explored to the full.

Innovative Business Models in some European countries

In each country, the innovative business model differs in many aspects. The main focus is on the way and strategy of investing, the conception of risk, innovative management styles and types, and the perception of innovation. It also takes into account company structure, global or local focus and scope of activity.

According to our research on the state of innovation business in countries, the highest performance was found in Germany, a living example of innovation throughout Europe.

In 2014, the German government published its High-Tech Innovation Strategy, which aims to strengthen the country's position as an industrial and export hub and become a major innovation leader. Key to these goals, according to the strategy, is the ability to translate "good ideas" into "innovative products and services", as these are the drivers of prosperity and support quality of life. Germany's Industry 4.0 ("fourth industrial revolution") initiative puts it at the forefront of the convergence of physical and digital systems..

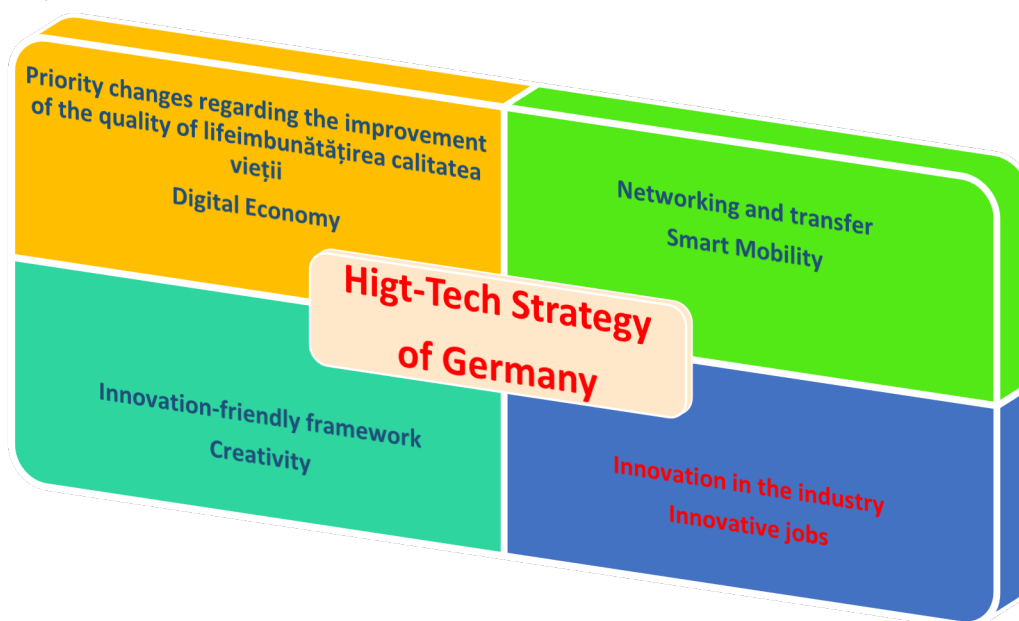


Fig. 1.9 Core elements of Germany's High-Tech Innovation Strategy

Source: Prepared by the author based on *The new High-Tech Strategy Innovations for Germany*



Technology plays a crucial role in this strategy, but technology alone will not deliver the kind of transformation Germany aspires to. In the German model, technology is the catalyst and one of the factors influencing the Innovation Business in such a way that it generates creative goods for consumers and financial sources for the company.

In the German strategy an important role is played by the development of the innovative business aspects. It has several components:

1. Digital economy and society - Industry 4.0 :

- Proces sophisticated industrial and hybrid products;
- Proces integration of consumers and manufacturers into global value chains;
- Servicii smart and intelligent data - BIG DATA ;
- Cloud Computing, used in particular for SMEs;
- Educație and digital research.

2. Innovative world of work - human factor with digital, creative and knowledge skills:

- Work in the digital world;
- Soluții integrated and innovative services for market requirements;
- Angajat talented, creative and adaptable to rapidly changing demands;

1. Smart direct and virtual mobility - Sophisticated infrastructure;

2. Networking and transfer :

- Extension strategic opportunities for industry cooperation with universities;
- Principiul VIP: Validating the innovation potential of scientific research;

3. Innovations in industry :

- Promoting spin-off and spin-in companies "INNOspace";
- Inițiativa "SME-Digital" ("Mittelstand-Digital") promotes greater use of ICT

and e-commerce among SMEs.

Yet the COVID-19 pandemic and the war in Ukraine revealed vulnerabilities in Germany's economic model: undiversified energy supply, over-reliance on fossil fuels, lagging digitisation and disrupted supply chains. Digital technologies can significantly disrupt manufacturing industries for which Germany has dominated for decades, jeopardising future competitiveness. Germany can call on one of the most advanced innovation systems in the world with these challenges, but a new, more agile and experimental approach to their innovation policy is needed. In the present review of Germany's innovation policy, in fact a must for all countries in the world, will pursue a maximum focus on: creating markets for future innovations, more significant and risk-tolerant funding for innovation, knowledge sharing, data infrastructure and improved capabilities. The new approach of German innovation policy in the current circumstances is based on two general aspects:

Leadership and Governance of the German Innovation System : The government should establish a clear vision of what success looks like in digital transitions. Equally, it needs to effectively involve all key actors of the innovation process, including migrants and women and environmentalists;

Supporting innovation in the private sector.

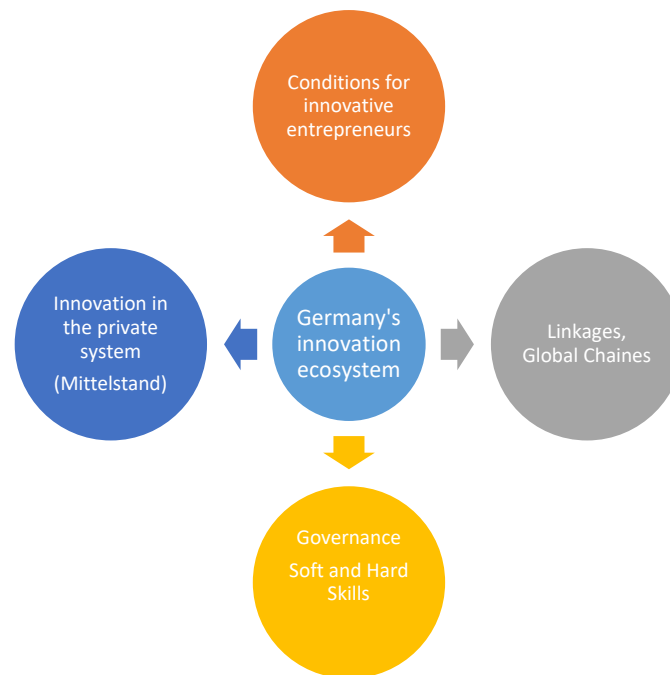


Fig. 1.10 Highlights of the Review of Germany's Innovation Strategy

Source: Adapted by the author based on OECD Reviews of Innovation Policy GERMANY 2022 Highlights of the Review of Germany's Innovation Strategy

Another example of a country based on innovation and innovative business would be Ireland. Ireland has one of the most open economies in the EU. Being knowledge-intensive, services and high-tech manufacturing are key drivers of the national economy. For the current period, the Government is driving this innovation direction to generate and build on Irish success globally, not just in Europe, and it is expressed in the country's National Smart Specialisation Strategy for Innovation 2021-2027.

The principles that enable it to be an innovative country are to massively increase investment in research and development, as well as building strong links between the higher education sector and business. Investment in R&D has increased by 79% from €2,564 million in 2011 to an estimated €4,595 million in 2020. In 2021, the Irish government has allocated €949.1 million to this area. To this end, by 2030, the aim is to develop innovative SMEs, increase the use of artificial intelligence and develop the Industry 4.0 strategy.

Turning to the regional situation, despite some progress in innovation, some EU27 countries still perform poorly in this area. To improve the innovation index, the European Commission has proposed a new approach to research and innovation through the creation of European Innovation Partnerships (EIPs) [4]. The EIPs focus on bringing benefits to member countries to modernise all sectors of national economies. The EIP acts at the level of the whole research and innovation chain, bringing together all relevant actors at European, national and regional level, aiming at several goals: stepping up R&D efforts, coordinating investments efficiently, regulating standards. [Fig.1.9]

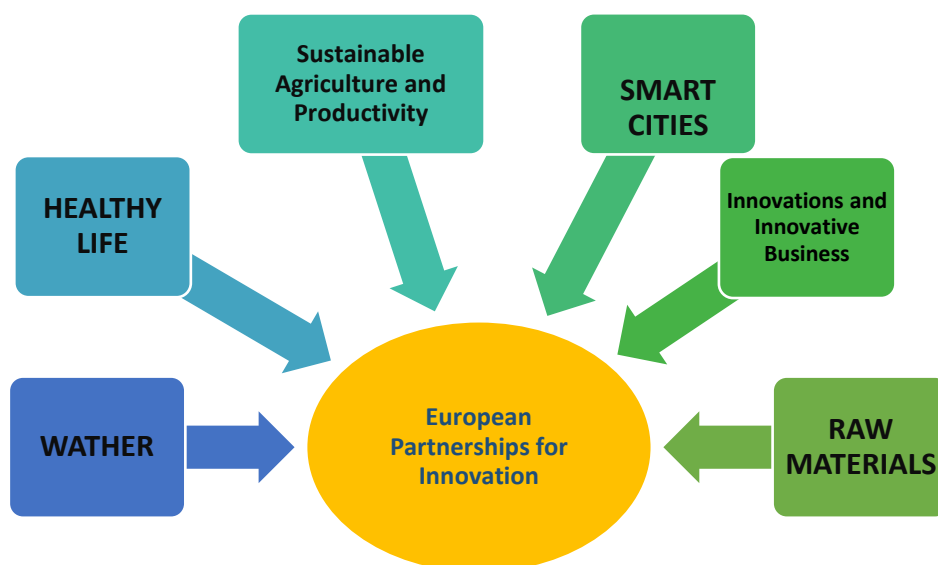


Fig. 1.11 European Innovation Partnerships Model

Source: Adapted by the author from the model proposed by the European Commission.
http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=eip

Conclusions : The aim of this model is to promote innovation in the most pressing sectors of the European economy in order to increase cohesion at all levels.

Summarising the results achieved by the countries of the region, it is found that for the innovation dimensions, the strengths compared to the average performance are human resources, especially the population with completed higher education, export of IT products and intellectual assets, especially patent applications, scientific articles of international value, R&D expenditure in the public sector, rapid increase in the number of employees in creative-innovative companies.

Re: This article is part of the research of the project within the state programme "Shaping innovative business in the context of regional competition" with the number 20.80009.0807.42.

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