

# INNOVATION AS A SOURCE OF COMPETITIVE ADVANTAGE OF THE REPUBLIC OF MOLDOVA

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***Abstract:** In this paper, we conducted a theoretical and applied research of the place of innovation in the development of a country, through highlighting the ways of ensuring the country competitiveness. Thus, we can mention that we started this research by going through the theoretical approaches of innovation, of factors that contribute to the formation of an economy based on innovation. Later, we researched the statistical data on the position of Moldova in terms of innovation, patent applications. We also researched the most innovative countries in the world. The research methodology was focused on use of the following methods: analysis, synthesis, induction, deduction, logical method. All these methods have contributed to promoting the research and highlighting the most important milestones of the research. In conclusion, we can mention that the Republic of Moldova needs to strengthen its efforts regarding the transformation of innovations into new innovative products, into patent applications filed. This will positively influence the dynamics of the country development and will accelerate the process of increasing the competitiveness of the country.*

***Keywords:** competitive advantage, innovation, sources of innovation, patent, innovative universities.*

***JEL Classification:** O30, O34, I29, M19.*

## **1. Introduction**

Over recent decades a growing attention started to be given to investigation, to innovation and to technology transfer in the wake of the structural transformations in the economy and the alterations that had occurred in the economies of the world. This need arises from the physical and moral deterioration of the techniques, equipment, technologies, ideas and knowledge.

In this context, there is a necessity in companies to create something new, to straighten the various problems arising on the market, to find viable solutions in order to overcome obstacles appearing on the market. Therefore, creativity appears as a support on the one hand and as a basic premise, on the other hand, in such a way helping companies to become more competitive on the market. Considering the fact that companies should handle many different factors of external influence, as well as to find speedy solutions to emerging issues, to discern these factors or to take up strategies in order to overcome the created disturbances.

In this context, there is a need in companies to create something new, to redress the various problems arising in the market, to find viable solutions to overcome obstacles appearing on the market. Thus, creativity appears as support, on the one hand, and the basic premise, on the other hand, helping companies become more competitive on the market. Given that the companies have to face several external influence factors, to find quick solutions to problems and to perceive these factors or, to adopt strategies to overcome the disturbances created by them.

## **2. Research methods**

The research methodology was focused on use of the following methods: analysis, synthesis, induction, deduction, logical method. All these methods have contributed to promoting the research and highlighting the most important milestones of the research.

### **2.1. Innovation and its characteristic features**

According to OECD, innovation is the global process of technological and commercial creativity, the transfer of a new idea or a new concept until the final stage of a

new product, a process or a service activity allowed on the market (12). Analysing this definition, we can notice that creativity is a basic factor of innovation, a factor that influences the generation process of new products and technologies. Consequently, creativity is considered to be a vital part of generating the innovations. Therefore, companies should be creative in taking up new directions, in implementing new strategies in order to overcome obstacles and to increase the competitiveness.

Once the decision to innovate in organisations was made, the necessity to correlate the process of innovation with the organisational objectives should be acknowledged. This correlation helps enterprises to innovate those products and technologies that will help the company to achieve the organisational objectives. Thus, among the organisational objectives we can differentiate such objectives as: increasing the market share by a certain percentage, accession on new markets, increasing the notoriety, expanding the assortment of products manufactured, reducing the defects, increasing the competitiveness of enterprises.

Innovation, viewed as a whole, presents a complex process that has many characteristic elements which determines its origins and which entails a number of beneficial effects on the organization. In Figure no. 1, we have presented the characteristic elements of the innovation process.



**Figure no. 1. Characteristic elements of innovation**

*Source: elaborated by the author*

Analysing the literature, especially researchers' innovation studies, it should be mentioned that to generate innovations we must have a series of premises that will generate and help on creating new products, new technologies. Studying the research conducted by Peter Drucker regarding innovation, we can mention that the researcher highlights a number of sources of innovation. Among them Drucker highlights:

- *Surprise* - which is produced by the success or the failure in the company activity environment, and which contributes to the generation of innovations;

- *Inconsistencies* – which appear when something is not satisfactory and there is a need to generate something new;
- *Despair* - is peculiar to the enterprises that struggle with problems and need to find a better solution in the shortest time;
- *Outdated processes* - within organizations, as time passes, the processes are morally wearing out, and, of course, they require an improvement, a freshening;
- *Lifestyle changes* – the organizations need to adapt to new live conditions, to the market activity; the organizations must be creative and generate innovations;
- *Changes in attitude* – together with consumers’ changing needs, along with mutations in consumers’ attitudes, goods or services produced/provided by organizations, they must adopt new products, methods and technologies to meet the customers’ demands;
- *Discoveries* - when new discoveries are made, organizations must create new technologies, processes, management methods in order to implement them.

In addition to these prerequisites of innovation, we can also mention:

- *The desire to have a competitive advantage* – together with the need to survive on the market, companies must find new solutions in order to persist and to improve their market position;
- *opportunities* - once organizations observe market opportunities and transform them into new ideas, new products, they generate innovations;
- *the existence of a valuable human potential* - when there is a valuable human potential within the company who has the ability to generate something new, to transform information into new ideas, products, technology, the innovation process occurs;
- *the existence of an innovation potential* – the innovation potential of an organization, consisting of human, financial, informational, material resources, constitutes a basic premise of generating the innovations;
- *the existence of a culture of innovation* - the culture of innovation is that complex socio-cultural approach through which the organizations are prepared to generate and absorb new ideas and turn them into innovations.

Due to the existence of a diverse range of premises of generating the innovation process, innovation can be also classified in several different types, grouped according to certain criteria.

The typology of innovation is schematically shown in Table no. 1.

**Table no. 1. The innovation typology**

Criterion	Typology
Depending on the type of change in the enterprise	a. <i>Administrative innovation</i> - which is based on changes in strategies, tactics, procedures adopted by the company. This innovation can be divided into: <ul style="list-style-type: none"> <li>- Marketing innovation - which is based on the implementation of a new marketing strategy in order to better satisfy customer needs.</li> <li>- organizational innovation - it is based on implementing a new company organizational method or strategy, which is expected to increase competitiveness.</li> </ul> b. <i>Technological innovation</i> - is based on the introduction of a new process or technology. This category is divided into: <ul style="list-style-type: none"> <li>- product innovation - is based on the generation of new products that will help enhance the competitiveness of companies.</li> <li>- process innovation - which is based on the introduction of new manufacturing processes, new technological processes.</li> </ul>
Depending on the novelty of the resulting product through innovation	a. <i>Incremental innovation</i> - this innovation involves implementing, adaptation, simplifying, improving the existing production processes to a higher level. b. <i>Radical innovation</i> – involves the innovation of new products, new technologies that have never existed on the market.

Source: adapted after Drucker P., 2006. *Innovation and entrepreneurship*. Harper.

An innovative enterprise is characterized by the following features:

- a high degree of responsiveness to market disturbances;
- high flexibility and a high degree of adaptation to new conditions, new requirements;
- increased ability to produce new products with low costs;
- ability to integrate new technologies into production;
- the ability to use the potential and to transform it into durable effects;
- the ability to use existing advantages and generate new competitive advantages.

If to make a brief incursion into the competitive advantage of companies, then we can highlight a number of competitive advantages such as:

- *competitive advantage based on minimum costs* - this explains that the company is better than its competitors in the production, packaging, marketing, service, products manufactured by the company, and ensuring a minimal cost per product. This competitive advantage is currently one of the most necessary, because the companies currently, strive to produce cheaper products than their competitors. Thus, this competitive advantage contributes to enhancing the reputation of the organization, the conquest of new markets, increased turnover and improved market position.

- the competitive advantage of differentiation or diversification – this competitive advantage is to be founded in the fact that a company delivers products on the market different from those that already exist, creating value for consumers. These companies that have this competitive advantage abound permanently the market with new products and with new features based on consumer requirements. Thus, firms are shaping their offer based on consumer behaviour on that market.

- the competitive advantage based on strengthening the position of a particular element – firms that have this advantage strive to deliver products, which, having certain distinct characteristics, differentiate them from their competitors.

- the competitive advantage of flexibility – this advantage is owned by the those companies that best manage to accommodate on the market, which better adapt themselves to market conditions, market requirements.

- presence competitive advantage of the innovative culture – this competitive advantage is present in those businesses in which innovative culture is present, i.e. that socio-cultural complex system is present which contributes to the absorption of ideas and generation of new innovations.

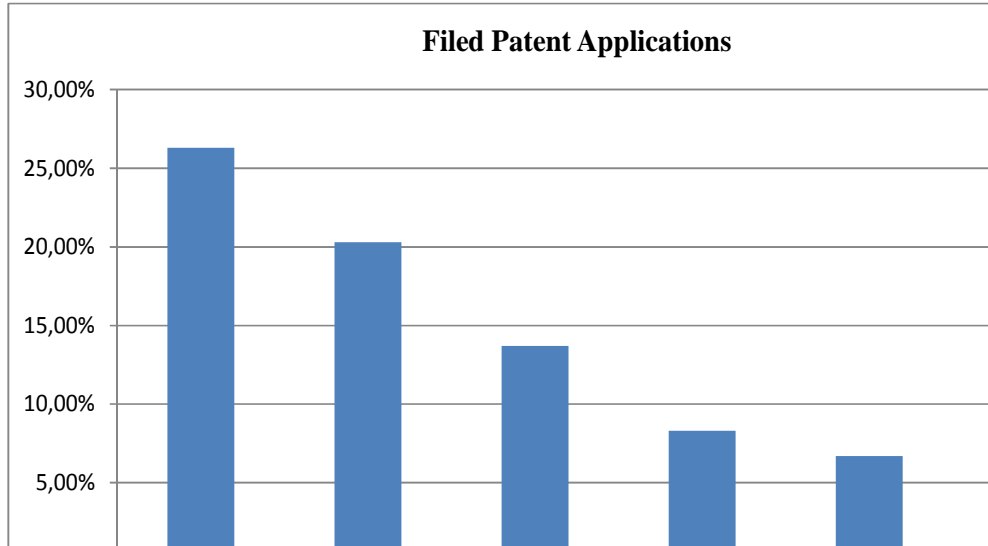
## **2.2. Innovation and competitive advantages for the Republic of Moldova**

If we analyse the capacity of the Republic of Moldova to generate new innovations, to implement new business ideas and to create competitive advantages in business, then we should mention that enterprises in the country are currently in a crisis situation. Thus, this situation conditions the emergence of innovations, because companies must find solutions to improve the situation. Many companies must apply modern methods in order to ensure viability. Therefore, domestic companies should be more receptive to new ideas, to have an innovation culture that would help businesses create, issue new products and new technologies on the market.

Domestic enterprises have the potential that must be exploited, which, if correctly capitalized, will help enhance the competitiveness of enterprises.

If we analyse the innovation capacity of countries, then we must consider the number of patent applications filed by each country. Therefore, in 2015, a record number of applications were submitted for obtaining patents. Accordingly, there were about 218 000 applications submitted, 1,7% more than in the previous year. Data refer to the international system of protection of inventions through the Patent Cooperation Treaty (PCT).

This system of protection is most preferred by international companies. The United States continues to be the largest patent applicant worldwide. American inventors have filed more than 57 thousand applications for the protection of inventions in 2015, placing the USA on the first place. Aggregate data regarding the positions of world states are shown in Figure no. 3.



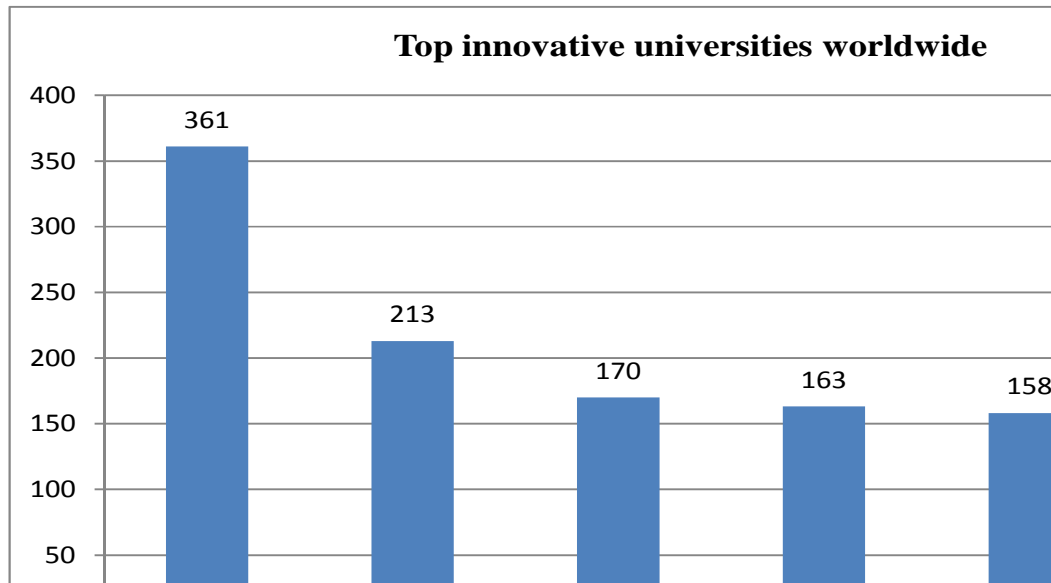
**Figure no. 3. The number of patent applications filed by world countries**

*Source: adapted by the author according to data international system of invention protection (OECD)*

From what we see, practically all countries, except Switzerland, are part of the G20. Thus, we see that the level of filed patent applications, i.e. the level of innovation generation within an economy depends on the level of economic development of the entire country. From here, we can highlight the direct relationship between a developed economy and a well-founded and shaped innovation system. We can mention that there is a direct correlation between these two analysed variables. The greatest powers of the world are the most innovative, they are those that capitalize the innovation potential and generate new innovations. We can mention that organizations and universities in the USA and Japan have submitted almost half of the patent applications in the world.

The largest increase in the number of filed invention applications was recorded by China (+16,8%), Korea (+11,5%) and Israel (+7,4%) compared to the previous year. A decrease in the number of applications is referred to Finland (-12,1%), Canada (-7,2%) and United States (-6,7%) compared to 2014 (OECD).

If we analyse the top of the most innovative universities According to the number of applications for invention, eight of the top ten universities are from the United States, and in the top 50 universities, most are located in the United States (24), followed by universities from Asian countries (21) and Europe (5). The schematic representation of these positions is shown in Figure no. 4.



**Figure no. 4. The number of patent applications filed by universities worldwide**  
*Source: adapted by the author according to data international system of invention protection (OECD)*

Ion Tiganas considers that, unlike the situation in our country, it is noted that the most important researches and the great science are fulfilled by the private sector or with the help of its direct support. Large corporations understand the value of innovation for the development of their business, continuing to invest in the search for the newest technological solutions and to protect their rights on inventions (Moldova Suveran , 2017).

It is worth stressing that the only legal form of protection of rights on an invention is its patent. Only, as a result of obtaining the patent, an innovative company, university or academic institution will own certain intellectual property rights that would allow them to use exclusively the invention, to be recipients of financial funds, resulting from the implementation of the invention, and to prohibit the illegal exploitation of their invention by any person. Despite this, the inventors from Moldova do not fully accomplish the importance of legal registration of invention, neglecting this stage due to lack of time, money or knowledge (AGEPI, 2015).

If we refer to the inventions from the Republic of Moldova, then we should mention that in the last 5 years 786 inventions were implemented in Moldova generating a revenue of 3.3 mil. Lei. Most patent applications filed by centres and universities from Moldova were submitted by the following universities: the Institute of Genetics, Physiology and Plant Protection, where 20 patent applications have been submitted, it obtained 24 titles of protection; the Technical University of Moldova, with 16 filed applications and 19 patents obtained; Moldova State University, with 20 filed applications and 13 patents obtained; the University of Medicine and Pharmacy with 16 applications and 12 patents and the Institute of Applied Physics of the Academy of Sciences of Moldova, with 14 filed applications and 11 patents obtained (AGEPI, 2015).

According to data provided by the State Agency for Intellectual Property (AGEPI) in 2014, the AGEPI received 297 patent applications of inventions, 12 fewer than in 2013. Out of these, 223 applications originated from national applicants and 74 from strangers. The decrease in 2014 in the number of patent applications is caused exclusively by the decrease of national applicants' interest to protect their creations by means of patents and, in fact, this can be referred to the general extensive tendency, manifested through a

downward trend of patenting activity by national applicants beginning with 2005 (AGEPI, 2015).

According to AGEPI, this state of affairs is due to several factors, among which we can mention:

- insufficient responsiveness of the real sector of the national economy to the innovative development, specifically to the capitalization of patented inventions, a characteristic phenomenon for the whole period of transition to market economy;
- lack of a mature competitive environment, due to the monopolization of some sectors of the national economy, which decreases the investment in innovation;
- insufficiency of effective incentives for the innovative development (AGEPI, 2015).

According to AGEPI, top 10 most active patent applicants in the field of inventions, as in previous years, are represented by the universities as: SUM, TUM, N. Testemitanu MPSU and institutions of science and innovations as the Institute of Genetics, Physiology and Plant Protection - 18 filed applications, 16 issued patents; the Institute of Applied Physics - 16 applications, 14 patents; the Institute of Chemistry - 12 applications, 13 patents; the Energy Institute - 10 applications, 4 patents; D. Ghitu Electronics, Engineering and Nano Technologies Institute - 5 applications, 9 patents; the Institute of Microbiology and Biotechnology - 6 applications, 7 patents; the Institute of Zoology - 5 applications, 5 patents. Consequently, out of the total number of applications submitted by national applicants, 58% come from these institutions and only 1% from enterprises and organizations (AGEPI, 2015).

### **3. Conclusions**

From what is mentioned above, we must emphasize the need to generate innovations that constitute the basis for a more flexible environment, for a more efficient environment for businesses, institutions, universities from the country. Currently, firms are already aware of the need to generate new innovations and to implement them, to become better and more competitive than their competitors.

In the present paper, an analysis of the importance of innovation as a source of forming the competitive benefit/advantage for the economy of the Republic of Moldova is carried out. Furthermore, the ways to get competitive advantage by a country are reviewed. In addition, the data provided by the State Agency for Intellectual Property on Innovation in the Republic of Moldova are interpreted and analyzed. The problems of this sector of innovation in the Republic of Moldova have been outlined and for these issues the efforts of the authorities should be strengthened in order to create opportunities for the development and generation of innovations in the country. A problem raised by AGEPI was the lack of motivation to generate innovations. This problem could be solved once the state motivates the economic agents, the enterprises, the institutions to be innovative, to offer some advantages to the most innovative economic agents in the national economy. Another proposal would be to stimulate Moldovan universities to generate innovations, to appreciate the work of researchers who apply for patent requests and to analyze these requests more urgently. These proposals would facilitate the generation of innovations and provide the Republic of Moldova with competitive advantages.

Thus, the Republic of Moldova can survive thanks to competitive firms, due to the institutions that will capitalize their creative potential and which will prove that they can ensure a safe and sustainable path of their activity.

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