

THE ROLE OF HUMAN FACTOR IN INNOVATION

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Abstract:

Innovation is a concept that has attracted the attention of researchers increasingly intensely over the past ten years. We speak of innovation as a concept found in a great variety of research, both economic and social, or engineering. At present, Romania is one of the modest innovators with an innovation performance below 50% of the EU average. It is therefore an improvement in the overall situation, but a starting point would be to understand the link between innovation and human resource, that is, the role of the latest in the innovation process. We speak of innovation both at the organization level and at the national level, and it is a lasting process that can not be achieved in a short time. It presupposes dedication, resources and knowledge, many of which lead to the need for specialized centers. Research in Romania is mainly conducted in the university environment, but although the number of doctoral graduates is high, a major challenge at the general level remains the underfinancing of this sector.

Key words: human resources, innovation, human factor, education, investment

JEL classification: O30, O32

1. INTRODUCTION

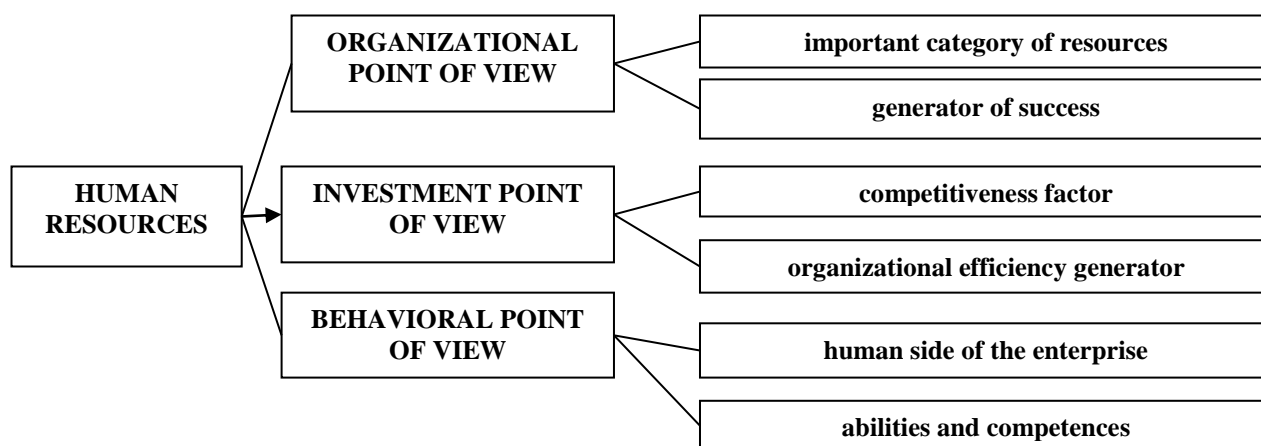
Innovation would not be possible without people, as well as people's lives would not be the same in the absence of innovation, and the progress would be greatly reduced. The course of an enterprise over time is closely linked to the management of all categories of resources, an idea which in turn leads us to conclude that people constitute the most important category of resources, since it is their action that defines the whole aim and contribute to the achievement of the proposed goals.

A resource becomes at one point a means of achieving purpose, just a factor used to reach the desired target. But when we talk about people, we refer by analogy to a whole set of knowledge, to intangibility, to skills, abilities, etc.

Employee values must be correlated with the values of the business they operate in the spirit of achieving procedural harmony. In the absence of this correlation, of personal and organizational values, the purpose of the managerial act will not be the one expected.

The longevity of an organization depends to a large extent not only on the whole knowledge of the employees but also on the ability of the enterprise to adapt to a changing environment, even turbulent under external influences, which implies not only changes in the top management, but also at the level of individual or organizational behavior.

The issue of human resources can be addressed from several perspectives:

**Figure no. 1**

Source: realized by authors

2. HUMAN RESOURCES AND INNOVATION AT MACROECONOMIC LEVEL

"Today, innovation is a matter of major importance, because it stimulates sustainable growth in a competitive market" (GII, 2014).

Reports produced by global specialized organizations (OECD) give the concept of innovation multiple roles:

- a significant contribution to economic growth;
- contributing to increased competitiveness (Porter, 1998);

Human resources are an indispensable category in this process, precisely through the capacity to bring in creativity and change.

"According to the new definitions identified in the literature, innovation is seen mainly as an introduction to new products or an improvement of existing ones, but also the new methods of implementing economic processes, both primary and auxiliary," (Ciurea, Demyen, 2013).

Innovation as a concept has been approached in various specialized papers from the national and international literature, but draws attention to that used by the OECD, which defines innovation as a "complex process involving diverse actors and involves a series of interactions between the innovation system and the economic and social context, being a "global process of technological and commercial creativity, the transfer of a new idea or a new concept to the final stage of a new product, process or activity accepted by the market", all in the context created by a global network that involves both a high level of specialization and expertise, as well as an understanding of the functioning of the markets (Ciurea, Demyen, 2017).

"The current economic environment has become increasingly difficult and in these conditions the only solution is represented by innovation" (Ciurea, 2013). "But a successful innovation is based primarily on a foundation created from education and skills" (GII, 2014).

Referring to human resources from a behavioral point of view (Figure 2), we can not ignore creativity as an essential element for adapting organizations to changes, adherence to what is new, implicit by the factor that contributes to the completion of innovation. This is because, no matter how efficient a machine is, it is devoid of this essential feature, of creating, of innovating. Creativity (Iancu, 2014) can therefore be considered to be an exclusively human process, which involves "combining knowledge accumulated by elements existing in the perceptual field, leading to an unknown and useful result for society for a period of time."

It is understood, however, that an innovation strategy implies, in addition to the presence and development of creativity, an involvement of the staff, who in turn must understand the need to implement the strategy in question and provide full support and share the enthusiasm of change.

If we discuss the competitiveness criterion, it can be said that innovation is turning into a "driving force for growth, profitability and the creation of sustainable values" (Ionescu, Dumitru, 2015).

All this, because innovation implies concrete references to the possibility of implementing the best ideas, but also of the methods or business models for an organization, in the spirit of sustainability and sustainability over time. "In this context, the ability of the enterprise to innovate and, in particular, to ensure the completion of this process, has a direct influence on economic growth" (Petrariu et al, 2013). Innovation, however, generates a number of effects over time, which, on the other hand, is rather difficult to measure, primarily because of the very long time involved in transforming knowledge and ideas into a final result.

At the same time, it is not to be neglected that every stage of innovation implies a number of costs and risks.

The reports produced by the European Commission find that Romania is part of the last category of countries with reference to economic growth, which influences us in terms of competitiveness compared to other countries. The main problem identified in this case is the application of economic policies that underpinned economic failure. The lack of policies to encourage human resources in the fields of activity determines the development of a broad threat, such as the nature of labor migration, a phenomenon that has gained momentum over the past decade (Constantin et al, 2004).

Microeconomic and macroeconomic development becomes impossible in the absence of a well-trained workforce, and the lack of creativity and innovation at local and national level may turn into an overall failure.

For the countries of destination, the influx of foreign labor is beneficial for supporting economic activities that the domestic labor market can not cover, either due to the lack of qualified personnel in those areas, or because of the lack of domestic labor for those sectors of activity.

"Many times, EU Member States facilitate access to national labor markets for highly qualified people, which has positive influences on economic efficiency, income growth in certain economic activities, and economic growth in general" (Nicolae, 2016).

However, national development capacity is negatively influenced by the migrant countries, because through the process of intelligence migration, they remain widowed by a highly creative and innovative potential.

It is nonetheless a breakthrough that world-wide specialists have begun to better understand the causes and consequences of a strong migration process. "The placement of the labor migration phenomenon on economic and financial coordinates qualifies this phenomenon as labor migration, starting from the fact that space-to-work factor transporting takes place" (Belobrov, Caraganciu, 2011, in Nicolae, 2016)

3. THE ROLE OF EDUCATION FOR THE INNOVATION PROCESS

On the other hand, the negative effects of intelligence exports are also felt at the organization level, where innovation is one of the elements that must underpin the development of a long-term strategy.

Human resources regarded as an asset of the enterprise (Currie, 20009), also presuppose the establishment of a series of links between human capital and management, given their intangible character. Permanent development is possible and even necessary as their value increases directly in proportion to the level of knowledge, skills, abilities, and how they are used.

Some research reports (The Global Innovation Index, 2014) consider the human resource to be a "driver of innovation", but discrepancies can be identified with respect to the countries of the world.

Research indicate two ways to form and improve human capital. Thus, it is necessary to recall the capacity of schooling, at the macroeconomic level, by creating the training conditions from the small classes and providing an infrastructure suitable for the acquisition of knowledge and the development of talent. This can only be done by financing and guaranteeing the maximum performance of schools, higher education institutions and research centers.

At both firm and macroeconomic level, we can identify a number of directions of action that management's attention should focus on:

- retaining valuable human resources within the enterprise / country,
- motivating human resources to perform the at least the same level as before,
- generating a sense of loyalty,
- encouraging the innovation process.

"At a national level, a state attracts talented human capital from other parts of the world by providing an appropriate level of rewards, and then increases and employs these workers in various innovative activities" (GII, 2014).

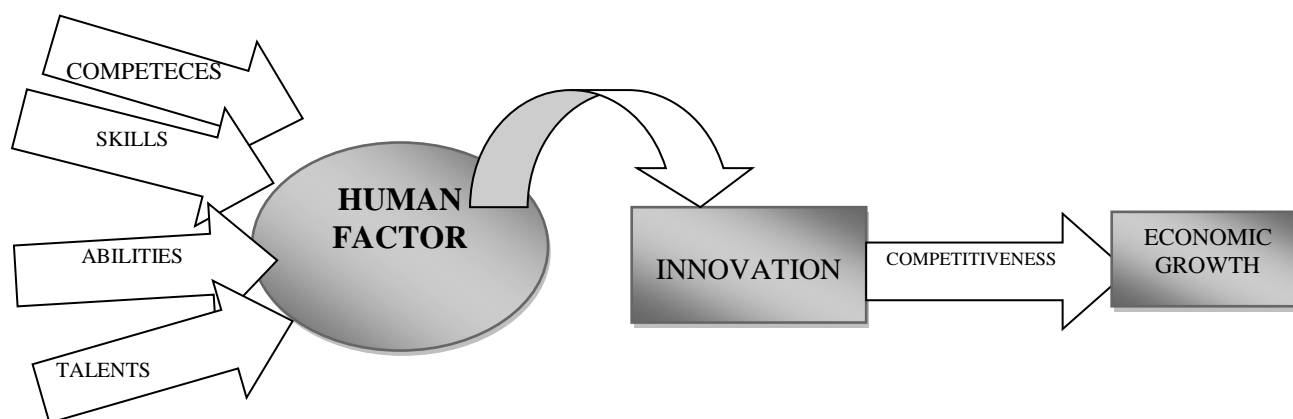


Figure no. 2

Source: developed by authors

Human talent is the basis for innovation, but it must also be developed through education. Therefore, organizations that devote more resources to adequate training of employees as well as countries investing more in the education system will also be the ones who achieve positive results in innovation, reinforcing the role of "individual innovators in the innovation process" (GII, 2014).

Education is often seen as a foundation for future development. But investment in this area is primarily conditioned by the national income of the countries under discussion, since naturally a state with limited financial possibilities will invest much less in the education sector than a wealthy state.

The following figure, published in the Global Innovation Index Report, shows high-income (first 10) and middle-income countries (the top 10).

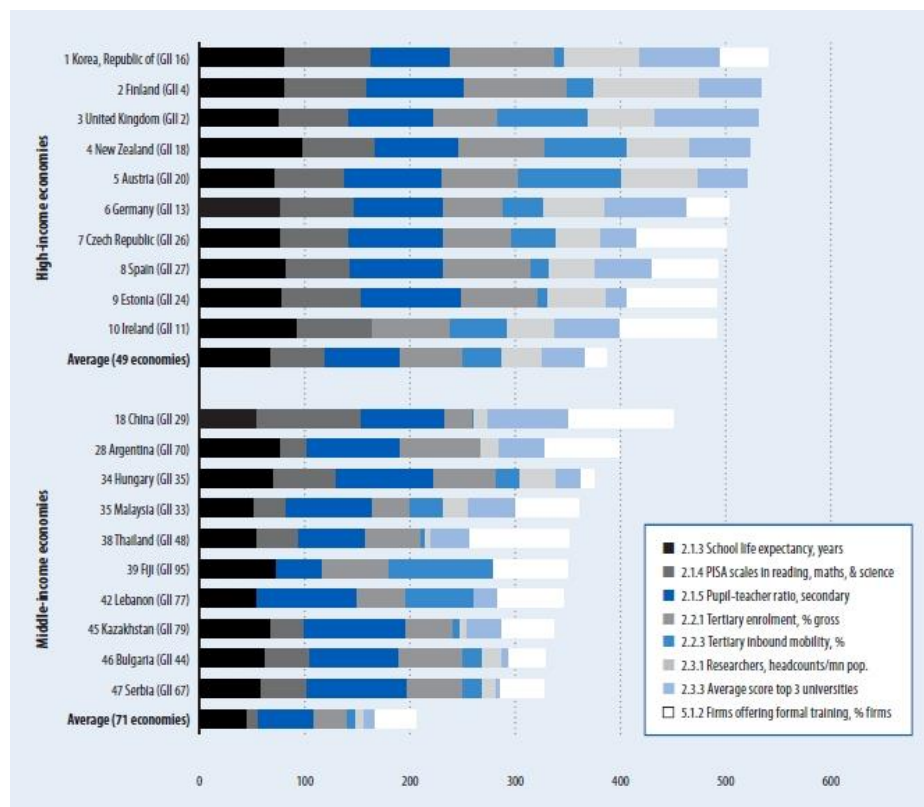


Figure no. 3. Ranking of countries by income level

Source: Global Innovation Index

According to official reports, a range of dimensions can be studied by which the notion of innovation becomes measurable in some respects. These include: the number of publications quoted in the databases and the H index, the number of patents registered in at least three offices, and last but not least, the average grade of the universities classification, given that they represent both centers of learning, and research, therefore acquire a dual function of preparing young people for the labor market in various fields of expertise, but also of doing research.

The most cited countries in this respect are: USA, Japan, Germany, Switzerland, Great Britain, France, Canada, the Netherlands, Sweden, and Korea, countries with a high innovation score, the number of patents being close to how and the number of research reports. In terms of university rankings, the United States and the UK record the highest scores, which is easily observable by the large number of applications to renowned university centers, namely Oxford, Cambridge, Harvard, Yale, etc.

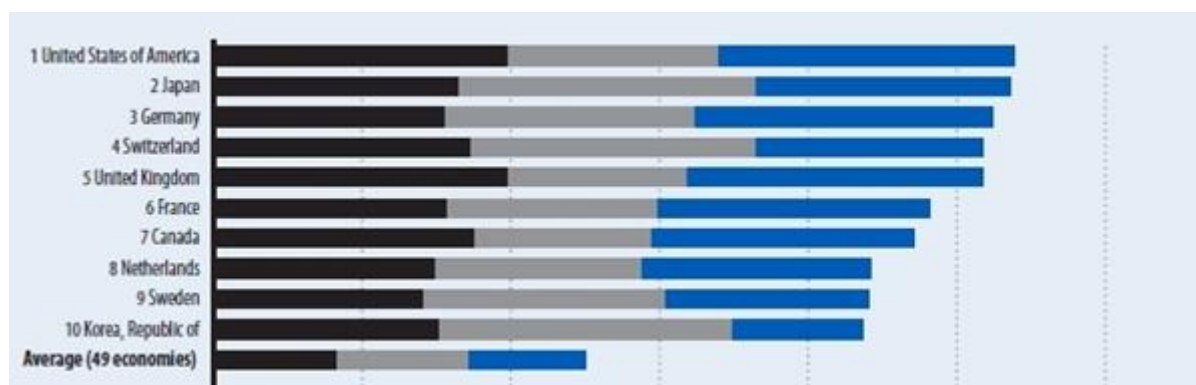


Figure no. 4. Ranking of countries, based on the innovation score

Source: Global Innovation Index

On the other hand, there are countries such as Brazil, India, Hungary, South Africa, Argentina, Mexico, Seychelles, Turkey, Malaysia, which, although we can not say that are at the opposite end, score less well in each of these chapters.

Thus, in the case of the "research reports and the H Index", the scores for the above mentioned countries are very close to value, except for the Seychelles and Malaysia, where they are much lower. University quote scores are close in value, although there are major differences between countries, with the exception of Hungary and Turkey, and, for Seychelles, this indicator does not exist.

However, it scores on patent categories registered with at least three offices, in which case the Seychelles equals the top countries, while this indicator is very low in the rest of the discussed situations.

The European Innovation Scoreboard 2017 identifies Romania as a modest innovator, with the overall situation declining compared to the previous year's scores. Thus, if we look at data for 2016 compared to 2010, we see a decline of 14.1% overall. Positive changes, according to EIS 2017, are observed in the case of human resources, where the score of 2016 (49.7) exceeds that of 2010 (42.3), with 7.4% progress, also for the number of people with higher education, where the progress is 27%. The research system improved by 6.5%, international scientific publications by 24.2% and the number of citations by 9%.

A positive score is recorded for the Innovation Framework, which is identified as "friendly", with a positive change of 14.9% in the case of entrepreneurship - an increase of 9.7%, respectively in the case of the increase in volume investment in R & D in the private sector - 2.6% .

4. CONCLUSIONS

We must not forget that innovation is necessary to improve the quality of life on the one hand, but also the general development of a state, on the other. However, it can not be implemented in the absence of human resources, because it is people who can both initiate actions and apply their knowledge in practice, whether we are talking about an organization, viewed from the point of view of work, either at the state and community level.

Facilitating access to education for young people becomes one of the most crucial directions towards which a state's attention must be directed, as macroeconomic progress can only be achieved by assimilating new knowledge and innovation.

In the current economic context, society must turn its attention to innovation as a force in itself that can bring beneficial changes to a knowledge-based economy.

Implementing innovation in an enterprise may still face a certain number of barriers. Some of them were also mentioned in literature and previous studies, as being: the level of operational costs, the insufficient level of investments and funding, the restricted level of access to some categories of data. At the same time, the unstable environment determines a higher level of difficulty when making forecasts. Also, the quality of human resources is not a problem to be ignored, because greater results cannot be achieved in the absence of well-prepared and competitive staff.

In terms of the new definitions, bringing the issue of „new” actually involves three distinct aspects: creativity, innovative activity and entrepreneurship.

Of these, creativity is defined as the ability to identify new relationships between elements which apparently are unrelated to each other. Creativity always involves bringing a novelty element, and it is the starting point for innovation. Creativity is a complex set of ideas, ways of thinking, activities, processes (tools, techniques, approaches), results (solutions to problems, production systems, products). Also, creativity is an attribute of human resources, being often associated with a brilliant idea, after which an innovative activity is to bring it to market, transforming it into something profitable.

Most of the time we talk about creativity and innovation, on the one hand because, as we have seen, they are conditioned on each other, finding answers to all the problems that arise in an

innovation process demanding creativity, and on the other because the two activities most often need the same conditions to grow within an enterprise. But it becomes impossible to mention creativity without stating the importance of human resource in the enterprise and also for the innovative activity developed.

It is essential to refer to the socio-cultural environment, which is made up of individuals and group models that reflect attitudes, values, beliefs, customs, traditions, cohabitation norms. The impact of this environment on the enterprise can be found through the human factor, in its multiple hypostases: employee, customer, consumer, supplier, etc.

The materialization of this impact is highlighted by the individual's attitude towards social groups, consumer behavior towards product quality, attitude towards work, entrepreneurial attitude, attitude towards investment and investors, social issues. Socio-cultural trends can cause significant changes in the demand for certain products or services, for which changes in these trends must be pursued by the enterprise in areas related to their products or services, or even at regional or national level.

From this point of view, we accept that the enterprise, by means of innovation, can shape the environment in which it operates and can define its limits on the market to which it is addressed, elements which thus cease to be external constraints. Innovation, thus defined, becomes an essential strategic tool in the company's business, a perspective that may establish the possibility of continuing the present research, from this specific point of view.

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