

**PUBLIC PERCEPTION OF THE ROLE OF SCIENCE AND
INNOVATION IN SOLVING THE PROBLEMS EXPERIENCED BY
CONTEMPORARY ECONOMY**

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Abstract:

In the context of contemporary economy, when the entire Europe is increasingly turning towards the so-called “knowledge-based society”, stressing the idea that information should be seen as a good strategic investment in science and research appears to be the only means to cope with the majority of societal changes occurring on European markets.

On a different level, it is well known that major technological changes in recent years, plus the saturation of markets and their increasing internationalization raises real problems of survival for the businesses that must find competitive advantages to help them be different on the market and ultimately to determine consumer loyalty and attachment. Innovation appears as being among the few alternatives at the disposal of the society, both at micro and macro-economic level, in order to obtain performance indicators that could support a real sustainable economic growth.

Key words: *innovation, competitive advantage, inclusive-friendly growth*

JEL classification: M310 Marketing

1. Introduction:

Given the increasing impact of innovation and technological development on economic growth, it can be said that the world's governments today are in a fierce competition to find ways to support research and development activities. The ability to find new ways of creating, distributing

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and exploiting information and knowledge generates a competitive advantage and thus an enhanced quality of life.

Some of the major changes that contemporary society has undergone are related to the increased impact of information and technology on the economic activity, especially in the last twenty years. An important role in the innovation process is the business sector, as the worldwide extensive research highlights that important investments in research / development (R & D) were financed by large multinational company. (www.oecd.org)

On the other hand, education, as a (tertiary) component of the service sector, should be a bridge between science and the business sector, with benefits for both higher education institutions and the institutions involved in research and for the economic operators.

Based on the definition given by O.E.C.D. (Organisation for Economic Cooperation and Development), innovation is the overall process of technological and commercial creativity, the transfer of a new idea or a new concept to the final stage of a product, process or service activity accepted on the market. (www.oecd.org)

Regarded as a component of research, innovation is seen from the perspective of marketing, particularly in terms of customer orientation, as the direct and / or indirect transposition of a new idea, considered as such from the perspective of the company and of the customers, and included in the offer of the enterprise, in order to successfully enforce the idea on the market and significantly enhance the sustainability of the product / service in terms of customer utility. (Bruhn, 2001)

Regardless of the approach provided by specialized literature, we can generally appreciate that innovation comprises the following characteristics (Lambertz & Geckeler, 1996):

- novelty, a fundamental characteristic of the innovation process,
- complexity, since innovation involves the connection of different elements, which are however highly interdependent and extremely dynamic,
- uncertainty, meaning that the implementation of innovation is always closely linked to the acceptability by customers,
- conflict potential, referring to the fact that the application of innovation in a company involves dispensing known elements and using completely new and unknown others.

Analysed at the micro level, the innovation process may have implications for all company functions and duties not only on research / development function.

When striving to implement innovation in a firm, the following three phases must be considered (Bruhn, 2001):

1. establishing the innovation strategy (finding ways to implement the already developed innovations, studying the innovation required by the market or opting for an integrated innovation strategy that takes into account the demands of the customers and the pressure from the competition as well as the fundamental strategic objectives pursued by the firm)
2. evaluation of innovative ideas and their feasibility analysis for the firm,
3. implementing innovations in the firm.

For the successful implementation of innovation management within a firm, the following requirements must be taken into account (Little, 1997):

- planning, as part of the management process,
- consideration of scientific knowledge by the management,
- adapting to the organizational structure and culture,
- focus on customer utility.

The benefits achieved by firms which implement innovation in their activity can be summarized as follows:

- ability to adapt quickly to the demands of the market,
- the possibility of diversifying the catalogue of production by including new products,
- increasing the quality of manufactured products,
- increasing profit by optimizing costs and reducing the “downtime”.

2. The need to implement the Orizont 2020 (Horizon 2020) Program at the level of the EU

There is no longer a secret that at the European level and beyond, the major concerns are directed towards finding solutions for problems such as the fight against climate change and environmental degradation, creating new jobs, improving healthcare services, finding new alternative energy sources etc.

In this context, supporting research and innovation activities are envisaged to be implemented in sectors that can provide optimal solutions to the problems mentioned above.

With a budget estimated at approx. 80 billion, Horizon 2020 aims to support a period of 7 years (2014-2020), during which science and innovation are seen as central priorities within the European Union, aiming thereby to stimulate economic growth.

Horizon 2020 has strong political support from the European leaders and MEPs, who agreed that investment in research and innovation are essential for the future of Europe, placing them at the centre of the Europe 2020 Strategy for smart, sustainable and inclusive-friendly growth. Horizon 2020 contributes to this objective, combining research and innovation and focusing on three key areas (www.ec.europa.eu):

- *scientific excellency* - this program will help scientists and innovative companies to boost European competitiveness, at the same time creating jobs and contributing to a higher standard of living,
- *leadership in the industrial sector* - the firm will only benefit by becoming more innovative, more efficient and more competitive, which in turn creates new jobs and new market opportunities. Each euro invested by the EU generates around 13 euro as an added value for businesses. Furthermore, the increase of investment to 3% of the GDP by 2020 could create 3.7 million new jobs,
- *social challenges* – the EU has identified seven priority challenges where specific investments in research and innovation can have a real impact for the citizens:
 - health, demographic changes and welfare,
 - food security, sustainable agriculture and forestry, marine and maritime research of inland waters and the bio-economy,
 - secure, clean and efficient energy sources,
 - smart green and integrated transportation,
 - activities to combat climate and environment change, the efficient use of resources and raw materials,
 - Europe in a changing world – inclusive-friendly, innovative and reflective societies
 - secure societies - protecting the freedom and security of Europe and of its citizens

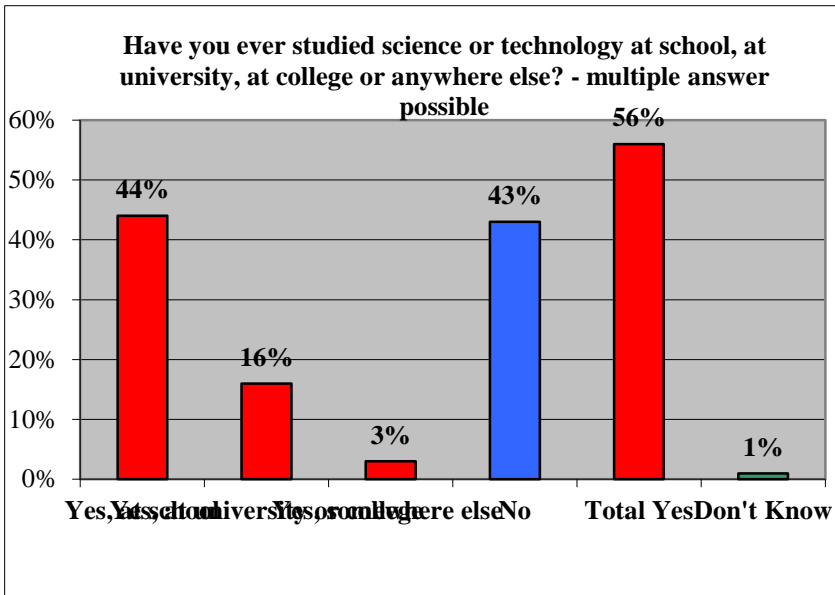
3. Research based on secondary data sources on the perception of science, research and innovation-analysis at European (EU 28) and world level

As previously mentioned, the European Union aims to support innovation and science as “engines” of economic growth within the EU.

In this context, the EU conducted and published several quantitative and qualitative studies, aimed at:

- identifying the level of professional training of the EU citizens, and the scope of their training;
- determining the general perception of European citizens regarding science and innovation;
- studying the reaction of the Europeans regarding the main directions of focus of the technological discoveries in the next 15 years.

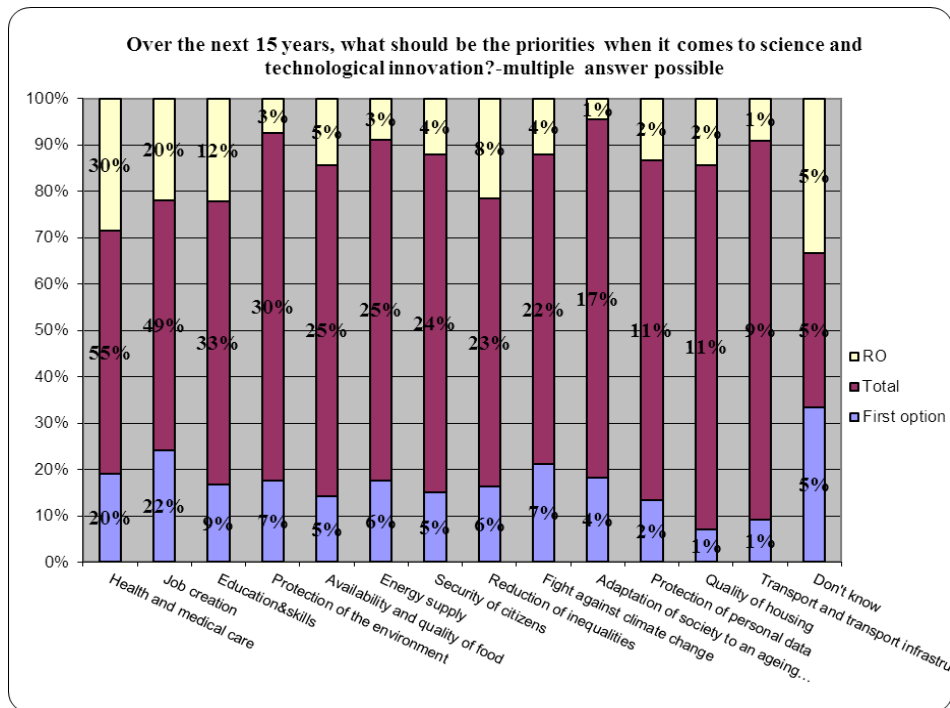
Fig.1. The level of training which Europeans have been exposed to in terms of science and technology



Source: European Commission, Flash Eurobarometer no.419, October 2014

One of these reports is the Flash Eurobarometer no. 419, which analyses aspects related to the role that research and science have in prioritizing the future actions leading to real economic and sustainable growth in the EU. Thus, the data collected in June 2014 and published in October 2014 reveal that the majority of Europeans (56%) said they had studied areas related to science and technology, either in primary school (44%), or in a college or university (16%) - Fig.1. The level of training which Europeans have been exposed to in terms of science and technology

Fig.2. Priority directions for guiding investment in research and innovation over the next 15 years



Source: European Commission, Flash Eurobarometer no.419, October 2014

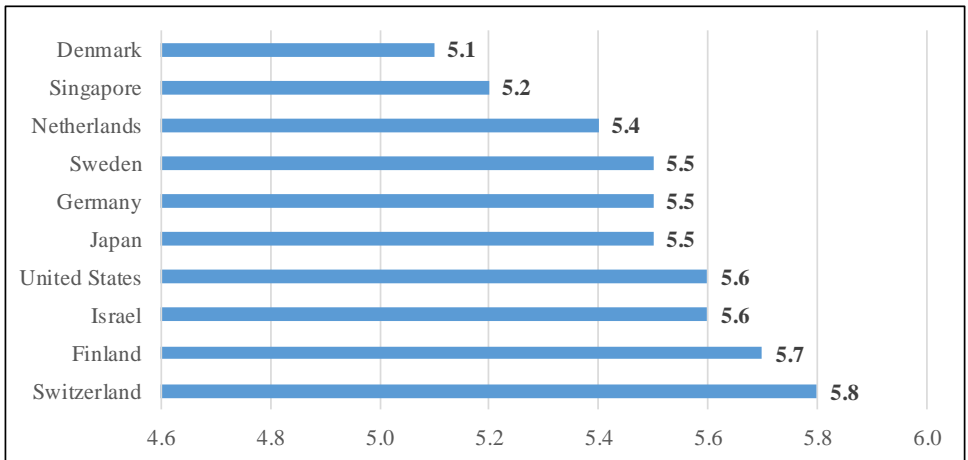
In terms of the priorities which research and technological innovation should focus on over the next 15 years, the Europeans of the 28 member states have been very trenchant, as 20% of Europeans gave priority to implementing

innovations in the health sector and health care, while a percentage of 22% of the respondents said that innovation should generate new jobs, and 9% indicated that education and training should be a priority for innovation - Fig.2. Priority directions for guiding investment in research and innovation over the next 15 years.

In Romania, the respondents' opinions about the directions which research and innovation should focus on reflect the same priorities as those identified in the EU, meaning 30% for the medical sector and health care, 20% for creation of new jobs and 12% for education and training.

If Europe wants to find solutions to the challenges of the society and stimulate growth and competitiveness, it needs a fully functional network of excellence in research - a European Research Area (ERA). This single market for knowledge, research and innovation is developed using EU funds and helps researchers, their knowledge and results to move freely in Europe.

Fig.3. Top 10 countries with the highest degree of implementation of innovation in economic activity; the 1-7 best



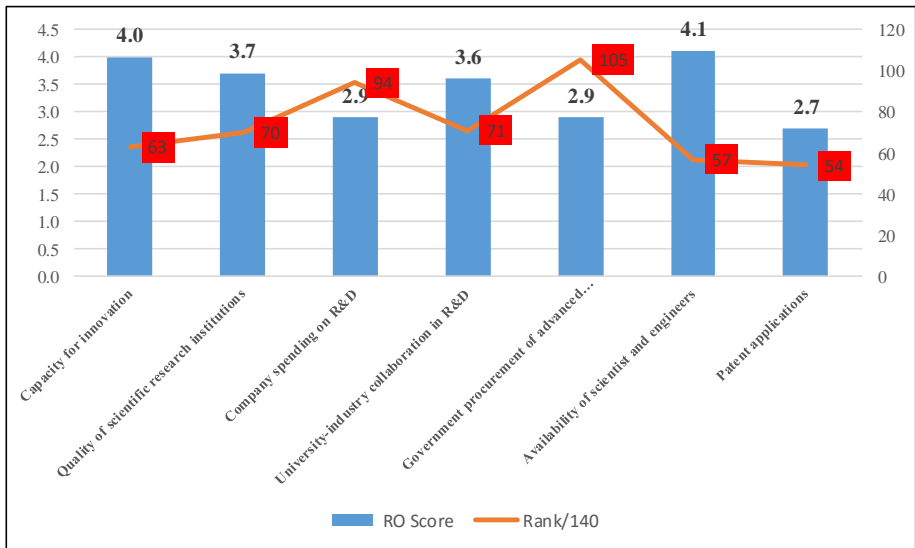
Source: World Economic Forum, Global Competitiveness Report, 2015

The data published by the World Economic Forum (www.reports.weforum.org) for the year 2015 on global competitiveness are also very interesting, innovation being considered the 12th pillar of global competitiveness.

In this study, Romania is ranked 75th out of 140 from the point of view of the implementation of innovation in economic activity, the top three ranks belonging to Switzerland, Finland and at a tie, to Israel and the USA (evaluations were made on a scale from 1 to 7) - Fig.3. Top 10 countries with the highest degree of implementation of innovation in economic activity; the 1-7 best

A detailed analysis of the variables used to characterize the degree of innovation highlights that, nationally, the most appreciated variable on a scale from 1 to 7 was the "availability of scientists and engineers" (score 4.1), while the least appreciated was the use of patents (score 2.7). From the comparative analysis with the other countries assessed globally, Romania's most favorable position ranks it 54 out of 140, in terms of patent usage, while at the least favorable ranking, 105 out of 140, was obtained from the variable called government procurement of cutting-edge technology – Fig.4. Evaluation criteria of the degree of innovation in Romania compared to the values registered worldwide

Fig.4. Evaluation criteria of the degree of innovation in Romania compared to the values registered worldwide



Source: World Economic Forum, Global Competitiveness Report, 2015

4. Conclusions

Generally, the population has a positive attitude regarding research and innovation, the major benefits perceived being those related to the improvement of life standards, which is highlighted by increasing the comfort of the population, boosting communication, increasing the lifespan of the population through the implementation of innovative health technology and medical treatments.

However, a large scale implementation of the science and technology discoveries has led in recent years to the emergence of phenomena causing concern among the population, such as the rising level of unemployment, the emergence of genuine concerns related to data and people security, the increase of technology addiction and the de-professionalization of the workforce, the emphasis placed on the negative effects on the environment and the rise of sedentarism.

Therefore, the confidence of the population in the benefits of implementing the findings of science and research in the economic activity is somewhat overshadowed by their concern about the negative impact of these findings on the health and integrity of the population.

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