Innovation In The European Union[1]

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Abstract: - In the contemporary knowledge-based society, innovation, as a vector used for the application and promotion of inventions and innovations, is one of the main sources used for obtaining a sustainable competitive advantage.
The present paper points out the main directions which the European Commission aims to develop in the sphere of innovation, within the context of the Initiative: "A Union of Innovation", which is part of the Europe 2020 Strategy. The paper analyses the performances accomplished by the EU states in the area of innovation while developing an international perspective that may represent the starting point in identifying solutions whereby the EU could reduce the gaps that exist in relation to the main international competitors, i.e. South Korea, USA and Japan.

Key-Words: - innovation, research-development, European Union, Europa 2020 Strategy, economic performance.

1. Introduction

Innovation activities imply the creation, adaptation and adoption of new products, services and technological processes, as well as the improvement thereof. Innovation policy may be defined as a set of coordinated actions whose main objective is to enhance the efficiency of the innovation activities[2].

The "Dictionary of Modern Economic Sciences" approaches innovation as an instrument that is frequently used both with reference to technological advance made in production processes, and with reference to introducing attributes and combinations of attributes for the traded products. As to products, innovation is a source of differentiation used by manufacturing companies for generating demand and, similarly, for enhancing their market share.

The innovative potential of an organization is a function with more variables, of which we mention the creative capacity of human resources, the competence of the managerial team, as well as the existence of financial-motivational mechanisms that support the creation, experimentation and transformation thereof into competitive market products and services.

In the contemporary knowledge-based society, innovation – as a vector of application and promotion of inventions and innovations – is one of the main sources which generate a sustainable competitive advantage.

The knowledge-based society relies on innovation and the on-going training of its members, which, in its turn, relies on a large community of researchers, academics, engineers, all of whom being included in a

[1] This paper was presented at CKS 2014 International Scientific Conference.
[2] Iancu, A., *Cunoaştere şi Inovare. O abordare economică*, Bucharest: the Romanian Academy Publishing House, 2006.

university network, in research centres and innovation-oriented companies that offer high-technology products and services and that use and process information[3].

Innovation was one of the main topics approached at the 6th edition of the World Science Forum[4] held at Rio de Janeiro on 24th-27th November 2013. Thus, the "Declaration of the World Science Forum" presents five recommendations, of which two refer to innovation activities:

- training for reducing inequality and promoting sustainable science and innovation worldwide;
- ethical and responsible attitude in research and innovation.

In the epoch of worldwide science, scientific authority must continuously implement self-analysis and self-assessment in relation to the responsibilities, duties and behaviour rules that are specific to the field of research and innovation.

When selecting and implementing research-development and innovation projects (RD&I) that are supported by governments (administrations) or private companies, science promoters and scientists, as well, are primarily responsible for maintaining a constant long-term interest in morality and society and secondly they are responsible for maintaining a constant interest in the short-term economic and political interests. Social inclusion, as a key-part of sustainable development, is an absolute necessity for scientific research, technology and innovation[5].

2. Innovation, an essential coordinate for Europe 2020 Strategy

In 2010, the European Commission adopted Europe 2020 Strategy, which is structured on 3 major coordinates[6]:

- intelligent growth – development of a knowledge & innovation-based economy;
- sustainable growth – promotion of a more efficient, more competitive and more environmentally-friendly economy as regards the use of resources;
- growth which facilitates inclusion – promotion of an economy with a high employability rate, which may ensure economic, social and territorial cohesion.

These three important axes of development support each other and represent a general perspective over the 21st century European social market economy.

Intelligent growth implies the consolidation of knowledge and innovation, as essential vectors for society and the knowledge-based economy. In order to achieve this objective, it is necessary to implement the following measures:

- enhancement of quality in the educational systems;
- enhancement of performances in research activity;
- promotion of innovation and transfer of knowledge within the EU space through IT and communication technology;
- developing the entrepreneurial spirit, which is opportunity-oriented and which adapts to the users' needs on the market.

One of the seven initiatives set forth in the Europe 2020 Strategy is the initiative: "A Union of Innovation". The objective of this initiative is represented by the orientation of research-development and innovation policy towards the challenges of the contemporary society, i.e. climate changes, energy and the efficient use of resources, health and demographic changes. Each link in the innovation chain should be reinforced for all activities ranging from fundamental research to trading. The European Commission is going to take measures like:

- completing the creation of a European Space for Research, creating a strategic agenda for research that is centred on a set of priorities, of which we mention energetic security, transports, climate changes, the efficient use of resources, health and aging, ecological means of production and land management;

[3] World Science Forum, ***Knowledge and Future, Budapest: 5th-7th November 2009.***

[4] The World Science Forum (WSF) is an event organized every other year under the aegis of the President of Hungary, the Managing Director of UNESCO, the President of the European Commission and the President of the International Scientific Council. In its first edition, WSF was organized in a different country, i.e. not in Hungary, as part of a strategy which was meant to reflect the modifications incurred in the landscape of science and in order to help the forum benefit from the contribution and the accomplishments of the scientific powers set up at scientific initiatives and, finally, in order to promote the forum in other regions.

[5] World Science Forum, *Science for Global Sustainable Development*, Rio de Janeiro, 24-27 November 2013.

[6] European Commission, *Europe 2020*, Brussels, 2010.

- improving the innovation conditions-framework for the business environment, the setting up of a European Unique Patent, a Court of law with jurisdiction in the matters of patents, modernization of the copyright and trademark protection framework, improving access of SMEs to copyright, speeding up the implementation of inter-operation standards, facilitating access to capital and the full usage of policies for secondary demand, e.g. through public acquisitions and intelligent regulations;
- launching European partnerships in the area of innovation between EU and national levels in order to speed up development and the use of technologies that are necessary for coping with challenges;
- reinforcement and further development of the role played by EU instruments in supporting innovation (e.g., structural funds, rural development funds, the Framework Programme - Research - Development, the Framework Programme – Competitiveness and Innovation, Plan SET), including through a closer collaboration with the European Bank for Investments through the simplification of administrative procedures in order to facilitate access to finance, especially for SMEs;
- promoting partnerships for knowledge and consolidation of the connections existing between education, enterprises, research and innovation, including through the European Institute for Innovation and Technology (EIT), as well as promoting the entrepreneurial spirit by supporting young innovating companies.

3. Performances of EU states within the area of innovation

The program of the Innovation Union, 2014 edition, designed by the General Directorate "Enterprises and Industry" within the European Commission, groups EU states into four categories as to the performances they obtained in the innovation activities[7]:

- Denmark (DK), Finland (FI), Germany (DE) and Sweden (SE) are "leaders in the area of innovation"; their innovation performances are much higher than the average level recorded within the EU;
- Austria (AT), Belgium (BE), Cyprus (CY), Estonia (EE), France (FR), Ireland (IE), Luxembourg (LU), the Netherlands (NL), Slovenia (SI) and the United Kingdom (UK) are "supporters of innovation", who obtained performances in the area of innovation that are above the average level or close the average level reached by the EU countries;
- Croatia (HR), the Czech Republic (CZ), Greece (EL), Hungary (HU), Italy (IT), Lithuania (LT), Malta (MT), Poland (PL), Portugal (PT), Slovakia (SK) and Spain (ES) are "moderate innovators"; they recorded performances in the area of innovation that are below the average level reached by EU states;
- Bulgaria (BG), Latvia (LV) and Romania (RO) fall into the category of "modest innovators", whose results in the area of innovation are significantly much lower than the average reached by EU states.

This classification of EU states from the perspective of the innovation performances that they reached relies on 25 indices, which belong to three basic groups:

- ✓ enablers (human resources; open, excellent and attractive research systems; finance and support);
- ✓ firm activities (firm investments; linkages & entrepreneurship; intellectual assets);
- ✓ outputs (innovators; economic effects).

[7] European Commission, Directorate-General for Enterprise and Industry, *Innovation Union Scoreboard 2014*, Brussels, 2014.

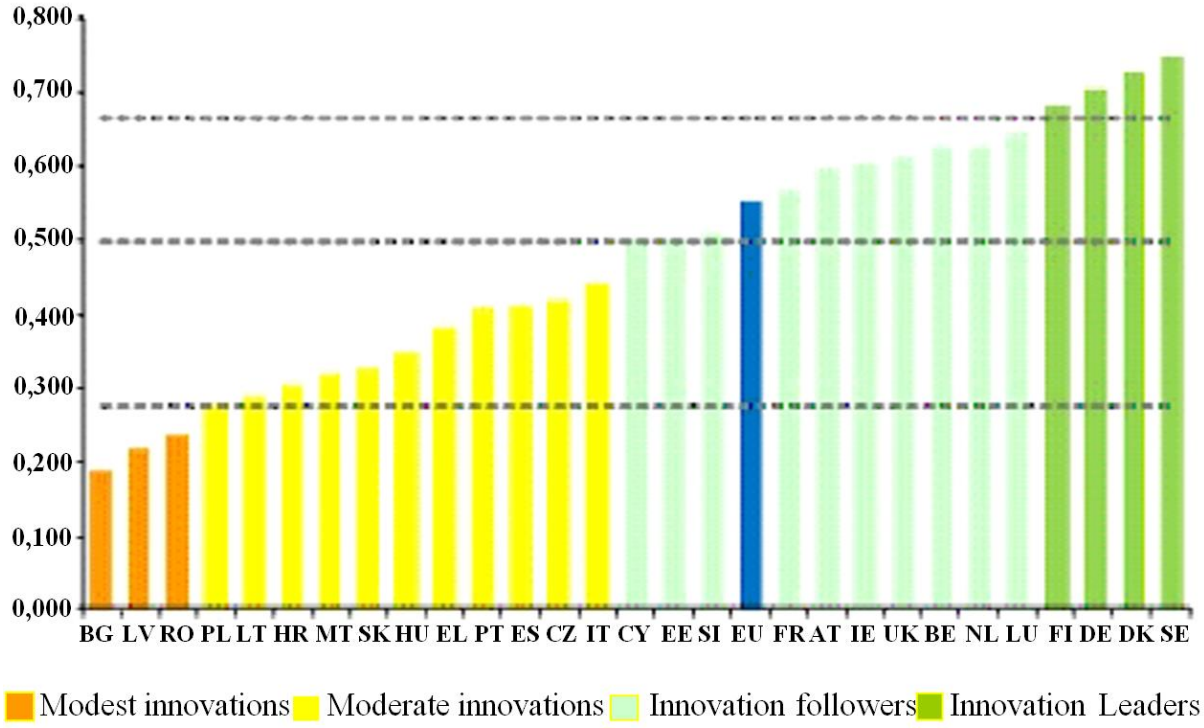

Figure 1. EU Member States' innovation performance8

The states belonging to the first group have excellent results that clearly rank them above the EU average in the innovation key-domains, from higher education and research systems, which imply innovating and active intellectual trading activities, to innovation accomplished within SMEs and the economic effects thereof, a fact which illustrates balanced national research and innovation systems.

The classification made within the European Union is relatively stable for Sweden, which appears as a leader, and which is followed by Denmark, Germany and Finland; these four countries grant the biggest financial resources for research and innovation. Portugal, Estonia and Latvia have recently recorded the most significant progress in the area of research and innovation, while Poland is the only country that evolved from the category of "modest innovators" to the one of "moderate innovators".

As to the countries which do not belong to the EU space, it is interesting to notice the fact that Switzerland remains a leader in the area of innovation, recording the best results in 9 of the 25 indices used for classifying states from the point of view of performances obtained in innovation. Island is also above the EU average, having the status of "innovation follower", while Norway and Serbia are "moderate innovators"; Macedonia, a country belonging to the former Republic of Yugoslavia, and Turkey belong to the category of "modest innovators".

At regional level, one can notice that the most innovative regions of the EU are, basically, identical with the most innovating states. However, 14 countries have performance groups and 4 member-states (France, Portugal, Slovakia and Spain) have regions in 3 regional performance groups, a fact which indicates differences in the area of performance and innovation, which are more visible within those states. It is only Austria, Belgium, Bulgaria, the Czech Republic and Greece (which belong to the EU), as well as Switzerland (which does not belong to the EU), that have a relatively homogenous performance in innovation because all the regions in those countries belong to the same performance group[9].

4. An international perspective

At international level, the EU is exceeded by South Korea, USA and Japan, which currently are undoubtedly leaders in the area of innovation. The performances recorded by the first two countries, South

[8] Idem.
[9] European Commission, Directorate-General for Enterprise and Industry, *Regional Innovation Scoreboard 2014*, Brussels, 2014.

Korea and the USA are 17% higher than the results recorded by the EU, while Japan has recorded performances that are 13% higher than the ones recorded with the EU area.

The main innovation leaders, USA, Japan and South Korea are ahead the EU especially as to the indices that measure enterprise activity, expenditures made for research and development, publications edited in collaboration by the public-private sectors and the patent applications for PCT, including as regards the results obtained in education that are measured through "the percentage of the population that has graduated a university"[10].

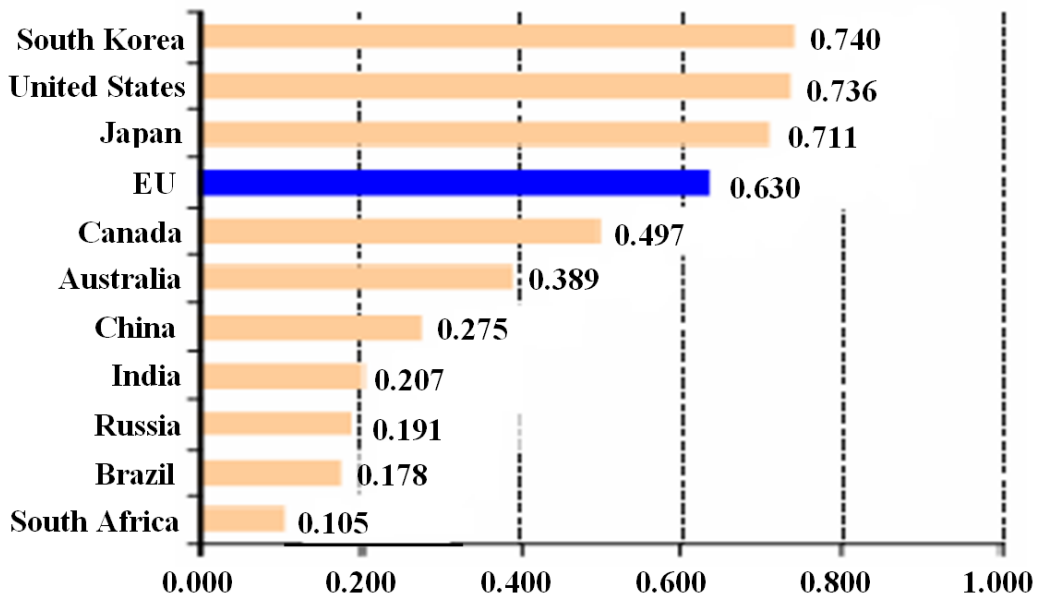

Figure 2. EU Innovation performance compared to main global competitors[11]

The performances of the EU in the area of innovation are superior to Australia and Canada, whose results represent 62%, respectively, 79% of the EU performances in the domain.

Similarly, the EU is one step ahead in comparison with the BRICS countries group, made up of Brazil, Russia, India, China and South Africa. The gap between the EU and the BRICS countries is increasing with only one exception, i.e. China, the second economic power of the world, whose performance in the area of innovation amounts to 44% of the level reached by the EU; however, this gap tends to diminish because the results obtained in the area of innovation advance with a higher speed in comparison with the EU area.

Consequently, the EU must continue to make efforts as regards the cooperation of EU member states in the domains of education, culture, enterprises and employability, developing the young people's entrepreneurial spirit, and developing innovative behaviour within public and private organizations.

In this context, Antonio Tajani, the Commissioner for industry and entrepreneurship and Deputy President of the European Commission, declared: "The general spread of innovation in the entire European space remains a priority if we wish to achieve our industrial policy objective according to which, until 2020, at least 20% of the EU GDP could be generated by the manufacturing industry. A large number of enterprise investments, a higher demand of European innovating solutions and less numerous obstacles in the commercial exploitation of innovations are essential for ensuring growth. We need more innovating enterprises and a framework that supports growth and facilitates the successful transfer of innovations to the market"[12].

[10] European Commission, Innovation performance: EU Member States, International Competitors and European Regions compared, Brussels, 2014.

[11] Idem.

[12] European Commission, *Press conference on the 2014 Innovation Union Scoreboard and the Regional Innovation Scoreboard reports*, Brussels, 2014 (my translation); original text: „Generalizarea inovării la întreaga Europă rămâne o prioritate, dacă se dorește atingerea obiectivului nostru de politică industrială ca, până în 2020, cel puțin 20% din PIB-ul UE să fie generat de industria producătoare. Mai multe investiții ale întreprinderilor, o cerere mai puternică de soluții inovatoare europene și mai puține obstacole în calea exploatării comerciale a inovațiilor sunt esențiale pentru creștere. Avem nevoie de mai multe întreprinderi inovatoare și de un cadru favorabil creșterii pentru a asigura tranziția cu succes a inovațiilor înspre piață."

Similarly, Máire Geoghegan-Quinn, the Commissioner for research, innovation and science, declared: "The dashboard confirms once more that investments in research and development enhance economic performance. With a budget of about 80 billion EURO for the next 7 years, the new research and innovation Program, Horizon 2020, is going to help us maintain this dynamic. It is necessary for us to increase the innovation investments in the entire European Union so that, by 2020, innovations will have amounted to a 3% level of the GDP[13]."

5. Conclusions

Innovation was one of the most debated topics at the 6th edition of the World Science Forum, held at Rio de Janeiro from 24th -27th November 2013. The "Declaration of the World Science Forum" contains five recommendations, of which two refer to the innovation activities: training for reducing inequality and promoting sustainable world science and innovation; ethical and responsible behaviour in research and innovation.

One of the seven initiatives comprised by the Europe 2020 Strategy is the Initiative: "A Union of Innovation". The objective of this initiative is political orientation in the sphere of research - development and innovation towards the challenges of the contemporary society, such as climate changes, energy and the efficient use of resources, health and demographic changes.

In the area of innovation, the hierarchy of the EU states is relatively stable, with Sweden as a leader, followed by Denmark, Germany and Finland, these four countries allotting the highest funds for research and innovation. Portugal, Estonia and Latvia have recently recorded the most significant progresses in the area of research and innovation, while Poland is the only country that has turned from a "modest innovator" into a "moderate innovator". Romania belongs to the group of "modest innovators", occupying the 26th of the 28 positions, represented by the total number of EU states.

At global level, the EU is surpassed by South Korea, USA and Japan, but it has superior performances in the area of innovation in comparison with Australia and Canada. Similarly, the EU has made an important step ahead the countries from the BRICS group, which includes: Brazil, Russia, India, China and South Africa. China is an exception for it makes fast progress in the area of innovation and it catches up with the gap it currently has in comparison with the EU.

In order to reach a performance level in the area of innovation that is close to the level reached by the world leaders in this area, the EU must further make efforts as regards: cooperation between member states in the domains of education, culture, enterprises and employability, developing the entrepreneurial spirit of the young people, encouraging the innovating behaviour within public and private organizations.

References:

[1] European Commission, Directorate-General for Enterprise and Industry, *Innovation Union Scoreboard 2014*, Brussels: 2014.

[2] European Commission, Directorate-General for Enterprise and Industry, *Regional Innovation Scoreboard 2014*, Brussels: 2014.

[3] European Commission, *Europe 2020*, Brussels: 2010.

[4] European Commission, Innovation performance: EU Member States, International Competitors and European Regions compared, Brussels: 2014.

[5] European Commission, Press conference on the 2014 Innovation Union Scoreboard and the Regional Innovation Scoreboard reports, Brussels: 2014.

[13] Idem; original text: „Tabloul de bord confirmă, încă o dată, că investițiile în cercetare și dezvoltare aduc beneficii în ceea ce privește performanța economică. Cu un buget de aproape 80 de miliarde de euro pentru următorii șapte ani, noul program de cercetare și inovare Orizont 2020 ne va ajuta să menținem această dinamică. Este nevoie să creștem acum investițiile în inovare în întreaga Uniune Europeană, pentru ca, până în anul 2020, să ne atingem obiectivul de 3% din PIB."

[6] Iancu, A., *Cunoaştere şi Inovare. O abordare economică*, Bucharest: the Romanian Academy Publishing House, 2006.

[7] World Science Forum, *Knowledge and Future*, Budapest: 5-7 November 2009.

[8] World Science Forum, *Science for Global Sustainable Development*, Rio de Janeiro: 24-27 November 2013.

[9] www.europeancommission.com

[10] www.infoeuropa.ro