INNOVATION – THE MAIN COMPONENT OF THE „KNOWLEDGE TRIANGLE"

Rus Mircea-Iosif
Babeş-Bolyai University
Faculty of Economic Sciences and Business Administration

Radu Ioana
Babeş-Bolyai University
Faculty of Economic Sciences and Business Administration

Science has begun to play an increasing role in industrial development not only as a major source of knowledge for new technological activities or scientointensive industries (medicine industry, chemistry, electronics), but also as essential input in testing, evaluation and quality control. Innovation is one of the activities that can generate economic and social progress. Therefore, this paper also approaches the significance of innovative information dissemination, as well as the objectives of this activity in view of the EU Member States. The European Union has prepared two funding programs for innovation activity, Europe 2020 and Horizon 2020.
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1.Introduction

Innovative activity is as old as human history. From his earliest attempts to change and adapt nature to his needs, man has never ceased to innovate, that is to introduce something new into his material or spiritual existence. Metallurgy, the mirror, porcelain, the gear, suspension bridges, the loom, the scales, the calculating machines, cartography, the clock, the compass, the decimal system, geometry, the square root, the sterilization system, vaccines are just a few of the findings of anonymous inventors of antiquity in Babylon, Mesopotamia or China.
Innovation's main goal is not only to improve the stock of knowledge, inventions and patents, but also to disseminate them on a large scale, in other words the dissemination stage of new and improved knowledge, products, technologies and services. This process is becoming more and more interesting area of study for the understanding, influencing and adjusting of the competitive market mechanisms market economy countries or in countries in transition to such economy.

2. Technology dissemination

Technology dissemination has gained increasing importance in the policy goals of science and technology due to the fact that financial support in this area is increasingly conditioned by rigorous and pragmatic evaluations in terms of real economic effects.
A series of aspects concerning micro and macroeconomic efficiency (increase in capital efficiency, labor productivity and competitiveness, operation of structural adjustment) are related to high hopes, especially for developing countries, for programs with consistent objectives of technological diffusion.
Technology dissemination is narrowly considered as a large-scale application of any available technology. The area of dissemination of these technologies may refer to various fields and sectors and, of course, to both public and private sectors. Technology dissemination doesn't only pursue goals directly related to improving the parameters of productive process efficiency, but also the elimination of duplication in innovative activities that would discover things already known in another part of the country or in other institutions.
Technology dissemination is also dependant on economy's, and especially industry's structural characteristic, on their complexity and intensity. In this respect it is worth noting the role that

large companies (machinery constructions, electrical, electronics, metallurgy, chemistry, etc.) that have greater opportunities to invest and operate machinery, equipment and new equipment, have. Close connections between the various companies in supply, production and marketing, horizontal cooperation, involving sales and purchases of intermediate goods, create a proper framework for encouraging the expansion of technical progress for all participants. (Radu M. *et at*., 2008)

Profitable achievements in technology dissemination are however conditioned by the level of the employees' professional qualification, their competent and adherent responsiveness, trade unions includes, to technological and organizational novelties. For adopting superior technologies, the level and structure of wage costs, as well as other statutory obligations of the company have a significant importance. In case of high productivity and wages, of effective operation of labor relations systems, of the labor market and information fluxes, technological diffusion rate can benefit from considerable human support.

3. Knowledge and technology transfer from research to industry

Theoretical studies approaching the variety of aspects in business life conducted in the academic environment are circumscribed to the subject known in the specialized literature as „Academy-Industry Relations", area of research that theorizes particular or common aspects of the concrete forms of manifestation of research interest, especially in universities, to develop efficient contacts with economy in general and industry in particular. Most of these papers describe or analyze in detail the causes and factors of success or failure of various initiatives that have occurred locally or regionally, evaluate their performance and impact, perform statistical and sociological surveys and forecasts etc.., being less concerned with conceptualization, theoretical debates or semantic controversies.

Therefore, the notions used by this area of research, like business incubation center or incubator, science park, spin-off, technology transfer center, research park, technology center, etc.., don't have a clear conceptual distinction, being used in practice without too much exigency and rigor, often being considered as substitutable, complementary or synonyms.

The specialized literature has a variety of definitions of the same concepts. Thus, the *Science Park* is characterized by its territorial vicinity to a, institution of higher education or an advanced research center, with which it has close relations. It aims to: supporting the development of companies, facilitating technology transfer from research and education to companies and organizations within the park or surrounding areas, encouraging businesses based on research results of R&D university departments or research institutes. The main objective of these parks is researching and designing new products and their development to prototype stage, production for market being achieved in separate units.

The Research Park is usually located within a university or research institute and has a predominantly scientific activity in which students and academics are working together. Production concerns are usually excluded.

The *Technology Center* helps develop an enterprise engaged in applying advanced technologies based on research that should not necessarily be carried out within the university, offering also a range of facilities and services, including the sale of products. It is distinguished from ***the Science Park*** by accentuating aspects concerning production and by the optional involvement of academic research. The selection of "residents" uses rigorous criteria concerning the inclination to use research or products requiring a high technological level.

The Innovation Center provides a range of facilities to new small and medium companies that engage in high technological level products (by taking a large risk to their market launch): office equipment, different services, access to considerable network of research, consulting and financing institutions etc. They can often be part of Science Parks.

Business incubators concentrate in a limited space a number of newly-created companies for the purpose of helping them increase their chances of survival by providing them with modular construction, shared facilities (telephone, computer, secretarial, etc.) and with managerial support and other support services. Their main goal is both the orientation towards new technologies, as well as local development and the creation of new jobs.

Industrial or business parks provide an environment of high qualification, suitable for a wide range of activities including manufacturing, sales, exhibitions, etc., without necessarily having to be in the vicinity of academic institutions.

The Managerial Workshop provides a multitude of consultancy and financing services to industrial business activities, taking place in new or existing units. By dealing with improving the quality of common services and imposing strict admission and output rules, a series of managerial workshops have become innovation centers or business incubators. (Gheorghe C.M. *et al*, 2009)

4. Strategies for stimulating the innovation process

Strategies in R&D and innovation evolved after a trajectory described by combining in different proportions two different types of policies, namely the policies of science and industry, sensibly influenced by the company's behavior. Innovation strategies relied on the explicit recognition of the fact that the success of creating and marketing new products is due to a set of factors, far more numerous than the R&D activity that was, until recently, taking all the credit. Of these factors, the market of products and technologies plays a significant role. (Sandu S., 2002)

Provided that economic competitiveness has become a major focus, increasing attention has been given to research conducted in industry, reflected in increased collaboration between industry and universities, as well as to the development of human resources potential for research. Maintaining a high quality in basic research remains an important objective, regardless of the levels of economic development of different European Union Member States.

A special attention is paid to participation in international research and development programs (particularly the Community Framework Programme for R & D) and to increasing the number of networks, consisting of public and private participants of the EU Member States. Another series of objectives in research and development tend to be shared in a growing number of EU Member States. (Gheorghiu R. *et al*., 2004)

The issue of public interest research has been treated, in the last few years, both in theory and in the practice of the developed European countries, with much more nuance and flexibility, observing a sensitive mutation from the interest in R&D public or government institutions to public interest strategic fields or R&D programs. These changes most strongly are reflected in the prevalence of R&D funding in comparison with institutional funding, mechanism also adopted by countries in transition to market economy, whose systems of science and technology are in full process of reform.

The experiences of developed countries are particularly relevant in terms of forming inter-institutional research networks, promoting research in collaboration between teams from public institutions and teams from private enterprises or institutions.

***Table 1**. General objectives of the EU Member States in the field of science and technology strategies*

	Objectives
Objectives common to most Member States	-Developing training and mobility for researchers; - Promoting innovation and technology transfer (exploitation of results, especially in small and medium companies) - Increasing collaboration and cooperation between industry and higher education and, in general, improving cooperation between private companies and public research sector; - Supporting and promoting industrial research both financially and in implementation; - Sustaining and developing high quality basic research; - Boosting economic competitiveness and stimulating economic growth; - Increasing R&D contribution to regional development; - Intensifying international cooperation, especially within Europe.
Objectives that tend to become common to Member States	- Developing programs containing socio-economic objectives of major importance; - Promoting public acceptance of science and technology; - Assessing the ethical and social aspects of technological development; - Improving the mechanisms and methods for program evaluation; - Developing the capacities of strategic deliberation in selecting priorities in science and technology.

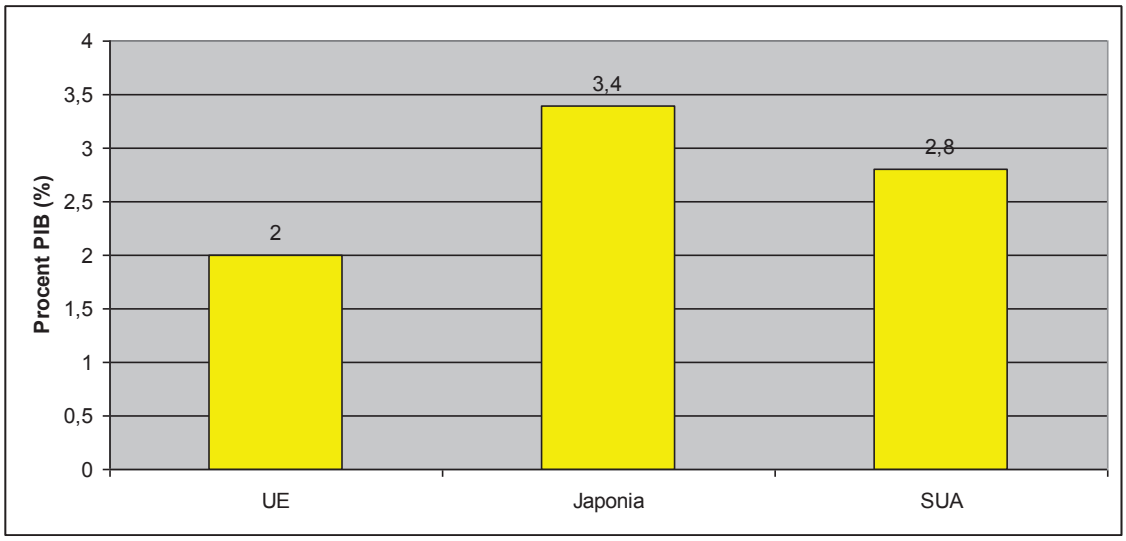
(Source: Sandu S., 2002)

5. Europe 2020 and "Innovation Union"

As other states adhered to the European Union, the creation of common policies insuring the Union's development became more and more necessary. Thus, common policies were created in fields like agriculture, trade, fishing, taxation, justice, internal affairs, etc. Research policy in the European Union is part of a broader policy of the European construct, namely, "Science and Technology". Policies in the field of information society arise from this, concerning audiovisual, media, space, life sciences and biotechnology.

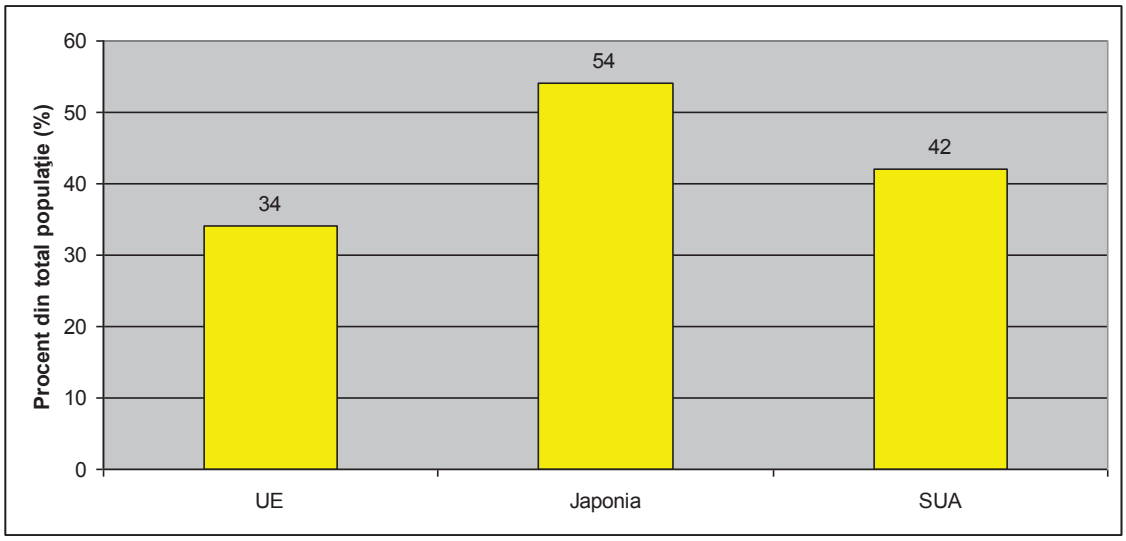
The reason for a policy in research and innovation is justified by satisfying two needs. Firstly, the need of coordination for the member states' activity in increasing efficiency and reducing costs, and secondly the need to strengthen the international competitiveness of European economy. Also, research and development develops economy and creates new jobs, and technological innovation can fight or diminish social problems like poverty, certain diseases or environmental degradation.

In 2009, the EU allocated an average 2% of GDP to R&D and innovation, while the US allocated 2.8% and Japan 3.4%. For 2010; the average for the EU countries was 2.7-2.8%. Also, we should not ignore the fact that in 2014, China's net RDI expenditure will surpass the EU.



TN: GDB Percentage (%)

***Fig. 1**. 2009RDI budget*
(Source: http://www.ec.europa.eu/innovation)



TN: Total population percentage (%)

***Fig. 2**. People with university degree in the population aged 25-34 years*
(Source: http://www.ec.europa.eu/innovation)

However, the rate of people aged 25-34 who have a university degree, in the year 2009, shows they Europe does not lack potential. It has researchers, entrepreneurs and world-class companies as well as high quality in terms of values, traditions, creativity and diversity. European companies and civil society are actively engaged in emerging and developing economies all over the world. Many innovations that changed the world occurred in Europe.

The biggest challenge for the EU and Member States is probably a more strategic approach to innovation. An approach where innovation is the primary policy objective, that would consider a medium and long-term perspective, where the measures and funding are designed so that they contribute to innovation, where EU and national / regional policies closely aligned and mutually

consolidated and last, but not least, where the highest political level sets a strategic program and regularly monitors its progress.
The initiative," Innovation Union established such an ambitious, integrated and strategic approach, exploiting and enhancing our strengths by using new and productive ways, preserving therefore the economic foundation that supports our quality of life and social model in the conditions of population aging. "Business as usual'' is equivalent to a gradual loss of the competitive advantages that we possess and accepting Europe's constant decline. (Rus M.I., 2011)
More specifically, in order to achieve," Innovation Union, among other things, the following are required:
a) In times of budgetary restrictions, the EU and Member States should continue to invest in education, research, development, innovation and ICT. Such investment should, if possible, not only be protected by budget cuts, but should they receive additional funding.
b) They should be accompanied by reforms that would increase the return on investment and approach the issue of fragmentation. The systems of research and innovation in the EU and Member states should be better coordinated and their performance must be improved.
c) Researchers and innovators must be able to work and cooperate across the EU as easily as at national level. The European Research Area must be completed within four years, establishing therefore a framework for a genuine free movement of knowledge.
d) Access to EU programs should be simplified and their leverage effect on private sector investments should be increased, with the support of the European Investment Bank. The contribution of the development framework program to fast-growing SMEs should be intensified. The European Regional Development Fund should be fully exploited for the development of research and innovation capacity throughout Europe, based on intelligent specialized regional strategies.

6. Conclusions

The European Union has an extraordinary potential for innovation. Europe has a long tradition of determined inventions. It has a variety of creative talents and it can rely on its It has a variety of creative talents. We should not forget that Europe founded one of the largest single markets in the world, where innovative products and services can be widely marketed. The Union also has a tradition of a strong and responsible public sector, which must be exploited.
Almost all EU Member States have improved their performance in research. However, the increase of performances in innovation has slowed down, and the EU is not covering the persistent gap in relation to the world leaders in innovation, U.S., Japan and South Korea. For EU-27, the largest gap remains for innovation in the private sector. EU still has a clear lead from the emerging economies of China, Brazil, India, Russia and South Africa. However, China is improving its innovation performances and continuously reduces the gap.
In the EU and the developed European countries, innovation has been seen for several years as an engine of economic and social progress, and the EU budget for 2014-2020 provides for the allocation of large sums of money to technological research and inventions within the "Horizon 2020" program, which will have a budget of over 80 billion euro. (www.ec.europa.eu)

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