

INNOVATION PROCESSES IN ROMANIAN COMPANIES

Delia – Marcela POP¹, Mircea – Teodor POP²

¹University of Oradea, dpop@uoradea.ro

²University of Oradea, popmt@uoradea.ro

Abstract—Using official data submitted by the Romanian Institute of Statistics, this paper aims to make an analysis of the Romanian companies' innovation capacity and their classification based on this criterion. Monitoring the evolution of research and innovation is an ongoing process in the economy of any country. At the same time, improvement and stimulation of innovative processes in all fields is an essential goal of government policies.

Keywords—Innovation, product innovation, process innovation, marketing innovation, organizational innovation, innovative companies

I. INTRODUCTION

DURING its evolution, particularly economic, mankind has constantly been influenced by innovative processes which have highly improved all the aspects of social life. It was innovation that triggered this evolution considered spectacular which resulted in a world economic development that has occurred more than 20 times since the beginning of the last century.

At the same time, these innovation processes have stimulated a technical development in all the fields and have significantly improved the quality of life worldwide. In this respect, highly important is the evolution of life expectancy at birth which depends on the progress of knowledge in all the areas of social life. This evolution has also followed an increasing trend, as its average value in Europe rose between 1990 – 2000 (100 years) from under 50 years to over 75 years.

Nowadays, monitoring the evolution of research and innovation is a permanent process in every country. Also, the improvement and stimulation of the innovation processes in all the fields of activity are an essential part of the governmental policy, whose main purpose is to increase the number of the innovative organizations, irrespective of their financing source.

II. THE INNOVATION PROCESS AND ITS OUTCOME

Innovation has always been the element that stimulated economic and social development. A research made in 2007 by the World Bank [1] revealed how the research-

based innovation and technological development can lead to different levels of development: *e.g.* although Ghana and South Korea had the same "GDP per capita" in 1960, the year 2005 brought significant differences between them, two-thirds of which can be attributed to the acquisition of knowledge.

The innovation is a creative process that involves the search for elements of novelty. The outcome of this process is referred to as "*innovation*". There are voices in the specialty literature holding that innovation represents both the process and its outcome. The concept of innovation has witnessed over the years an evolution that has determined various definitions formulated by the experts in the field.

For instance, the *Explanatory Dictionary of the Romanian Language* defines the outcome of innovation as "novelty, change, modification"; solving a technical or managerial issue in order to increase productivity or to achieve technical enhancement, etc.", while the process of innovation is thought of as „the action of innovating and its result; improvement, enhancement". At international level there is a wide range of manuals that define, analyze and guide the research development and innovation activities. Thus, the *Oslo Manual* focuses on innovation, the *Frascati Manual* analyzes specific research-development elements, and the *Canberra Manual* studies the human resources involved in the research development process. All these manuals provide definitions commonly agreed upon by the OECD and EU countries but they have extended applicability to other countries, too. The *Oslo Manual* [2] recommends the following definition of the concept: „An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations".

The 3rd edition (2005) of the *Oslo Manual* classifies innovation into four categories:

1)*product innovation* – “the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses”. The term good refers to both material goods and services.

2)*process innovation* – the introduction and implementation of a new commercial, technological or

production method etc. used in an organization, or its dramatic improvement. This includes significant changes in the techniques, equipment and/or software used to implement these new elements that aim at increasing production, improving the quality of goods and reducing the production and distribution costs.

3) *marketing innovation* - the implementation of a new marketing method intended to meet the customers' needs, to open up new markets, or to better position a company's product on the market, etc. This type of innovation involves the introduction of significantly new elements (new product launch on the market) or major changes in the product policy (design or packaging, etc.), in the product distribution policy (new distribution channels, new product sale or logistics methods), or in the product promotion or pricing policy.

4) *organizational innovation* - the implementation of a new organizational element, method or procedure in a company's business practices, workplace organization, organizational culture, or external relations, etc. This innovation is meant to reduce a company's administrative, managerial or transaction costs, to improve workplace satisfaction, to facilitate a more durable and cost-effective company development, to adopt a more flexible and innovative organizational behavior, etc.

The essential feature of all these types of innovation is that they must end up in the form of a product, process, element of the marketing policy or organizational method which must be new or significantly improve the performance of the company/organization that manages and implements the innovation.

Depending on the amount of change they determine innovations fall in two sub-categories: radical innovations and incremental innovations. Thus, the radical or „*breakthrough innovation*” brings about brand new solutions that can be developed in a new business, have a major impact in the field, and can set up new industries or markets. Radical innovations provide clients with a considerably higher value, in correspondence with the degree of novelty.

The incremental innovations were defined in 1995 by Catherine M. Banbury and Will Mitchell as "refinements and extensions of established designs that result in substantial price or functional benefits to users" [3]. Incremental innovations represent minor refinements of already existing products or processes, which occur successively and repetitively during their lifetime.

III. INNOVATION MANAGEMENT AND THE JOBS IT CREATES IN ROMANIA

Just like any other process occurring within a company the innovation process must also be planned, organized, led, directed and controlled. The activities and decisions related to the innovation within a company can be divided into two categories:

1) *monitoring activities and the project implementation management within a company;*

2) *decision-making about further innovation projects and their monitoring.*

The concept "innovation management" was coined in 2009 by Sandrine Fernez-Walch and François Romon who defined it as "the set of actions taken by a company and the solutions adopted to facilitate the emergence of the innovation projects, to decide upon their launch, to trade new products or implement new processes in order to increase the company competitiveness" [4].

The innovation management is an important feature of a company's business strategy. The strategic elements that influence the innovation management are put into practice by means of the company's objectives, its current and future financial situation, its work environment, the managers' involvement, the dynamics of the market that the company taps, etc.

The companies that embrace the principles of the innovation management are named innovative companies and their abilities fall in two categories:

1) *strategic abilities* characterized by a long-term vision and the ability to identify and anticipate market trends, etc.

2) *organizational abilities* that rely on a novelty-oriented organizational culture, optimal cooperation with the innovation sources, employees' involvement in the Just like any other process occurring within a company the innovation process must also be planned, organized, led, directed and controlled. The activities and decisions related to the innovation within a company can be divided into two categories:

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In practice, the statistical analysis and observation of the innovation processes can be achieved by adopting the regulations of the Oslo Manual on which relied the research conducted by the Community Innovation Survey and that Romania has been using since 2000. According to the classification proposed by this survey the innovative companies can be divided into two categories and monitored accordingly: successful innovative companies and companies with unfinished or abandoned innovation projects.

The successful innovative companies are companies which have introduced and implemented at least one product or innovation process, that is, they have launched on the market new or significantly improved products, implemented new or significantly improved processes, introduced in their own activity new or significantly improved organizing or marketing methods. The term can be applied to the active companies that have implemented or are currently implementing various types of innovations.

Based on the type of innovation implemented by a company the successful innovators can be, at their turn, classified into three categories:

- 1) *product innovators*
- 2) *process innovators*
- 3) *product and process innovators*

The companies with unfinished or abandoned innovation projects are companies that are carrying out innovation activities intended to develop or introduce new or significantly improved products or to implement new processes, even in the research-development activity, but whose projects are left unfinished or abandoned.

Since the data reporting of 2008 (which analyzed the period 2006-2008 that followed the modification of the Oslo Manual made in 2005) the classification of the companies has changed as follows:

1) *innovative companies*: companies with only product or/and process innovation, companies with only organizing or/and marketing innovation, companies with

only product or/and process innovation and with organizing or/and marketing innovation;

2) *successful innovative companies*: companies with only product innovation, companies with only process innovation and companies with both product and process innovation;

3) *companies with unfinished or/and abandoned innovation projects*.

In practice, at the opposite side of the innovative companies lie the non-innovative companies, that is, those companies that did not perform any innovative activity during a certain monitored period.

Following the adoption of the innovation management principles by the Romanian companies, the Classification of Occupations in Romania (COR) was adjusted and modified in 2007 by the introduction of a new occupation - "innovation manager"; this introduction was followed by the validation in 2008 of the occupation standard for this job. At present, the position of "innovation manager" is codified with code 242106. The job responsibilities of this manager involve an effective management of the innovative process developed by a company.

In Romania, the same field of innovation has given rise to another occupation - "technology broker", which is currently codified in the Classification of Occupations in Romania with code 241265. A technology broker is a qualified person who can carry out technology transfer, that is, successfully harmonize the technology offer and demand by complying with the industrial property rights.

IV. SURVEY ON THE INNOVATION PROCESS IN THE ROMANIAN COMPANIES

Up to now the National Statistics Institute [5], [6] has gone public with statistical data on the innovation process in Romania gathered before 2013; therefore, there is no analysis available for the period after 2013.

The evaluation of the innovation process in the Romanian companies is achieved mainly based on the number of companies that carry out innovative activities.

TABLE I
NUMBER OF ROMANIAN INNOVATIVE AND NON-INNOVATIVE COMPANIES BETWEEN 2002-2012

	2002		2004		2006		2008		2010		2012	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	23404	100	26024	100	28488	100	29979	100	26330	100	28866	100
Innovative companies	3983	17	5171	20	6013	21,1	9986	33	8116	31	5968	21
Non-Innovative companies	19421	83	20853	80	22475	78,9	19993	67	18214	69	22898	79

Table 1 presents information on the number of Romanian innovative and non-innovative companies and their corresponding percentage between 2002-2012.

The present survey reveals that by 2008 the number of the Romanian innovative companies followed an increasing trend, with its peak being recorded between

2006-2008. The economic crisis at the end of 2008 also affected the Romanian innovative companies whose

number decreased with 1870 by the end of 2010. A decreasing trend also maintained in 2012 when the percentage of innovative companies (21%) was very close to that of 2004 (20%).

Table 2 emphasizes the “Successful Innovators” represented by the companies with the most intense innovation process. The analysis indicates the same decreasing trend starting with 2006-2008. Also, the number of “Product-only innovators” plummeted between 2002-2006 and in 2010 they accounted for 2.4% of the total number of Romanian companies, the same

percentage as for 2002; yet, in 2012, their number halved (representing only 1.2%) and was the lowest for the analyzed period. Regarding the “Process-only innovators”, their percentage was variable and their number followed the general increasing trend until 2008, followed then by a dramatic decrease. As for the “Product and Process Innovators” their percentage increased until 2006 (15%) and then decreased and reached a value of 2.2% in 2012, when their number was lower than that of the “Process-only innovators”.

TABLE II
NUMBER OF ROMANIAN “SUCCESSFUL INNOVATORS” BETWEEN 2002-2012

	2002		2004		2006		2008		2010		2012	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Successful Innovators	3963	17	5136	20	5970	21	5748	19	3631	14	1691	5,9
Product-only Innovators	582	2,4	472	1,8	525	1,9	710	2,4	635	2,4	351	1,2
Process-only Innovators	413	1,8	1203	4,6	1169	4,1	1965	6,6	955	3,6	706	2,4
Product and Process Innovators	2968	13	3461	13	4276	15	3073	10	2041	7,8	634	2,2

Table 3 depicts data on the “innovators with unfinished or/and abandoned innovation projects”, whose number constantly increased by 2008, at the same time

with their percentage that reached between 2008-2012, 0.5% of the total number of Romanian companies.

TABLE III
NUMBER OF ROMANIAN “INNOVATORS WITH UNFINISHED OR/AND ABANDONED INNOVATION PROJECTS” BETWEEN 2002-2012

	2002		2004		2006		2008		2010		2012	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Innovators with unfinished or/and abandoned innovation projects	20	0,1	35	0,2	43	0,1	159	0,5	132	0,5	115	0,5

V. CONCLUSION

Innovation is an element that generates improvement in the people’s standard of living and wealth. At the same time, these objectives are reached by raising competitiveness and technical advances in all the branches of economy. It has been proved that investments made in its own research and innovation process ensure autonomy by improving competitiveness in the national and regional economies. Moreover, these investments also provide practical instruments to solve issues specific to various communities or economies, as the research and innovation process exceeds national boundaries and can adjust to the features of any community. These two elements can solve various community problems but in case this cannot be done directly, the potential solutions found outside that particular community have to be adapted to its characteristics.

In this respect, using various planning tools and based on the “Research-Innovation Strategy 2014-2020”, Romania will have to find the most optimal solutions to make the most out of the employees` creativity, to finance

new innovative ideas and solutions, to implement these innovative solutions, to file for and use the intellectual property rights, etc.

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