

INNOVATION-SOLUTION FOR GROWING THE COMPETITIVENESS OF INDUSTRIAL ENTERPRISES IN ROMANIA

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Abstract. *Under the conditions of the globalization, enterprises need to become more innovative, because only in this way they can cope with changes and increase the capacity to enter in competition and, implicitly, obtain income from their work. This paper presents some elements featuring the evolution of the innovation process in industrial enterprises, before (in the years 2002-2004) and after the integration of Romania into the E.U. (between 2008 and 2016), through some relevant indicators for this sector (number of the enterprises performing innovative activities, types of innovation, innovation expenditures, turnover of all innovative enterprises and so on), as well as some comparisons with the situation of innovative businesses in the E.U.*

Keywords: *competitiveness, innovation, industrial enterprises, performance indicators.*

1. Introduction

The modern business environment is generally characterized by an increasing global competition and demand of customers.

Innovation, "one of the prerequisites for creating a knowledge economy", is an essential element of competitiveness, in particular, to compete in today's global markets, the knowledge base being matched by research and technological development activities, but also by developing new marketing, organization or management solutions.

Conceptually, " technical innovation is the implementation of a new or significantly improved product (good or service), or a process, a new marketing or organizational method in business practice, in job

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organization or in external relations". The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) for the firm.

However, the implementation of an innovation project is an action that is subject to many risks, that is why the profit is uncertain.

In the attempt to overcome its competitors, many businesses develop and/or adopt new products, processes, techniques or procedures, obtaining and marketing new products, a major business objective. These actions involve significant costs and a certain degree of risk related to the recovery of these costs and the fact that competing firms are involved in the process of technological innovation.

Because the innovation processes have an important temporal dimension and are costly in financial terms, their realization requires long-term commitments in terms of their funding so that financial constraint exerts an effective impact on investing in enterprise innovation.

As regards business innovation, although inherently a risky business innovation, it offers, in return, increased profitability when it is materialized and finds outlets. However, in many cases, the problems arising from the risk-innovation relation can ultimately lead not only to the failure of an innovative project but also to firm losses, not mentioning that the losses can be important, as innovation is one of the costly activities in financial terms.

After the integration of Romania in the European Union, in order to increase the competitiveness of Romanian industrial enterprises, it became obvious that a greater emphasis had to be placed on the production, on new ideas in the production process, changing the fabrication structure, improving the characteristics of the existing products and obtaining them at a lower cost. However, the ability of a firm to remain competitive and to survive on the market depend primarily on managers' ability to generate those investment projects and flows that ensure maximization of the results while minimizing risks.

It is well known that the competitive market demands a continuous effort to generate visible differences from rival products, and for Romanian companies, especially those in the manufacturing industry, that issue requires the adaptation to the rules of operation in the single European market, regarding the customers' demand for quality, maintaining competitiveness in the conditions of intensifying competition, permanent renewal of the manufacturing nomenclature according to the evolution of the demand and so on.

Industrial companies that succeed to customize their products by creating an additional and desirable attribute or by designing and delivering new products acquire long-term competitive advantages that enable them to expand their production and expand their market segment.

Broadly speaking, industrial innovation is, in fact, the finality of scientific and technical creation activities and may refer to the realization of a new technological product or process, to the introduction into the economic activity of a new system of organization and management of production and labour, a new type of service and so on.

After Romania's integration into European Union, the industrial enterprises have been obliged to engage in restructuring activities of the company – technological, managerial and organizational – and to permanently improve the quality of products and services offered to buyers with very high technical, economic and recently, ecological requirements.

Although significant progress has been made in this direction, it is necessary to intensify the efforts in order to accelerate the renewal of products in every enterprise, in order to increase the competitiveness of Romanian industrial enterprises on the single European market.

2. Innovative business activities in Romania

The data analysis of the evolution of the innovative activities in Romanian enterprises during the post-accession period (mainly between 2014 and 2016) compared to the pre-accession period revealed some characteristics of the enterprises engaged in these activities, that are presented below.

Table no. 1

Evolution of innovative and non-innovative enterprises, by activities, during 2004-2006 and 2014-2016

Economic activity	Total enterprises		Innovative enterprises				Non-innovative enterprises	
	number		number		% in all enterprises		number	
	2004-2006	2014-2016	2004-2006	2014-2016	2004-2006	2014-2016	2004-2006	2014-2016
Total enterprises	28,488	28,809	6,013	2,925	21.1	10.2	22,475	25,884
Industry – total	17,281	14,446	3,789	1,493	21.9	10.3	13,492	12,953
Manufacturing	16,740	13,167	3,675	1,455	2.0	11.1	13,065	11,712

Source: Innovation in industry and services during 2004 -2006, Innovation in business enterprises during 2014-2016, National Institute of Statistics, 2008, 2018.

a) Data analysis shows that during the post-accession period, the number of the companies that carried out innovative activities declined, accounting for only 10.2%, in 2016 compared to 21.1% in 2006 (Table no. 1).

In the economic activities of the industry sector, the processing industry holds 97.5%, the rest of the sectors have much smaller shares.

b) By type of innovation, in 2012-2014 and 2014-2016, the main achievements are registered in innovative enterprises regarding organizational and/or marketing methods (9.4% and 7.7% respectively), followed by innovative enterprises of products and/or processes (6.5% and 5.4%, respectively).

c) As regards novelty of the innovations, during 2014-2016, only 1.4% of all enterprises have introduced new products to the market and 2.6% have introduced new products only for the enterprise, while in the period 2012-2014, 1.3 % of all enterprises have innovated new products for the market, and 2.9% have innovated new products only for the enterprise.

In manufacturing, enterprises that introduced new products for the enterprise accounted for 3.2% of total enterprises during 2014-2016 and those who introduced new products for the market accounted for only 1.4% in the same period, while between 2012 and 2014 these percentages were 3.8% and 1.8%, respectively.

d) As regards the location where the goods are sold, in 2014-2016, 90.5% of the enterprises sold their products on the local or regional market, 74.3% sold their products on the national market, 58.8% sold their products on the European market and 31.2% of enterprises sold their products on other markets.

Instead, during 2012-2014, 90.0% of the enterprises sold their products on the local or regional market, 72.2% on the national market, 48.5% on the European market and 23.5% of the enterprises, have sold their products in other markets.

e) Financial resources available to carry out innovation activities, either from own or outside the enterprise, were intended to cover R & D expenditure incurred in the enterprise or for outsourced research and development activities (R&D activity taken from other enterprises/ organizations, acquisition of knowledge from outside the unit, acquisitions of other external knowledge) as well as the acquisitions of machinery, equipment and software (Table no. 2).

Table no. 2.

Structure of enterprise innovation expenditures with innovative products and /or processes, by components and areas of activity between 2002 and 2016

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Economic activity	Total Expenditures	from which:									
		Expenditures by in-house research & development activity					Expenditures by acquisition of machinery, equipment and software				
		2002	2006	2008	2014	2016	2002	2006	2008	2014	2016
Total enterprises	100.0	22.2	19.5	8.4	42.4	40.8	53.7	74.9	84.6	42.6	44.3
Industry- total	100.0	17.6	13.4	8.2	29.1	40.2	56.6	82.9	87.4	57.3	40.5
Manufacturing	100.0	14.3	9.9	10.3	32.5	40.4	57.1	86.0	85.5	52.8	39.6

Source: Innovation in industry and services during 2000-2002, 2004-2006, 2006-2008 and Innovation in business enterprises during 2012-2014, 2014-2016, National Institute of Statistics, 2004, 2008, 2010, 2016, 2018.

From the analysis of the statistical data, it is noted that until 2008, in the total expenditures for innovation, the highest share has been allocated to acquisition of machinery, equipment and software, followed by in-house research and development.

Also, the share of internal R & D expenditures increased significantly in the total enterprise expenditures, especially in 2014 and 2016.

In fact, the costs of innovation and their distribution are closely related to the company's strategy. Some businesses allocate large amounts of money to carry out their own or outsourced research activities, while other businesses invest in introducing new technology or in other types of procurement. All these activities lead to innovation.

In other words, the import of advanced technology and equipment has been the main source of innovation in Romanian companies.

Concerning the structure of innovation expenditure, for own or outsourced staff training activities for the development and/or introduction of new or significantly improved products and processes, own or contracted activities to market innovations, including market research and launching of advertising, designing or changing the shape or appearance of goods or services or other own or contracted activities (feasibility studies, testing, endowment, industrial engineering for the implementation of new or significantly improved products and processes) have been allocated 4.0% of total innovation spending in 2016, up by more than 2.4% in 2014.

In industry, expenditure on own or outsourced training of staff for the development and / or introduction of new or significantly improved products and processes was 3.5% in the year 2016 and manufacturing 3.7% in the same year.

f) In 2016, the turnover of innovative enterprises accounted for 23.1% of total business turnover, less than 31.3% in 2014.

In 2016, the share turnover of innovative enterprises in organizational and/or marketing methods was 19.9% and that of innovative enterprises of products and/or processes was 17.7%, while in 2014, these percentages were higher, respectively 23.1% and 20.6%.

In the total turnover of enterprises, the share of turnover obtained from the sale of new or significantly improved products in the year 2016 was 13.4% (13.7% in 2014).

In 2016, of the total turnover of new or significantly improved products, 29.9% represents the turnover of enterprises with new products for the company and 5.6% represents the turnover of enterprises with new products for the market. Instead, the share of turnover of enterprises with unchanged products was 64.5%.

In 2014, of the total turnover of new or significantly improved products, these percentages were 28.8% and 18.9%, respectively, and the turnover of enterprises with unchanged products was 52.3%.

g) During 2004-2006, for 30.9% of the innovative enterprises among the main reasons that blocked the innovation activity in Romanian enterprises, we mention, the lack of sources of financing, both internal (funds within enterprise or group of enterprises) and external (funds from sources outside the enterprise non) as well as high innovation costs, in 28.5% of innovative enterprises.

Lack of funding sources is one of the factors blocking innovation efforts both in innovative enterprises and in innovative enterprises.

After Romania's integration into the EU, in the years 2014-2016, the main obstacle faced by enterprises was the high share of innovation costs (5.8%), the lack of internal financing for innovation (4.9%), the high competition on the market (3.8%), the lack of credit or of private capital (3.7%), the not full harmonization of legislation/regulations with EU law (1.8%), while in period 2012-2014 the main obstacles were the lack of internal innovation funding (4.7%), followed by a lack of private loans or capital (3.2%) as well as the difficulties encountered in obtaining government subsidies or other (3.2%) and there was also a lack of qualified employees (1.7%).

Lack of support for enterprises with innovative potential led to the fact that in Romania, during pre-accession (between 2002 and 2004), innovative enterprises represented only 19.5% of the total number of enterprises (Table no. 3), compared to an average 39.5% in the European Union (27 countries).

Table no. 3
*Innovative enterprises in Romania compared to other EU member states,
in the years 2002-2004 and 2012-2014*

	Period	Total enterprises	Innovative enterprises	Share of innovative enterprises (%)
		number	number	
UE-27	2002-2004	756,982	299,034	39.5
UE-28	2012-2014	775,329	380,455	49.1
Romania	2002-2004	25,824	5,041	19.5
	2012-2014	28,380	3,645	12.8

Source: Innovation in industry and services during 2004-2006 and Innovation in business enterprises during 2014-2016, National Institute of Statistics, 2008 and 2018.

In countries such as Austria (52.5%), Belgium (51.3%), Denmark (52.0%), Germany (65.1%), Ireland (52.2%), Sweden (50.0%), innovative enterprises exceeded half of the total number of active enterprises.

In the same period, only in Bulgaria (16.1%) and Latvia (17.5%) the number of innovative enterprises was below the level registered in Romania.

In the period 2012-2014, after the integration of Romania into the EU, the share of innovative enterprises fell to 12.8%, while the share of innovative enterprises in the 28 Member States rose to 49.1%.

In the same period, as regards this indicator, the largest shares were registered in Germany (67.0%), Luxembourg (65.1%) and Belgium (64.2%), while the lowest shares were to be found in Romania (12.8%), Poland (21.0%) and Latvia (25.5%).

3. Conclusions

1. Although in European Union the efforts to innovate are constantly intensifying, in Romania these concerns are reduced. That is why in Romania the number of enterprises performing innovative activities is below the European average, with a direct impact on the economic and social progress at national level.

Lack of support for enterprises with innovation potential has led to the situation where, in Romania, after the integration of Romania into the E.U., the share of innovative enterprises has decreased, while in most of the EU member states it has increased.

2. In the structure of innovation expenditures, the acquisition of modern equipment and software has a significant share compared to expenditures for internal research and development and external research

and development and the import of advanced technology and equipment has been the main source of innovation in Romanian companies.

After Romania's integration into the European Union, the main obstacles to innovation faced by enterprises have been the innovation costs, followed by the lack of internal funding for innovation, the lack of credit or private fund and a lack of qualified employees.

3. The performance of the Romanian innovation system was represented by the higher share of the turnover obtained from the sale of new or significantly improved products for the company, followed by the revenues from the sale of new products to the market.

As most of the revenues come from trade, after Romania's integration into the EU, for Romanian enterprises, especially for those in the manufacturing sector, it is necessary to adapt to the rules of operation in the European single market, to the customers' demand for quality, to a permanent renewal of the manufacturing nomenclature according to the evolution of the demand, etc., due to the increased competition.

4. In order to obtain the necessary innovative framework, Romania must adopt a proper long-term strategy, bringing together the knowledge triangle of business, education and research, with a quality governance and lean management.

As a matter of fact, it is urgent that Romania gets more actively involved within the European R&D framework, taking into account that R&D activity generates international spillovers concerning technological change and productivity improvement for trading partners.

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