

# Innovation and performance. An analysis on European and Romanian companies

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# INNOVATION AND PERFORMANCE. AN ANALYSIS ON EUROPEAN AND ROMANIAN COMPANIES

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**Abstract:** *The challenges of the economy and of the modern society based on knowledge are closely related to the success of firms, their ability to generate new, innovative products and services, in a steady pace and in a large, diverse structure in order to ensure performance and long-term welfare. In a global world where countries compete to produce and promote the market for quality and convenient products for the consumers, the innovation capacity of a country and the innovative capabilities of companies acquire a special importance. Numerous studies have analyzed the determinants of innovation of the innovative activities in companies, focusing in particular on organizational and technological capabilities and associated strategies required for successful innovation. There are different types of measuring innovation at the firm level, and in this paper we chose four main groups inspired by the typology promoted by OECD and Eurostat: product innovation, process innovation, organizational innovation, marketing innovation. To remain competitive in the long term, companies must consider all these areas, introduce new products to market, improve the quality of the existing products, upgrade or purchase new production technologies. Based on statistical reports of world and national organizations, our research highlights an extremely diverse and heterogeneous picture of the performance innovation indicators in Europe and the situation in Romania, by comparison both with the EU average, with countries in Central and Eastern Europe (CEE), but also with their own performance in prior periods.*

**Keywords:** innovation, innovative firms, performance, EU, Romania.

**JEL classification:** O31, M21, L25.

## 1. Introduction

Innovation is a widely debated issue tackled by both economists and various national and international organizations. Innovation is considered to be one of the key factors affecting the long-term success of a company in the context of competitive markets today. Therefore, there is a growing interest in studying innovation because most theories of innovation have as a starting point the company (Audretsch and Thurik, 2001) and the environment in which it operates. Innovation in a company is positively related to the performance and profitability of the company, contributing to the growth and development of the economy, based

on knowledge. Information is key to monitoring the level of innovative activities, and refers to a set of indicators related to innovation introduced or implemented in enterprises based on the four types of innovation: product innovation, process innovation, organizational innovation, innovation of marketing. Our research presented in this paper carries out a comparison of the main innovative indicator of companies in Europe, for selected top innovators countries and for several Central and Eastern European states, to better understand the gap of the Romanian place regarding a reasonable performance in innovation.
The paper is organized as follows: in the next (second) part we briefly present an overview of innovation and its link with the performance of a firm and several typologies of innovative firms, in the third part we present the research methodology, the main data and discuss the results; finally, we conclude and emphasize some further policy implications.

## 2. Innovation and performance. Types of companies and innovations

The performance of a company and its link with innovation is a complex and multidimensional concept (Murphy et al., 1996), often intuitively rather than rigorously demonstrated. Performance can refer to the structure components of a company (i.e production performance, marketing, investment) to the output (of products) or to reaching general indicators such as sales volume, profit, return (Sohn et al., 2007), (Wolff and Pett, 2006), (de Jong et al., 2002), (Harris, 2001).
The positive relationship between firm-level innovation and its performance seems obvious: a new, innovative product has few competitors on the market and, as a result, a period of time, the company will be able to obtain higher profits. While, obsolescence of the product, competition with other products and imitation will diminish these advantages, but the company already has experience and behavior driven to introduce new innovative products and thus will maintain its position and performance (commercial, financial) for a period of time shorter or longer (Varis and Littunen, 2010), (OECD and Eurostat, 2005). Despite this deductive explanation, the profound relationship between innovative behavior and performance of the company is still a matter of debate.
J. Schumpeter was among the first economists to use the concept of innovation in his studies. He explained that the capitalist engine is kept in motion by new customers, new markets, new methods of production or transportation, new products or new forms of industrial organization created by capitalist enterprises (Bayarçelik and Taşel, 2012).
Empirical research on firms in the manufacturing sector found that the relationship between the number of innovations made (and promoted on the market) and the operating profit margin is positive and that innovative companies can keep their financial performance higher compared to the non-innovative ones for a certain period of time (Geroski et al., 1993), (Han et al., 1998) and that innovation provides a sustained higher profitability (Roberts, 1999), (Atalay et al., 2013), (Talmaciu and Cismas, 2017). Innovative entrepreneurs consider innovative potential is often constrained by their access to finance, a main restrictions that stand in front of their business growth. Most incipient entrepreneurial initiatives, as well as stable SMEs, face significant financial constraints, largely due to their inherent risks and weaknesses, but also due to the reluctance of lenders regarding the success of SMEs' proposed innovations (Badulescu, A., 2011, Badulescu and Petria, 2011).

Calantone, et al. (2002) or Artz et al. (2010) shows that innovation in the company is positively related to the performance and profitability of the company and innovation enhances sales growth as long as the company "presses" the rapid entry of new/innovative products on the market and ensures that the products retain a level of novelty higher to the competing products. Finally, Atalay et al. (2013) or EBRD Report (2014) show that innovation has an impact on performance when associated with the organization, marketing and product policies at the company level, "innovation strategy is an important year major driver of firm performance and should be developed and executed as an integral part of the business strategy" (Gunday et al., 2011). Operational performance therefore depends on the capacity of entrepreneurs and managers to recognize and use innovations within the company to generate a positive attitude towards attempts to discover new ideas and solutions for the productive traditional methods and processes (Badulescu and Dodescu, 2010), (Badulescu, 2010), Dodescu et al, 2011).

One of the early innovation ranking was made by Schumpeter, who identified five types of innovations: a) creating new products or improving product quality; b) new production methods based on new scientific discoveries; c) new sources of supply of raw materials and semi-finished products; d) creating new markets; e) the emergence of new forms of industrial organization that will lead to the creation of a monopolistic position (Schumpeter, 1934). According to the Oslo Manual, innovation can be represented by the implementation of a new or significantly improved product (good or service), or a process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (OECD and Eurostat, 2005).

This definition covers a wide range of possible innovations that can be classified into four categories: 1) product innovation; 2) innovation of process; 3) marketing innovation; 4) organizational innovation. The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) to the firm. It should be stressed that innovation must be run successfully on the market (e.g. products) or implemented (i.e. processes) to obtain an economic impact (OECD and Eurostat, 2005).

Some definitions and methodological notes are necessary. Thus, product innovation refers to the marketing of a product or service new or significantly improved with respect for its traits, being user friendly formed as components or subsystems (eg. Smartphone, software, insurance, transport, consultancy) and the innovation of process includes the implementation of a production process, distribution method or new or significantly improved ancillary activities (OECD and Eurostat, 2005). The organizational innovation refers to the implementation of a new organizational method in business practices of the company, in workplace organization or external relations that has not been used before by the enterprise. Marketing innovation refers to the implementation of a new marketing concept or strategy that differs significantly from the existing enterprise marketing methods and which has not been used before (OECD and Eurostat, 2005).

In the European statistical practice and research, successful innovators are defined as companies that have introduced or implemented at least one product, a process, a way of organizing or method of marketing new or significantly improved while innovative enterprises are enterprises which launched new or significantly improved products (goods or services) on the market, or introduced new or

significantly improved processes, or new organizational or marketing methods (Dumitriu and Nunu, 2016), (OECD and Eurostat, 2005). Finally, we define non-innovative enterprises as those businesses that had no innovative activity in the period under review (Dumitriu and Nunu, 2016), (European Bank for Reconstruction and Development (EBRD), 2014), (OECD and Eurostat, 2005).
There are, of course, other types of innovative companies. It is obvious that the diversity, structure, capital endowment or the size of the companies generate significant differences in terms of innovative behavior and performance. This can guide research to establish a typology of firms according to their degree of innovativeness, i.e. diversity of companies can be divided into innovative clusters, starting with their (innovative) inputs, outputs and processes. Through the cluster analysis, Kemp, et al., 2003 drawing on previous research under EIM Business and Policy Research (Netherlands), develop a typology of innovative firms by using 26 indicators of innovation. Their research summarizes four groups/types of innovative firms with homogeneous characteristics in the three directions mentioned (inputs, outputs and processes), with the high internal and external validity cohesion: output-oriented companies, all-round companies, process-oriented companies and lagging behind companies.

**Table 1**: Types of innovative firms

| | |
|---|---|
| **Output-oriented companies**<br>- focus on output innovations;<br>- highly educated personnel;<br>- many employees involved in innovative activities;<br>- continuously innovating is often incorporated in the strategy;<br>- below-average process innovations;<br>- many new products/services;<br>- high turnover from new products/services. | **All-round companies**<br>- all-round innovators;<br>- many company trainings;<br>- high use of subsidies;<br>- innovative in all parts of the organization;<br>- dynamic organisation structure;<br>- frequent co-operation and out-sourcing of innovative activities;<br>- many patents;<br>- considerable level of new products/services. |
| **Process-oriented companies**<br>- focus on process innovations;<br>- a low level of innovative activities;<br>- many trainings;<br>- below-average innovation outputs;<br>- many different types of innovative activities. | **Companies lagging behind**<br>- hardly innovative;<br>- below-average scores on almost every indicator;<br>- lowest level of automation;<br>- hardly no use of subsidies;<br>- hardly no process innovations;<br>- below-average innovative outputs. |

Source: de Jong, et al. (2002) and Kemp, et al. (2003)

## 3. Research

### 3.1. Innovative enterprises in Europe

According to Audretsch (2005) innovation is one of the most important factors in the activities of the companies, generating in turn, direct and indirect positive effects on the country, stimulating growth.
To gain an insight into innovation activities at the enterprise level, monitoring is required for innovative activities because innovation contributes to growth and development of the economy based on knowledge. Indicators on innovation are

key elements in monitoring the level of innovative activities. Eurostat measures the innovation at the company level through a set of indicators related to innovation introduced or implemented in enterprises based on the above mentioned four types of innovation (product innovation, process innovation, organizational innovation, innovation of marketing) and presented in the Oslo manual (OECD and Eurostat, 2005). Eurostat indicators measure innovative activities and present at the same time a picture of the innovative activities of innovative enterprises in the EU.
According to Eurostat data, between 2010-2012, among countries with values above the EU average in terms of the share of innovative enterprises in all enterprises, for all types of innovations, there are countries like Austria, Denmark, Finland, France, Germany, Italy, Luxembourg. In contrast, with a share of innovative enterprises in all enterprises, below the EU average, there are countries like Romania, Bulgaria, Hungary, Slovakia, Latvia, Lithuania, Poland (Table 2). For most countries in the latter category, individual indicators hardly exceed 50% of the EU average, although this group is not homogeneous, neither within the indicators in the same country nor among the countries.

**Table 2:** Innovative enterprises in EU (selected countries), between 2010-2012

| **Countries** | Innovative enterpri-ses of products and/or processes | Product innovators | Process innovators | Organizatio-nal and/or marketing innovative enterprises | Innovators for methods of organization | Innovators for marketing processes |
|---|---|---|---|---|---|---|
| **E.U. 28** | **36.00** | **23.70** | **21.40** | **37.10** | **27.50** | **24.30** |
| Germany | 55.00 | 35.80 | 25.50 | 47.60 | 32.20 | 34.40 |
| Austria | 39.30 | 26.60 | 28.70 | 46.10 | 36.40 | 29.50 |
| Finland | 44.60 | 31.00 | 29.30 | 38.40 | 29.70 | 26.50 |
| Denmark | 38.10 | 24.80 | 22.90 | 41.80 | 32.20 | 29.40 |
| France | 36.70 | 24.20 | 24.10 | 42.30 | 34.20 | 25.40 |
| Luxem-bourg | 48.50 | 30.30 | 32.80 | 53.50 | 46.80 | 32.40 |
| Italy | 41.50 | 29.10 | 30.40 | 45.30 | 33.50 | 31.00 |
| | | | | | | |
| Romania | 6.30 | 3.40 | 4.60 | 18.80 | 14.10 | 13.80 |
| Bulgaria | 16.90 | 10.80 | 9.30 | 18.60 | 12.40 | 14.20 |
| Hungary | 16.40 | 10.60 | 8.30 | 26.50 | 16.50 | 19.70 |
| Slovakia | 19.70 | 14.40 | 1.50 | 27.70 | 18.60 | 19.30 |
| Latvia | 19.50 | 10.40 | 12.70 | 23.90 | 16.90 | 16.50 |
| Lithuania | 18.90 | 11.60 | 13.10 | 26.20 | 17.50 | 19.30 |
| Poland | 16.10 | 9.40 | 11.00 | 15.50 | 10.40 | 10.60 |

Source: Eurostat, Innovation statistics, [Online], Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Innovation_statistics

Using these indicators contribute to a better understanding of the innovation process and allow an analysis of the link between innovation and economic fields, aimed at monitoring the progress of innovative activity in Europe. For a better picture of the position of each country, in Annex 1 (final) European countries have introduced performance of all these indicators.

### 3.2. Analysis of innovative enterprises and sectors in Romania

We can get data on Romania either from the Eurostat database, either those of the National Institute of Statistics, which aligns to the community actions to collect data on innovation by conducting a statistical survey on innovation, research conducted with a frequency of two years, aiming to obtain a set of indicators for the characterization of innovation and the measurement of the development of innovative activities in Romania.

According to the European regulations on innovation statistics, the scope of a statistical survey on innovation is the total population of enterprises operating in industry and services. In the statistical survey there are comprised the enterprises with the following main activity: mining and quarrying; manufacturing industry; production and supply of electric energy, gas, hot water and air conditioning; water supply, sewerage, waste management and remediation activities; wholesale trade except motor vehicles and motorcycles; transport and storage; information and communication; financial and insurance; professional, scientific and technical. The enterprises have been selected according to the size, the number of employees (Dumitriu and Nunu, 2016).

Between 2012-2014 the National Institute of Statistics of Romania paid an integrated statistical survey on research and development and innovation in business enterprises based on a community questionnaire "Community Innovation Survey", known as abbreviated CIS, provided by the European Commission through Eurostat, on a sample of 28 380 enterprises with activities in industry and services. Of the 28 380 enterprises, 3645 enterprises have developed innovative activities, of which 3334 are successful innovators, the remaining 311 enterprises with innovations being finalized and/or abandoned (NIS, 2016).

In the period 2012-2014 the share of innovative enterprises was 12.8% of all enterprises considered sampled and non-innovative enterprises by 87.2%. Of all innovative enterprises a rate of 3.5% introduced or implemented only products and/or new or significantly improved processes, while 6.3% of them have only implemented organizational innovations and/or new or significantly improved marketing. A share of 3.0% of innovative enterprises had innovation as product and/or process and organizational innovations and/or marketing.

Of all enterprises with innovative products and/or processes (6.5%), 1.1% had innovations only of products, 1.8% had innovations only of processes, and 2.5% had both innovations of products and processes, while 1.1% were enterprises with innovative products and or processes completed and/or abandoned. Of all enterprises with organizational innovations and/or marketing (9.4%), 2.8% were enterprises with organizational innovations only, and the enterprises with marketing innovations were only of 2.7%. Companies that had both innovation and marketing organization recorded a higher share or 3.9%, see also Annex 2 (Dumitriu and Nunu, 2016).

Figure 1 presents the share of innovative enterprises in Romania, in all enterprises by types of innovations, between 2012-2014.

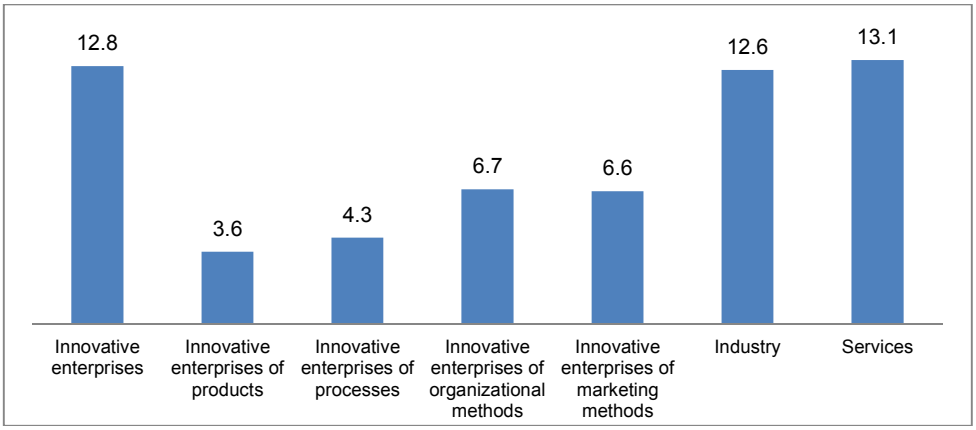


**Figure 1:** The share of innovative enterprises in Romania, in all enterprises, by type of innovation between 2012-2014
Source: Based on the National Institute of Statistics (NIS), (2016), Press Release No. 189/28 July 2016

If we classify innovative enterprises after each type of innovation (regardless of the other types of innovation), the innovative of organizational methods enterprises that used forms of organizing new business practices of the enterprise, in workplace organization and external relations enterprise, which were used by the enterprises, registered the highest share, i.e. 6.7%. The enterprises that have implemented a new concept, strategy or method of marketing that has not been used before had a share of 6.6%, while the enterprises innovative of processes have had a share of 4.3% and that of products of 3.6%. Service enterprises were innovative, accounting for 13.1% of all enterprises, while the industry has a lower score, 12.6% of all enterprises.
INS survey results on innovation in enterprises show that the share of innovative enterprises in the period 2012-2014 (12.8%) was down 7.9 percentage points from the previous period 2010 to 2012 (Figure 2). In fact, Romania's innovation performance, expressed as the percentage of innovative enterprises (in various stages or guidelines) is about 30-50% lower in 2014 compared to 2012. The decrease is manifested in four of the five categories, while we notice an increase only for product/process innovators, an indicator which, however, had the worst performance, both in Romania and in all European countries.
Romanian enterprises performance in this respect are worse about 6 times (!) the EU average and 8-10 times the performance of the highest ranked (Germany, Finland, Luxembourg, Italy). In the group in which Romania was introduced (mostly countries of Central and Eastern Europe, Romania's performance in these indicators is 2 or 3 times weaker than a possible average of the group (Table 2).

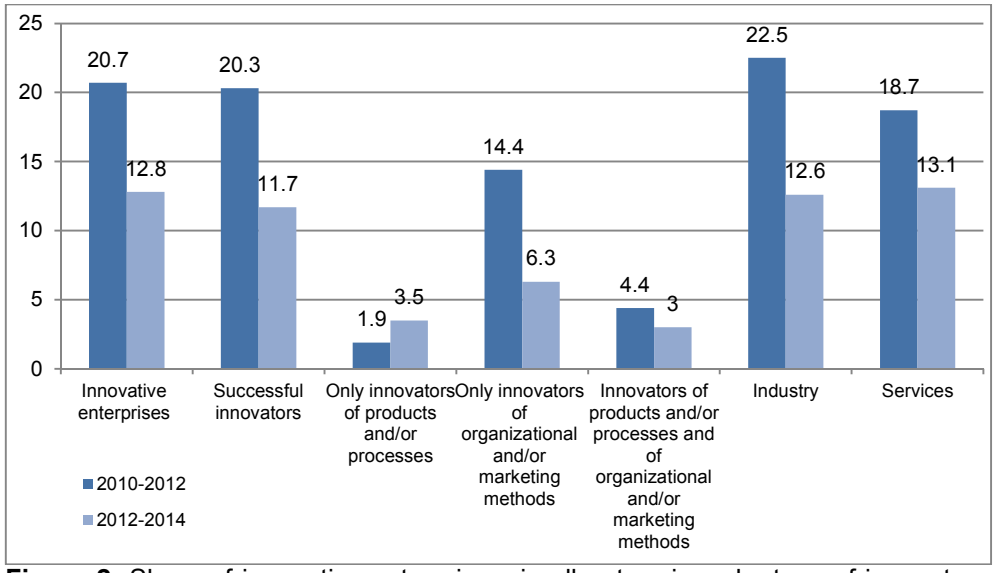


**Figure 2:** Share of innovative enterprises, in all enterprises, by type of innovators and economic activities in the period 2012-2014 compared to the period 2010-2012
Source: Based on the National Institute of Statistics (NIS), (2016), Press Release No. 189/28 July 2016,

According to the data provided by the NIS, within the economic activities in industry, the largest share is held by the manufacturing industry 95.2%, while the remaining sectors have weights much lower: water supply, sewerage, waste management and remediation activities 2.3%; production and supply of electricity, gas and air conditioning, hot water 1.4%; and mining and quarrying 1.1%.
In the service sector, the largest share of innovative enterprises, all enterprises owned by wholesale 39.2%, followed by information and communications 26.0%, the transportation and storage 16.8%, professional, scientific and technical 13.1% and brokerage financial and insurance by 4.9%.
In the period 2012-2014, the most innovative economic activities, industry and services, calculated according to their share in total enterprises in their sector they were those of: research and development 54.2%, manufacture of basic pharmaceutical products and pharmaceutical preparations 39.7% and information technology services activities 36.6%. Top 10 innovative activities (sectors) of Romania, between 2012-2014 can be seen in Table 3.

**Table 3:** Top 10 innovative activities (sectors) of Romania between 2012-2014

| | **Economic activity** | **The share of innovative enterprises in total enterprises in their sector** |
|---|---|---|
| 1. | Research-development | 54.2 |
| 2. | Manufacture of basic pharmaceutical products and pharmaceutical preparations | 39.7 |
| 3. | Information technology service activities | 36.6 |
| 4. | Manufacture of coke and refined petroleum products | 30.8 |

| | | |
|---|---|---|
| 5. | Telecommunications | 23.2 |
| 6. | Remediation activities and services | 22.2 |
| 7. | Metallurgical industry | 22.2 |
| 8. | Manufacture of other transport means | 22.0 |
| 9. | Manufacture of chemical substances and products | 21.8 |
| 10. | Publishing activities | 21.3 |

Source: Dumitriu and Nunu, (2016), *Înovaţia în întreprinderile din mediul de afaceri perioada 2012-2014*, Institutul Național de Statistică, p. 23

Analysis of data in the above table suggests significant differences against a pattern associated with the developing countries, but it itself does not reveal the true performance (or, rather, under-performance) of Romania in comparative terms - EU or even of Central and Eastern Europe. It is obvious that sectors like R & D, pharmaceutical or ITC accumulate the highest number of innovative enterprises, but it is reasonable to ask why economic sectors that no longer have long "spearhead" in innovation worldwide (products sector of coke and petroleum, metallurgy and publishing) are present in the top 10 innovative sectors in Romania? In other words, this information must be supplemented by analyzing the performance of these sectors, especially with comparable data from other European countries and worldwide.

**4. Conclusions**

Innovation is regarded as an essential source for sustaining economic growth and welfare. Numerous studies have analyzed the determinants of innovative activities in companies, focusing in particular on organizational and technological capabilities and associated strategies required for successful innovation. Based on OECD and Eurostat reports, our research highlights the extremely diverse and heterogeneous picture of innovation performance indicators, structured into four main groups (product innovation, process innovation, organizational innovation, marketing innovation).

In this context, Romania's situation regarding the main firm's innovation indicators is not at all encouraging. Compared to the EU average or even other selected ECE countries (Poland, Hungary, Bulgaria, Latvia) the level of some indicators like *innovation in organization and/or marketing* is of 40-60% of the CEE average in these sectors.

For innovative enterprises of products and/or processes, the situation in Romania is much lower. It is about 6 times lower than the EU average, 8-10 times the performance of the highest ranked (Germany, Finland, Luxembourg, Italy), 2 to 3 times that of countries in CEE ( Poland, Hungary, Lithuania, Latvia, Slovakia). Moreover, Romania's innovation performance expressed as the percentage of innovative companies (in various stages or orientations) is falling, being about 30-50% lower in 2014 compared to 2012. Without a policy to improve the outcomes in the educational systems to provide access to advanced knowledge, to promote intrapreneurship and collaboration between companies and institutions, and especially without substantial investments (public and private) in R & D infrastructure (Badulescu and Cadar, 2016), the gap between Romania and the

other countries in the region and especially to performers in the EU will not be reduced but, on the contrary, it will worsen.

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**Annex 1: The share of innovative enterprises in all enterprises in the EU in 2010-2012**

| **Countries** | Innovators of products and/or processes | Innovators of products | Innovators of process | Innovators of organizatio-nal and/or marketing methods | Innovators of organiza-tional methods | Innovators of marketing processes |
|---|---|---|---|---|---|---|
| U.E. 28 | **36,00** | **23.70** | **21.40** | **37.10** | **27.50** | **24.30** |
| Austria | 39.30 | 26.60 | 28.70 | 46.10 | 36.40 | 29.50 |
| Belgium | 46.50 | 31.50 | 31.10 | 37.90 | 29.30 | 21.90 |
| Bulgaria | 16.90 | 10.80 | 9.30 | 18.60 | 12.40 | 14.20 |
| Czech | 35.60 | 25.30 | 24.00 | 31.60 | 20.50 | 22.40 |
| Cyprus | 29.90 | 20.90 | 28.20 | 36.10 | 26.20 | 29.50 |
| Denmark | 38.10 | 24.80 | 22.90 | 41.80 | 32.20 | 29.40 |
| Estonia | 38.40 | 20.70 | 23.80 | 31.80 | 21.70 | 21.90 |
| Finland | 44.60 | 31.00 | 29.30 | 38.40 | 29.70 | 26.50 |
| France | 36.70 | 24.20 | 24.10 | 42.30 | 34.20 | 25.40 |
| Croatia | 25.00 | 16.40 | 19.00 | 31.80 | 22.90 | 23.50 |
| Germany | 55.00 | 35.80 | 25.50 | 47.60 | 32.20 | 34.40 |
| Greece | 34.30 | 19.50 | 25.60 | 45.40 | 30.20 | 36.80 |
| Ireland | 42.30 | 27.80 | 25.90 | 50.80 | 21.80 | 35.70 |
| Italy | 41.50 | 29.10 | 30.40 | 45.30 | 33.50 | 31.00 |
| Latvia | 19.50 | 10.40 | 12.70 | 23.90 | 16.90 | 16.50 |
| Lithuania | 18.90 | 11.60 | 13.10 | 26.20 | 17.50 | 19.30 |
| Luxembourg | 48.50 | 30.30 | 32.80 | 53.50 | 46.80 | 32.40 |
| Malta | 35.90 | 23.90 | 26.40 | 44.40 | 34.70 | 32.60 |
| The Netherlands | 44.50 | 31.90 | 25.90 | 35.70 | 27.30 | 23.20 |
| Poland | 16.10 | 9.40 | 11.00 | 15.50 | 10.40 | 10.60 |
| Portugal | 41.30 | 26.00 | 33.50 | 43.60 | 32.80 | 32.80 |
| United Kingdom | 34.00 | 24.00 | 14.10 | 39.10 | 34.20 | 16.80 |
| Romania | 6.30 | 3.40 | 4.60 | 18.80 | 14.10 | 13.80 |
| Slovakia | 19.70 | 14.40 | 1.50 | 27.70 | 18.60 | 19.30 |
| Slovenia | 32.70 | 23.60 | 22.50 | 37.60 | 26.30 | 28.50 |
| Spain | 23.20 | 10.50 | 15.10 | 23.40 | 19.40 | 13.20 |
| Sweden | 45.20 | 31.50 | 23.90 | 39.10 | 25.30 | 30.40 |
| Hungary | 16.40 | 10.60 | 8.30 | 26.50 | 16.50 | 19.70 |
| Norway | 31.20 | 19.10 | 11.90 | 33.00 | 21.70 | 23.20 |
| Serbia | 31.20 | 24.50 | 22.00 | 41.70 | 32.60 | 32.20 |
| Turkey | 27.00 | 17.70 | 20.40 | 43.70 | 31.70 | 34.70 |

Source: Eurostat, Innovation statistics, [Online], Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Innovation_statistics

Legend:

| |
|---|
| Values under European average |
| Values over European average |

**Annex 2: Types of innovative enterprises across Romania, between 2012-2014**

| Type of innovative enterprise | Number of enterprises | Share in the total of enterprises % |
|---|---|---|
| Total of enterprises | 28380 | 100.0 |
| Innovative enterprises | 3645 | 12.8 |
| Successful innovators | 3334 | 11.7 |
| Innovative enterprises of products and/or processes | 988 | 3.5 |
| Only innovative enterprises of organizational and/or marketing methods | 1805 | 6.3 |
| Innovative companies of products and/or processes and methods of organizing and /or marketing | 852 | 3.0 |
| Innovative enterprises of products and/or processes | 1840 | 6.5 |
| Only innovative enterprises of products | 313 | 1.1 |
| Only innovative enterprises of processes | 511 | 1.8 |
| Innovative enterprises of products and/or processes | 705 | 2.5 |
| Enterprises with innovations of unfinished or abandoned products and/or processes | 311 | 1.1 |
| Innovative enterprise of methods of organizing and/or marketing (regardless of the innovations of products and/or processes) | 2657 | 9.4 |
| Only innovative enterprises of organizational methods | 782 | 2.8 |
| Only innovative enterprises of marketing methods | 759 | 2.7 |
| innovative enterprises of organizational and marketing methods | 1116 | 3.9 |
| Innovative enterprises of products (regardless of other types of innovation) | 1018 | 3.6 |
| Innovative enterprises of processes (regardless of other types of innovation) | 1216 | 4.3 |
| Innovative enterprises of forms of organization (regardless of other types of innovation) | 1898 | 6.7 |
| Innovative enterprises of marketing methods (regardless of other types of innovation) | 1875 | 6.6 |
| Non-innovative enterprises | 24735 | 87.2 |

Source: Dumitriu R., Nunu C., (2016) *Înovaţia în întreprinderile din mediul de afaceri perioada 2012-2014*, Institutul Național de Statistică