

## HIGHLY IMPORTANT OBJECTIVES FOR INNOVATION IN ROMANIA WITHIN THE EUROPEAN CONTEXT

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**Abstract:** *Romania, as a country with a low R&D level, in order to converge to the living standards of western economies, is doomed to foster private investments in applied research and experimental development. Thus, it is critical to study what are the main objectives for innovation at organizational level. This paper investigates the most important objectives for innovation in Romania and in the European Union, aiming to find out what are the main challenges innovative enterprises have to face. The general approach is focused on the analysis of the frequency with which these objectives occur, both at general and structural levels. Therefore we have extracted the most important three highly important objectives for innovation, both in Romania and EU: improving the quality of goods or services, the need to increase the range of goods or services and the entering new markets or increase the market share. All these three are positively correlated with the size (number of employees) of the organization. One of our findings underlines that there are fewer objectives in EU than in Romania, both at general and structural levels. Such a situation suggesting that the differences derive from two main sources: Romania has more needs, thus the enterprises target more goals, and there is a lack of managerial know-how that leads to non-prioritized objectives for innovation. Also, we identified an asymmetry, consisting in the fact that in EU, medium sized enterprises are more likely to act as the small ones, as opposed to the Romanian context. R&D and innovation component should be in the center of the Romanian strategy for convergence and competitiveness strengthening, treating differently the SMEs in order to foster innovation in a sustainable manner, through the encouragement of private enterprises to engage in partnerships for R&D an innovation. Also there is a critical need for governmental intervention in building facilities for the modern business infrastructures (business incubators, industrial parks, clusters, and competitive poles), creating a viable VC market for innovative projects, stimulating the creation of new SMEs and fostering internationalization of the local enterprises.*

**Keywords:** *Innovation; R&D; Objectives; SMEs; European Union*

**JEL classification:** *L29, M14, O32, O52*

## 1. Introduction

Romania presents itself as a country with low R&D level, thus being simultaneously subject to a wide gap in the economic development as compared with the EU average, but also to a great growth potential. The growth perspectives derive primarily from the following characteristics of the Romanian economy: the need for administrative and institutional structural reforms, generous fiscal space, good macroeconomic statistics, competitive labour costs, geographical position and existing natural resources. The administrative and institutional structural reforms can act as development boosting instruments on short and medium term, as their main effects (raising the quality of the governmental act, better law enforcement, greater efficiency of governmental spending, the narrowing of the gap between the nominal and the implicit tax rates etc.) would be rapidly converted in higher confidence in the economy, better positioning in terms of international capital flows and a decrease of the risk associated to Romania (the level of CDS). The existing fiscal space is a great opportunity, as it gives the possibility to allocate governmental funds to the development of the economy. In this sense, the resources could be directed as marginal contributions in order to raise the efficiency of the spending (co-financing the EU funded projects, participating in PPPs, partnerships with the international financial institutions), and should address with priority the following needs of the Romanian economy: creating modern business infrastructure (business incubators, industrial parks, clusters, competitive poles), creating a viable VC market for innovative projects, stimulating the creation of new SMEs and fostering internationalization of the local enterprises. All these sources of growth converge to the idea that developing the competitiveness of the Romanian economy is the number one objective in the medium and long run, and besides the structural and institutional aspects, the enterprises are the ones that can, or cannot, capitalize this potential. In order to make enterprises, an especially SMEs, more competitive on the global market, there should be consistent efforts for innovation, and thus, for internal and external R&D.

## 2. Theoretical framework

The theoretical literature regarding R&D underlines the growing importance of the R&D activities performed in networks as a result of collaborative approaches (Kesavayuth, 2012). The amount of the resources allocated for R&D is a good proxy for forecasting the success rate of the project, being registered a positive correlation between these two elements (Schwartz, 2012). This is why there is a pragmatic need for stimulating collaboration in order to generate the critical mass in order to ensure a risk – reward ratio of the projects that is bearable. There was an intense theoretical debate over the assumption that *“public R&D subsidies crowd out private R&D investment”*, but the empirical findings suggest that *“funded firms are significantly more R&D active than non-funded firms”* (Aerts, 2008).

Great energy was put into studying of the connections between the quality of the corporate governance and the tendency to conduct internal and external R&D. Although it is quite intuitive, the theoretical literature records results that point out that in order to *“enhance companies' innovation and R&D capabilities, need to improve their corporate governance”* (Dong, 2010). In one of the baseline studies focusing on the interconnection of general management and R&D projects underlines the following: *“(1) the presence of CEO incentive schemes increases both*

*corporate innovation effort and innovation performance; (2) sales-based performance measure in the incentive scheme, as compared with profit-based performance measure, is more conducive to firm innovation; and (3) CEO education level, professional background and political connection are positively associated with firm's innovation efforts*" (Lin, 2011). There are works that overcame the analysis phase, and formulated/proposed measures needed for developing the R&D component: (1) improving the management quality in SMEs and (2) incentivizing collaboration and cooperation (Martinez-Roman, 2011). Some authors approached the evolution of the R&D management, emphasizing that *"the perspective on managing R&D processes has changed over the years, moving from a technology-centered model to a more interaction-focused view"* (Nobelius, 2004).

A recent study of ours (Lavric, 2012) is underlying that at EU level, there are three groups of states, that differ one from another in terms of structure and intensity of R&D: (1) high R&D level (Finland, Sweden, Denmark, Germany and Austria); (2) medium R&D level (France, Slovenia, Belgium, Netherlands, Ireland, Great Britain, Estonia, Portugal, Czech Republic, Spain and Italy); and (3) low R&D level (Hungary, Lithuania, Poland, Malta, Slovakia, Bulgaria, Latvia, Cyprus and Romania). In this context, Romania, as a country with a low R&D level, in order to converge to the living standards of western economies, is doomed to foster private investments in applied research and experimental development. Thus, it is critical to study what are the main objectives for innovation at organizational level.

### **3. Methodology**

In this study we use the Eurostat data regarding the "Community Innovation Survey 2010" for Romania and the rest of the EU states. Because of the data availability, there were included the following countries: Belgium, Bulgaria, Czech Republic, Estonia, Ireland, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Austria, Poland, Portugal, Romania, Slovenia, Slovakia and Sweden. We also excluded from the analysis the United Kingdom, although it appears in the statistics, the data is fundamentally inconsistent and out of the normal variability around the rest of the countries.

The data set from Eurostat refers to the highly important objectives for innovation in 2010, including the study of product and/or process innovative enterprises, regardless of organisational or marketing innovation (including enterprises with abandoned/suspended or on-going innovation activities). So, our study will focus on the identification of the most relevant tendencies regarding the objectives for innovation in Romania and in the European Union, focusing the analysis in the following directions: (1) structural analysis in terms of enterprise size, (2) Romania's specificity in the European context and (3) correlation testing between different components.

### **4. Results**

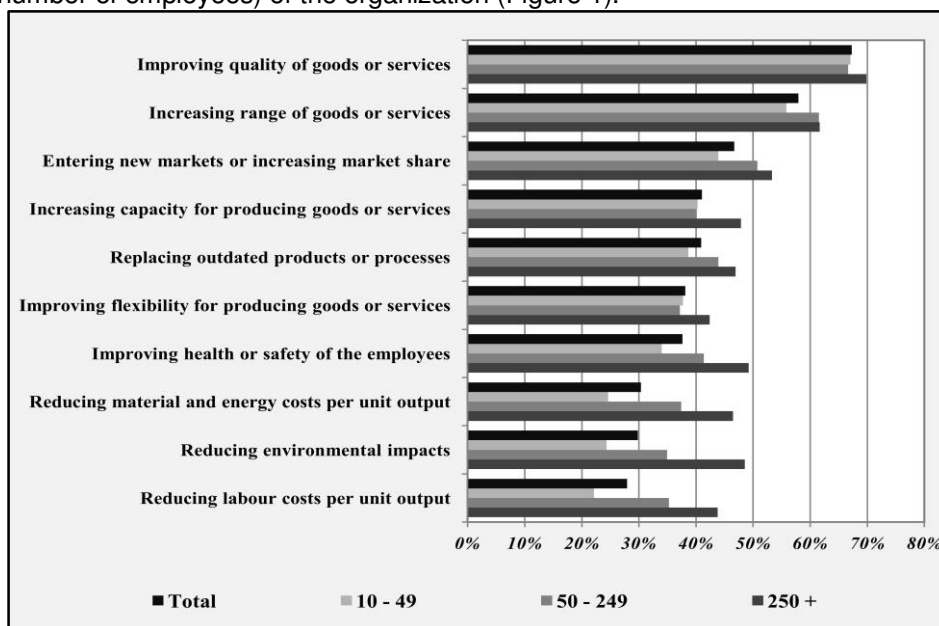
#### **4.1. Highly important objectives for innovation in Romania**

At micro level, it is important to analyze the specifics of product and/or process innovative enterprises, regardless of organisational or marketing innovation (including enterprises with abandoned/suspended or on-going innovation activities). In order to do so, we will focus our attention on the main innovation objectives in the

Romanian enterprises as compared to the EU situation. In this sense, the Community Innovation Survey is delivering data at EU level regarding the highly important objectives for innovation: (1) increasing range of goods or services, (2) replacing outdated products or processes, (3) improving quality of goods or services, (4) improving flexibility for producing goods or services, (5) increasing capacity for producing goods or services, (6) reducing labour costs per unit output, (7) improving health or safety of the employees, (8) entering new markets or increasing market share, (9) reducing environmental impacts, (10) reducing material and energy costs per unit output. As we see, these objectives can be classified at least by two main criteria: by types of resources and by level in a production system flow. By types of resources, we have financial, material, human and informational, and, in a systemic approach, there are inputs, processes and outputs. As we are talking about highly important objectives for innovation, it is clear that through R&D or know-how transfer, the organization is actually fostering primarily the informational resources, that transcend the classical paradigm and materialize in knowledge resources (some authors place it as a fifth type). If we look at the enterprises as open systems, it is obvious that innovation, and especially R&D, are strongly associated to the internal processes, but the objectives we investigate could be easily characterized by the type of the challenges those innovations are aiming to answer. Therefore, increasing the range of goods or services relates more to external pressures (local and external markets, changing consumer behavior, and technological progress), and implies primarily informational, material and financial resources. Replacing outdated products or processes is highly connected to sphere of internal processes in comparison with the technological edge and markets development (that covers such notions as life cycle of products and technology and comparative advantage). Improving the quality is a much more general objective, as there is large space and complexity in defining, in clear, specific and comprehensive terms, what the quality really is. The approach that dominates the debate on quality management, combining wisely the theoretical and the pragmatic aspects, states that quality represents the measure in which a product is responding to/satisfying the consumers needs in both its objective (value adding elements) and subjective (expectations, perceptions, emotions) dimensions. Improving flexibility for producing goods or services is obviously concerning the internal processes (that transform the inputs in order to deliver the output) and primarily the informational and human types of resources. Although flexibility proved to be a constant (for at least two decades) preoccupation of the theoreticians and practitioners in manufacturing, it is critical now as it was back then, because the processes that brought the paradigm shift, not only did not disappear, but got more intense and complex. Increasing the capacity of producing goods or services involves simultaneously, at high intensity, material, financial, human and informational resources. From a systemic point of view, it is more focused on internal processes and inputs. Such an objective it is more likely to appear in a market where there is a supply deficit, that could be generated by the scarcity of resources (natural or human), technological limitations or market asymmetries. This objective for process and/or product innovation it is actually congruence between stimulating productivity and efficiency growth. Reducing labour costs per unit, as well as reducing material and energy costs per unit output, are also related to the above mentioned elements (productivity and efficiency). Improving health or safety of the employees and reducing the environmental impacts, are two

objectives that are related both to the corporate social responsibility of the organizations and to the standards and requirement enforced by national and international laws. Maybe one of the most complex and difficult to fulfill objectives regarding innovation is to develop their capacity to enter new markets or increase the market share. It is mainly because for delivering on this one, there is an inherent need to accomplish at a considerable level the other 9 ones. As we see, there is quite a diverse range of preoccupation regarding R&D and innovation, therefore it is critical to measure and analyze these objectives in order to extract useful conclusions for the governmental authorities, entrepreneurs and managers that could be used in order develop competitiveness, foster internationalization and raise private participation to R&D activities.

Romanian innovative enterprises record on average 4,18 objectives per organization, this indicator being positively correlated with the size of the enterprise (3,88 – small enterprises, 4,49 – medium enterprises, 5,10 in large ones). At general level, the most frequent objective is improving the quality of goods or services (67,29%), being followed by the need to increase the range of goods or services (57,93%) and the desire to enter new markets or increase the market share (46,72%). There are also enterprises for which increasing capacity for producing goods or services (41,06%), replacing outdated products or processes (40,92%), improving flexibility for producing goods or services (38,13%), improving health or safety of the employees (37,60%), reducing material and energy costs per unit output (30,35%), reducing environmental impacts (29,79%) and reducing labour costs per unit output (27,93%) are highly important objectives. Taking a closer look in terms of structure, we find out that there are 6 out of 10 analyzed objectives that maintain the positive correlation between the specific intensity of an objective and the size (number of employees) of the organization (Figure 1).



**Figure 1:** Highly important objectives for innovation in Romania by enterprise size

Source: Community Innovation Survey, Eurostat, own calculations

As a matter of fact, these 6 objectives can be divided into two main groups: objectives whose nominal growth rates are correlated with enterprise size (1) positively (convex profile), (2) negatively (concave profile) or (3) almost non-correlated (linear profile). In the third group there are the most ones: entering new markets or increasing market share; replacing outdated products or processes; reducing material and energy costs per unit output, and reducing labour costs per unit output. Each of second and first categories contains only one objective – reducing environmental impacts, respectively improving health or safety of the employees. In this context, we can argue that in the case of those objectives whose nominal growth rates form a convex rate, small and medium sized enterprises differ consistently from the large ones. On the other side, a concave profile suggests that the medium enterprises are more like large companies, thus small enterprises are characterized as more vulnerable.

#### **4.2. Highly important objectives for innovation in the European Union**

The innovative enterprises from the European Union record on average 3,14 objectives per organization, this indicator being positively correlated with the size of the enterprise (2,98 – small enterprises, 3,37 – medium enterprises, 4,02 in large ones). As we see, there are fewer objectives in EU then in Romania, both at general and structural levels. Such a situation suggests that the differences could occur from two main sources: (1) Romania has more needs, thus the enterprises target more goals, or (2) there is a lack of managerial know-how that leads to non-prioritized objectives for innovation. Even if the first hypothesis is true, in order to catch up the developmental gap, there should be established priorities, as the resources used are not endless. At general level, the most frequent objective is improving the quality of goods or services (49,84%), being followed by the need to increase the range of goods or services (46,58%) and the desire to enter new markets or increase the market share (41,97%). There are also enterprises for which replacing outdated products or processes (32,12%), increasing capacity for producing goods or services (28,72%), improving flexibility for producing goods or services (28,33%), improving health or safety of the employees (24,52%), reducing labour costs per unit output (22,52%), reducing environmental impacts (19,92%) and reducing material and energy costs per unit output (19,20%) are highly important objectives. It is obvious that the main hierarchy of the objectives is kept almost the same in Romania compared to the EU average, thus emphasizing that there are core challenges that all the EU states are facing and are pursuing to overcome through R&D and innovation.

Another two findings are that, in the EU context, (1) the frequency of all the analyzed objectives is positively correlated with the size (number of employees) of the organization, and (2) only one objective has a concave profile, while the others are characterized by a clear convex profile.

#### **5. Conclusions**

The underdevelopment of the Romanian economy and the growth rates that are below the potential, underline the need for a coherent strategy for convergence and competitiveness strengthening. So, the R&D and innovation component should be in the center of this catch-up process, and in order to do so, we have to start from

identifying the real needs of the enterprises, i.e. their objectives for innovation. Also, in order to foster innovation in a long term paradigm, SMEs should be encouraged to engage in R&D activities jointly with other organizations (other enterprises, universities, public and private research institutes, NGOs etc.).

In our study we identified, from a list of ten, three highly important objectives for innovation, both in Romania and EU: improving the quality of goods or services, the need to increase the range of goods or services and the entering new markets or increase the market share. All these three are positively correlated with the size (number of employees) of the organization. Also, it is quite obvious that they express the enterprises response to the globalization processes, underlining the importance of R&D and innovation in the in the global economy.

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