The Innovation Public Policies  
and the Firms’ adoption of Innovative Processes -  
- A New Methodological Approach for Evaluation

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Abstract

Today, innovation is present in the discourse of politicians and business leaders. They see innovation as a positive value and as a solution to solve social problems and company’s competitiveness, so organizations are encouraged to adopt innovative practices through incentives and innovation policies.

Several economic and sociological studies have shown that Portuguese companies adopt more easily technological innovations (with short-term effects) than organizational and social innovations. In this sense, we will consider innovation public policies effects at Portuguese companies and how they take available opportunities for innovation. The aim is to know if the concept of innovation spread by these policies is multidimensional (e.g., social, economic and technological) or restricted.

We propose to study the factors (internal and external) that affect innovation processes in enterprises through case studies methodology. This research strategy will show us the processes of innovation from within the organizations and analyze the socio-economic context in which organizations operate through a new methodological approach for evaluation.

Keywords: Innovation, Innovation Systems, Public Policies, Enterprises, Territory

JEL Classification: J58, O31, O38

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Introduction

Nowadays, the concept of innovation presents itself as a fashion or a modern myth. The innovation issue appears a commonplace in speeches of groups with different interests and positions in society and it seems to have the power to generate social consensus. Innovation is often considered, by policy makers and business leaders, the only way to solve urgent societal problems and firms’ competitiveness. Innovation is regarded as a positive value and every efforts oriented towards the development of significant novelties are fostered (e.g. incentives, innovation policies).

Nevertheless, even innovation has a dark side. Already Joseph Schumpeter referred to innovation as “creative destruction” because innovation offers opportunities but it entails risks to. Some types of innovation (e.g. radical innovation) questions existing competences and routines and requires new patterns of behavior. Moreover, new technologies and processes can unleash unforeseen side effects which can turn innovation into a danger (e.g. green biotechnology can menace rural economies). Firms which are able to develop innovative products can certainly contribute to the growth of a country and society development, but can also cause new problems (e.g. information technologies endanger data privacy).

Innovation is a complex and multidimensional concept (cultural, economic, organizational, social and technical) and there are several types of innovation: innovation in products and services; innovation in production processes, equipment and formulas to provide services; social and organizational innovation; changes in attitudes and behavior, etc.

Usually, innovation studies consider different factors affecting innovation processes (e.g. institutions, power relationships…) but few contributions focus on the interplay of these factors. This paper aims to overcome the fragmentation of the level of analysis (the micro, the meso or the macro level of analysis) and encourages the connection of analyses of the inside of organizations with analyses of the societal context in which firms operate.

Since organizations are able to coordinate long chains of action and link crucial resources, they often addressed as potential innovators. Starting from the idea of the paradoxical nature of innovation we want to understand if and how firms find a balance between the chances and risks of the innovation and to know the role innovation public policies plays in the firms’ adoption of innovative processes.
Some studies about the status of Portuguese firms concerning innovation show that there is no systemic concept of the organization. It appears that innovative practices focus almost exclusively on technology innovations and less on social or organizational.

The problem leads us to the following questions: given the value of innovation and the conviction that it is positively related to business competitiveness, how public policies to support innovation and the institutional environment help to improve or discourage the adoption of innovations by firms? What kind of innovation perspective are firms adopting - a multidimensional perspective (cultural, economic, organizational, social and technological) and long-term or one-dimensional and short-term?

The main aim of this paper is also to conceive a methodology model to assessing the impact of innovation public policies in Portuguese SMEs, and the internal management of innovation processes originated in the incentives for innovation provided by this policy.

1. Theoretical framework

1.1. The Concept of Innovation

The debate of innovation becomes stronger from the 1970s, when, by strength of changes in economic and socio-cultural context, become visible the great changes in production systems. This issue has traditionally been studied by Economics, but it has attracted interest from other scientific fields, including Sociology2.

In economics, the concept of innovation was introduced by Schumpeter. This author emphasized the role of technological innovation in creating value and the importance of individual entrepreneurs for entrepreneurial dynamism. According to Schumpeter technological innovation creates a “creative destruction” that undermines the traditional ways of creating value and provides income to the entrepreneurs responsible for their introduction (Cunha, Rego, Cunha & Cardoso, 2004; Oliveira, 2008).

In the economic perspective, the meaning attributed to the notion of “innovation as technical change” has varied over the time according to different theoretical perspectives. Until the 1950s, the “technical progress” (improvements in equipments) is synonymous of “process innovation”. Later, the notion of “product innovation” becomes an issue of great economic importance. Schumpeter's contribution for the recognition of the concept of

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2 A sociological approach brings to the center of research the actors and the social relations of production of innovation (Oliveira, 2008: 2).
“product innovation” was very important, but it only would be recognized by economists in 1980s with Rosenberg’ contributions.

Drucker (1986: 39) recognized the conceptual legacy of Schumpeter and states that innovation is “the imbalance introduced by the innovative entrepreneur, and not the balance and optimization, is the standard of a healthy economy and the central reality of economic theory and practice”.

The contributions to the definition of innovation are numerous. In what follows we present several definitions of innovation compiled by Cunha et al (2004: 607).

Downs & Mohr (1976) definition highlights the element of novelty as a prerequisite for innovation, which should result in the “adoption of means or ends that are new to the organizational unit that takes it”.

Butler (1981) highlights the changing behavior (individual and organizational) as a requirement for innovation, which happens through the “selection and retention of any change in behavior that includes variety of products, processes and organizational characteristics”.

For Rogers (1983) “an innovation is an idea, practice or object perceived as new by an individual or other organizational unit of adoption”. In this definition, innovation depends on the value attributed to the novelty, the meaning that actors attribute to it and its usefulness.

In Handy’ definition (1985) the concept of innovation approaches to the notion of change in the products and processes of the organization: “innovation includes all activities aimed at changing the things that the organization does or the way how organization does it”.

Dosi’s definition (1988) of innovation includes several kinds of behaviors, and sometimes even conflicting, ranging from search and discovery to the reproduction of the existing: “innovation concerns the search, discovery, experimentation, development, imitation and adoption of new products, new production processes and new organizational structures”.

Some authors chose to limit the definition of innovation to the specific context of business. This is the case of Drucker, who says “innovation is the specific instrument of entrepreneurship. It is the action that endows resources in a new capacity to create wealth. The innovation creates the resource. A ‘resource’ is something that does not exist until man discovered a use for something existing in nature, and thereby provide an economic value (Drucker, 1986: 42).
Porter (1990) opts for a definition of innovation in a broad sense “to include the improvements in technology and in methods or processes of doing things. It can manifest itself in changes in products, processes, new marketing approaches, new forms of distribution and new ideas”.

For others authors, the novelty (in the sense of a rupture with the present situation) is an essential criterion in order to talk about innovation. This is the case of Amara (1990) – “innovation means to create, to launch or disseminate something new. This ‘something’ new may be a new product or tool, a new service, a new process, a new material or a new organizational form”- and (Mezias & Glynn, 1993) – “innovation materializes new ideas not consistent with the current concept of organizational business”.

In Lundvall (1992) point of view innovation involves processes of learning as a result of relational dynamics between firms and other elements of the institutional environment. “Innovation can be considered as new possibilities and use of pre-existing components. Most innovations reflect previously existing knowledge but combined in new ways”.

In the Green Paper on Innovation of the European Commission (EC) (1995) “innovation is taken as being a synonym for the successful production, assimilation and exploitation of novelty in the economic and social spheres. It offers new solutions to problems and thus makes it possible to meet the needs of both the individual and society”. This definition stands innovation as a social phenomenon and not just as an economic mechanism or a technical process. The concept is taken as a positive value which falls on expectations of solving social problems (Oliveira, 2008).

In the same document innovation has a variety of roles: it’s a driving force, which points firms towards ambitious long-term objectives; leads to the renewal of industrial structures; is responsible for the emergence of new sectors of economic activity. In brief, innovation is: i) the renewal and enlargement of the range of products and services and the associated markets; ii) the establishment of new methods of production, supply and distribution; iii) the introduction of changes in management, work organization, and the working conditions and skills of the workforce (EC, 1995: 1).

In the innovation context individual and organizational skills matter. So, innovative firm should have a number of characteristic features which can be grouped into two major categories of skills: i) Strategic skills - long-term view; ability to identify and even anticipate market trends; willingness and ability to collect, process and assimilate technological and economic information; and ii) Organizational skills - taste for and mastery of risk; internal cooperation between the various operational departments, and external cooperation with
public research, consultancies, customers and suppliers; involvement of the whole of the firm in the process of change, and investment in human resources (EC, 1995: 1).

Research, development and the technological factor are key elements in innovation. For incorporating these elements firm must make an organizational effort by adapting its methods of production, management and distribution. But the essential factors are, in European Commission point of view, human resources. “In this respect, initial and ongoing training play a fundamental role in providing the basic skills required and in constantly adapting them”3 (EC, 1995: 1).

The Green Paper emphasizes the technological component but also values the organizational aspects in recognizing the need to involve workers in technological change and its implications for the organization of production and work, and the mechanisms of interaction within the company (Kovács, 2000: 36).

Another view of innovation associated the concept with the developed world: “The innovation, including its successful deployment in production processes, has been hailed as the only avenue by industrialized countries to sustain economic growth and material well-being” (Gattiker, 1990: 15).

The idea that innovation has a crucial role in the processes of economic development of countries, through the action of firms, is shared by several authors including Schumpeter. Innovate is a prerequisite for dealing successfully with the permanent needs of adaptation to an environment increasingly unpredictable, unstable and dynamic (Kovács, 2000).

Innovation can also be defined as a way of “trying out ideas and inventions of their own or others with a view to achieving improvements in production, marketing or organization” and is “the way to mobilize, organize and control material resources, knowledge and human resources of an organization” (Lisboa, 1998). This author takes innovation as a positive value and draws our attention to the need to evaluate each process that underlies innovation.

The motivations of firms to innovate are various and can be associated with survival strategies, competitive strategy or make himself the subject of innovation. In addition to the intrinsic motivations of firms to innovate, we must also consider the diversity of external factors to stimulate innovation, particularly in its social, economic, technological, political and legal dimensions (Kovács, 2000). The company’s ability to learn and innovate depends on the internal and external environments. The environment outside the company

3 Many studies and analyses show that a better educated, better-trained and better-informed workforce helps to strengthen innovation.
deserves all the attention because it depends on the motivation to innovate and drive it most of the policies of regional economic development (Vaz, 2006).

Figure 1 – Firms’ external and internal environments

![Diagram of Firms' external and internal environments]

Source: Authors own elaboration

The set of definitions presented points to three core features of the concept of innovation: i) ambiguity - innovation is an open and contingent concept, i.e. it does not produce unique answers to solve problems; ii) ubiquity - innovation is an intrinsic variable of the economic systems because they constantly create new products, processes and markets, and iii) cumulative - the organizational innovation is a cumulative process based on technology and knowledge. In this cumulative process, experiences and practices from the past can impose himself as resistance to change in organizations. For this reason, the innovations do not always produce continuous improvement. Assuming that innovation is a “creative destruction”, successful innovations require disruption (Cunha et al, 2004: 607).

In short, the concept of innovation is complex and multifaceted (Kovács, 2000) and appears as a small label for a wide variety of phenomena (Cunha et al, 2004). The concept hosting a variety of situations such as: “the adoption of new technological solutions or work processes, launching new products, competition in new markets, establishment of agreements with customers or suppliers, the discovery of new source raw materials, a new manufacturing process, a new way to provide after-sales service, a new modus operandi for the relationship with customers, etc.” (Cunha et al, 2004: 605).
1.2. **Types of innovations**

Innovation is a complex and multidimensional concept and there are several types of innovation. We present below some of the numerous classifications of innovation produced in the literature.

Schumpeter builds a typology of innovation in historical basis. The author defined the following types of innovation: i) a new product / new quality product; ii) introduction of a new method of production / new business process; iii) opening a new market for a sector or a country; iv) acquire a new source of raw materials or products and v) a new form of organization (e.g. monopoly) (Oliveira, 2008).

Abernathy & Utterback (1998), among others, distinguish the *product innovation* and the *process innovation*. Product innovations are focused on developing and improving the products functions in order to marketing new or improved products. Process innovations refer to the adoption of new processes, or process improvement in manufacturing, i.e., introduction of new production equipment (e.g. transition from mechanization to automation).

In the economic profitability point of view, innovation in product and innovation in process are relevant and considered together. This differentiation is peaceful within the theoretical framework and objectives of the economy, but is meaningless in other contexts, including the social production of innovation. The innovation process is not restricted to changes in equipment, also covers other areas such as organization of work and production, which have historically been linked to technical change. Indeed, in a certain perspective, innovation in process and innovation in product are articulated like a puzzle (Oliveira, 2008: 21).

Another relevant typology distinguishes *social innovations* and *technological innovations*. The first have greater impact on social and organizational life (Collins & Porras, 1994), and are examples of social innovation the publicly traded companies, the development laboratory, mass production or assembly line. The technological innovations can be found on the Internet, the biotechnology or the computer (Cunha *et al*, 2004: 617).

The classification of Chesbourg & Teece (1996) distinguishes *autonomous innovations* and *systemic innovations*. The first are independent so can be developed in isolation (e.g. a new braking system). The systemic innovations are those whose benefits can only be performed in conjunction with related or complementary innovations (e.g. introduction of the management system just-in-time).
Another classification, which includes the types of innovation mentioned above, is the distinction between radical innovation and incremental innovation. Radical innovation introduces a discontinuous change in the functioning of the organization. It establishes a new design for a product or process and can shake the foundations of the industrial structure (Cunha et al., 2004). It can also kill the already established firms due their inability to adapt to the external environment (Hannan & Freeman, 1984). This kind of innovation may result from deliberate research inside the firms or in outside organizations and the results are products or processes completely news (Oliveira, 2008). Incremental innovation improves or enhances a dominant product or process without threatening its existence. Its expression is not enough to threaten the status quo of a sector of activity (Dutton & Dewer, 1986; Tushman & Anderson, 1986). The changes produced by incremental innovation are beneficial to the market of products and processes already exist (e.g. using a different raw material, the same product with a new design, new use of a certain product, a better performance ... ) (Oliveira, 2008).

Schumpeter helps to understand the taxonomy of innovation by differentiating the adaptive response and the creative response. When an economy adapts to a change, or an industry reacts by expansion or contraction in the same pattern of behavior, it is an adaptive response. But when firms do something that differs from the existing pattern of behavior, we are in the presence of a creative response (Oliveira, 2008).

Applying this reasoning to the question of innovation, it can be said that innovation in the process nears the adaptive response, while major innovations in the product (which are usually associated with major innovations in the process, the business organization and market management) correspond to creative responses

1.3. Technological innovation versus organizational innovation

Most of the analysis concerning innovation focuses in the technological dimension and see innovation as synonymous of R&D activities, acquisition of new equipment or launching new products and new processes. However, it has been increasingly internalized the idea that innovation is a complex process that have, in addition to technical and economic aspects, also social, cultural and organizational dimensions (Kovacs, 2000).
The economic and social benefits of organizational innovation were demonstrated by social scientists since the 1920s, but had only practical implementation from the 1970s. Several empirical studies in the Theory of Human Relations demonstrated the influence of social and human variables on productivity (e.g. management styles, motivation, job satisfaction, communication, participation and involvement) (Serrano, 2003). In the 1950s, the “socio-technical approach” (Tavistock Institute of London) proposes a new model of work organization alternative to scientific work organization proposed by Frederick Taylor. Under the contingency theory, the studies of Burns & Stalker (1961) about the management of innovation, point to a dependency relationship between the organizational structures and the characteristics of the environment. It follows the definition of two extreme organizational models - mechanistic and organic - which correspond to stable and predictable environments and unstable and dynamic environments, respectively (Filleau & Ripoull, 2002).

Accepting the assumption that people are more productive, creative and flexible if they are satisfied in their workplace it allows organizational change (e.g. decentralization of structures, enrichment of tasks, improving communication and personal relationship or motivation of workers). These ideas were taken up more recently with different names, such as empowerment, downsizing, continuous improvement, teamwork, etc. (Kovács, 2000).

In the last decades, the interest about organizational innovation issues increased mainly due the crisis of the Taylorist/Fordist dominant model of organization and the technological, economic and sociocultural changes in external environment. According to Crozier (1989) the collapse of the Taylorist/Fordist logic presupposes the emergence of a new innovative logic based on the following four elements: i) the ability to innovate, ii) the priority to quality, iii) the central importance of HR and iv) intangible investment, i.e., in people, systems and relationships culture.

The diversity of approaches and interpretations about the transition to the paradigm of flexibility and for its organizational transformations and impacts is summarized by Castells (1999: 174-175) in four points: i) regardless of the causes and origins of organizational transformation, since the mid of 1970s, we observed a major (industrial or otherwise) division in the organization of production and markets in the global economy; ii) the organizational changes interacted with the diffusion of information technology but, in general, it were independent and appeared before this diffusion; iii) the main purpose of organizational changes was how to deal with uncertainty caused by the rapid pace of
changes in the economic, institutional and technological enterprise, increasing flexibility in
the areas of production, management and marketing; iv) organizational changes aimed at
redefining the work processes and employment practices, introduced a lean production
model in order to save manpower by automating work, job elimination and removal of
administrative layer.

Given the dominant features of the present business competitive environment -
unpredictability and uncertainty - companies must become faster, more flexible and
innovative even in regard to their own social organization. Whereas the organizational
forms easily become obsolete the target of innovation is the organization itself and thus go
from “a world of technological innovations within organizations to a stable social world of
technological innovations in the context of changing social organizations” (Brilman 1997:
37). In this perspective, competitiveness appears associated with the structure and
functioning of the human and social system, so the author recommends the development
and implementation of relevant management models in social terms, whatever the
reconstruction strategy adopted (Brilman, 1997: 82).

In short, faced the conditions of the business, social and technological environment,
innovation seems to be the main route to respond effectively to the challenges of an era of
change. It is with this conviction that Brilman (1997: 37-39) proposes four types of
innovation for companies: i) innovation in products and services, ii) innovation in
production processes, equipment manufacturing and formulas to provide services, iii)
innovation in social organization and especially the reinvention of companies, iv) changing
attitudes and behavior.

“The organizational innovation means the application of new principles to the
production of goods and services, new structures and processes of action, new type of
relationship between people and new models of behavior (values, mentalities and
attitudes)” (Kovács, 2002: 43). This type of innovation requires more tacit knowledge than
technological innovation and its costs and benefits are harder to quantify. The interest in
organizational innovation becomes associated with what Kovács (2000) describes as the
critical aspects of competitiveness - productivity, quality and flexibility.

The traditional organizational models, focusing on stability and predictability, are
replaced by new models, focusing on reducing costs, improving quality and increasing
flexibility. “The innovation of products and processes requires a greater integration
between several areas (production, R&D, marketing…), communication and cooperation
between experts and workers, between producers, suppliers and customers as well as
between producers and consumers” (Kovács, 2000: 37). This is why we speak in innovation as a dynamic process of continuous improvement that requires a learning culture intraorganizational and interorganizational.

In the 1980s, the emergence of Japan as a strong competitor showed that the social and organizational innovations are associated with strong organizational cultures. Several comparative studies try to prove the superiority of Japanese firms in relation to American and European companies in several aspects, like e.g. exploiting the potential of new technologies and the rapid development of new products due the importance attributed to the organization and management methods. The corporate culture has become a central topic for actors with different interests and the management culture is emerging as the most suitable model for achieving the flexibility, i.e., the rapid adaptation of individuals, groups and organizations to technological changes and market demands (Kovács, 2000).

Throughout the 1980s, had been developed new practices of human resource management (HRM) in the fields of team groups animation, training and re-qualification, management of employment, skills and mobility, recruitment and external placements. Acting on firm’ HR means giving more attention to people and motivate them to work to ensure the survival of the firm and keeping jobs. With HRM, we are witnessing the emergence of a new model for the management of the human problems of production. From now firms should support their economic development strategies considering a series of human factors of production like living conditions, working conditions, ongoing training, participative organization, career assessment, information systems and decision making (Sainsaulieu, 1993).

Organizational innovation becomes a practical question in the search for flexibility not only a subject of academic interest. There are no reference organizational models, so the four models we’ll present are considered those whose methods and techniques have been influencing the organizational innovations since the end of the 1970s (Serrano, 2009; Kovács, 1998, 2000, 2002, Kovács et al, 2006):

i) Lean production – this Japanese inspired model looks for a more efficient and flexible production by reducing waste and improving productivity and quality. It promotes company’s weight loss through the outsourcing of activities, adoption of management methods that allow workers to organize their own work, learn new skills, assume responsibilities and to seek continuous improvement. The subcontractors are integrated into a hierarchical network and the major suppliers and customers are involved in design and product development (Kovács, 1998, Kovács et al, 2006). Competitiveness depends,
beyond the technological level, on other key dimensions to ensure operation in accordance with the principles of just in time and total quality. These dimensions of social and organizational nature are, e.g. the flexible work organization, the versatility of workers and their unlimited availability to the company (Kovács, 1998; Wood, 1992);

i) Anthropocentric model - this model of sociotechnical inspiration seeks to reconcile economic and social objectives (Wood, 1992). Is supported by a post-taylorist logic and is defined as “a decentralized organization of advanced technologies and qualified human resources where the operational level controls the technology and the division of labor” (Kovács 1993: 11). This model searches the simultaneous improvement of business competitiveness and work quality of life, the integration of advanced technologies and skilled HR in decentralized and participatory organizations. Cooperation between unions and employers aims to achieve socially acceptable solutions at the macro level and internal consensus. For Kovács, the two pillars of the anthropocentric model are i) the human resources development and the requirement of new technical and social skills at the different levels of qualification and ii) the implementation of new organizational principles such as autonomy, creativity, professionalism, decentralization, participation and cooperation (Kovács, 1993: 11);

ii) Re-engineering - this model appears in the first half of the 1990s as the American alternative to the Japanese model. In this case the emphasis is on the rationalization of the operational processes (essentially at the services level) through the grouping of jobs and tasks and the exploration of the information and communication technologies potential, in order to increase flexibility and eliminate waste. The flattening of the structure and the decentralization of decision making shifts the coordination of middle managers for local area networks (Kovács, 2002);

iii) Networks and virtual organizations - are the typical organizational models of the information society. They are temporary structures that can take many forms and contain different types of relationships - e.g. cooperation based on partnership or dependence based on dominance (Kovács, 2002; Castells, 1999; Brilman, 1997; Butera, 1991). Among the advantages of network organizations can be highlight the possibility to be a privileged and extended space for technological and organizational innovation if prevails a logic of cooperation and autonomy and a balanced division of labor among the network companies Kovács (2002).
1.4. Innovation, competitiveness and knowledge

Often, the concepts of innovation and competitiveness are taken as synonyms. Two companies may have high levels of competitiveness and opposing strategies, e.g.: i) unskilled labor, low levels of supervision, low salaries (ideal-type of textile) and ii) skilled labor, high rates framework, relatively high wages (ideal-type of computer software). There are two possible strategic orientations - high road and low road - to face the challenges of international competition also recognized by Harrison (1997). Put simply, the relationship between competitiveness and innovation can be formulated in two extreme ideal-types of competitiveness standards: i) the traditional pattern of competitiveness based on price (process innovation) and ii) a new competitive pattern based on innovation (product innovation).

In Porter’s terminology a competitive firm has the ability to combine high wages and high prices in international markets. The discourse about productivity gains, competitiveness and innovation, says little about the social reality of a country, a region or a company. The analysis of the “sustaining competitiveness factors” (Porter, 1990) helps to understand why companies, sectors, countries or regions have similar levels of competitiveness supported on different factors and report on the competitiveness strategy adopted.

From this perspective resulting two consequences: i) science is the 3rd factor of production together with the capital and labor and ii) the necessary knowledge is based more in “intellectual work” (knowledge workers) and require more basic school education. Considering that science is a contribution of major importance for innovation, knowledge resulting from scientific research is the base ingredient of technological innovation (Oliveira, 2008: 28).

Although the literature focuses on the importance of academic knowledge for innovation, there are some authors who admit other types of knowledge, like the typology of learning for innovation proposed by Lundvall (1992) and Malerba (1992): i) learning by doing - can improve the work process in order to enable improvements in efficiency and productivity gains, and ii) learning from advances in science and technology - can lead to major innovations in the product or radical innovations. These two types of learning, mobilize very different kinds of knowledge.

The concept of knowledge is used in the literature to describe all knowledge useful for innovation, independently of the origin and nature of that knowledge. The neoclassical
perspective prefers to use the term “technology transfer” to refer to the transfer of goods and services (e.g. capital or goods). In this process there is no place for man, is the metaphor of the invisible hand that remains on the market of techniques (Oliveira, 2008).

It was Lundvall, in the context of National Innovation Systems (NIS) approach, who gives the relevance of knowledge transfer as a learning process, making it a central theme in this heterodox approach of innovation. “The innovation reflects learning” (Lundvall, 1992: 9) and learning requires the involvement of people. According to Oliveira (2008) is by this means that the individual enters implicitly in the economic approach of the innovation.

The mobilization of knowledge useful for innovation requires two kinds of knowledge: the tangible knowledge (present in equipment and other products for immediate use) and intangible knowledge (incorporated in people who require learning and assimilation). In this perspective, the diagnosis of problems found in the transfer of knowledge lies in the obstacles to movement (and dissemination) of knowledge so should be promoted mechanisms and policies to remove such obstacles and promote the circulation and use of knowledge (Oliveira, 2008: 51).

The world economy is today based on the gradual transition from a resource-intensive to a knowledge-intensive economy. The economic capacity to gain competitive advantage and economic developments of the innovation depends more than ever, on the way how companies, institutions and territories are able to disseminate, adapt and apply information and knowledge (Neto, 2001).

1.5. National Innovation Systems and Regional Innovation Systems

The “theory of national innovation systems” (NIS) (Lundvall, 1992; Nelson, 1993) proposes a new perspective to the question of innovation. The technical change is viewed in a dynamic way and it is assumed it results from processes of learning and cooperation between enterprises and other institutions.

What are the contributions SNI theory brought for clarifying the concept of innovation? At a first glance it seems to have made the definition less clear because the generic definition of innovation includes process innovation and product innovation. But it should be noted that product innovation and process innovation are quite distinct in terms
of content, form, social players involved, knowledge mobilized and competitive logic in which they operate (Oliveira, 2008: 9).

The NIS shows that technology is not given, the process of technical change is not restricted to the company and the institutional framework is also important in its development and its diffusion. Innovation is therefore a process that unfolds in space and time (Oliveira, 2008: 7).

The economic benefits of technical change (downstream) and the process of innovation induction (amount) are considered by many authors. Freeman (1997) is interested in the evolution of institutions and the “long cycles” of the economy. The author show that clusters of technological innovations redefine the effective economic conditions and the sectoral economy composition – by the emergence of new sectors and by redefining the boundaries of the existing ones - which implies the need of institutions renewal. For this author, the NIS refers to a set of institutions, public or private, that relates to each other and has the ability to promote technological innovation.

Porter (in Oliveira, 2008: 8) attempts to relate the institutional environment in which companies fall and their ability to produce innovation and understand how this framework can explain the difference between firms in different countries. From an operational standpoint, the author considers four main aspects:

i) the ability of each country regarding the qualification of HR and their scientific and technical basis;

ii) the conditions of the market (size and sophistication of demand);

iii) the articulation between sectors and the presence or absence of “supporting industries”, in that it may enhance or not the transfer of technology;

iv) the structure and strategy of companies and the relationships that develop between them, in that it assumes that these depend on the institutional context in which they operate.

For Nelson (1993) the relevant institutions of the NIS are the organizations of Science and Technology (S&T), the policies of S&T and the issues related with intellectual property.

Lundvall (1992) introduces a new strand in the logic of the NIS - the issue of learning. This takes place in the interactions between producers and users by distinguishing two levels of operation of the system: i) the institutions and ii) the industrial structures.

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4 Organizations, formal rules and behavior patterns shared by different actors of a system (Lundvall, 1992)
Assuming that innovation is a process has consequences. First, the fact that all the factors that contribute to achieving the innovation process are themselves considered innovation. In this sense, innovation should be distinguished from supporting factor for innovation because changes in factors cannot lead in innovation (new technical artifact), given the intrinsic nature of uncertainty surrounding the whole process.

For Nelson & Winter (1977), there are no “natural technological trajectories”. This statement simultaneously rejects the technological perspective of neoclassical and evolutionary perspectives of technical change and accepts the theoretical assumption that technical change is a social process.

Schumpeter (1991) helped to make more objective the separation between the “world of technology” (invention) and the “world of economy” (innovation). Thus, the inventor developed the technology and the entrepreneur (entrepreneur-innovator) combines the creative elements available (including technical knowledge). For the author, innovation is less associated with new knowledge, the scientific or the ability to take risks, and closer to the spirit of creativity or initiative capacity of entrepreneurs. In this perspective, innovation is the combination of existing elements in a creative way.

According to the NIS innovation is viewed as a process that unfolds in time and space - in a broad institutional framework - and includes the invention, the innovation and the diffusion (simultaneous processes intrinsically and intimately articulated) (Oliveira, 2008).

For Kline & Rosenberg (1986) innovation involves the technique creation and its marketing, so the last criterion for innovation success is always economic. A technologically sophisticated object only acquires the status of innovation if it succeeds in the market. Thus, the distinctiveness of innovation concept is not confined to the qualities of the artifact itself; there are a set of characteristics attributed from outside where the criterion of economic efficiency is an integral part.

Amable et al (1997) show that there is a wide diversity of innovation systems in EU countries. Experts in economy of innovation have reflected on the particular situation of intermediate economies. They ask themselves if the concept of NIS is applicable to countries with intermediate levels of development and technologically dependents. Since most of the technology in less developed countries is imported, the system of innovation is defined broadly to include policies focusing on foreign technology transfer, intellectual property rights, import of capital goods and foreign direct investment. The innovation system also comprises a network of public and private institutions and actors that support
or carry out scientific and technological activities, including research and development dissemination and creation of human and technical capital (Lança, 2001: 62).

Another evolutionary perspective of innovation is called tripple-helix (whose pillars are the university, the state and the firms) (Etzkowitz and Leysdorf, 1997). According to Oliveira (2008), in Portugal we only have a double-helix whose impact on the innovation capacity is relatively harmless because of lack of business sector - the third-helix. The evolution of innovation in Portugal shows a lack of diversity of the system and particularly the weakness of certain vital organs, such as industry. A country of intermediate development can talk about innovation or just about the ability to adapt to the demands of international competition. And it will make sense to speak of radical innovation? (Oliveira, 2008: 27).

Product innovation requires radical changes at several levels - organizational change, management of manpower - including the knowledge necessary for their implementation. Technologically dependent countries such as Portugal, can adapt to the rules of international competition to achieve productivity growth, but is not very enlightening, call it innovation (Oliveira, 2008: 32).

In the system of innovation, innovation is systemic, multi-functional and inter-organizational and is intertwined with the dynamics and industrial relations between innovative companies and their surroundings. Indeed, innovation has become considered as an interactive process (of feedbacks) as has been demonstrated by several empirical studies (Natário & Neto, 2006: 8).

The accelerated process of globalization and advances technological developments have highlighted the need to address the issue of innovation in regions, then stand the institutionalist approaches that make up the Regional Innovation Systems (RIS) and the Local Innovation Systems (LIS) (Natário & Neto, 2006:9).

When applying the concept of NIS to the regional level, the concept of RIS can be identified, according Chung (1999: 2), as a sub-system of the NIS. Chung (1999: 5) defines the RIS as the complex of actors and institutions in regional innovation and interaction that are directly associated with the generation, dissemination and appropriation of innovation.
2. Some Aspects of Portugal’s Diagnosis Regarding Innovation

In Portugal, Ferrão (1992) was one of the first authors to capture the importance of the concept of innovation and instrumentalized it in favor of a territorialized analysis of the service sector development.


Rodrigues et at (2003) followed closely the notion of NIS and prepared the grounds of a innovation public policy more integrated and consistent. From the point of view of the use of contemporary sociological theories Oliveira (2004, 2008) presents a detailed analysis that shows the importance of social factors in the production of technical knowledge, technological development and new markets creation (Freire, 2008: 88 ).

The European Innovation Scoreboard (EIS) is a report which provides a comparative assessment of the innovation performance of EU27 Member States, under the EU Lisbon Strategy. In EIS (2009: 3) had been identified three categories of innovators:

i) Innovation Leaders - Denmark, Finland, Germany, Sweden and the UK), with innovation performance well above that the EU27 average and all other countries;

ii) Innovation followers - Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, the Netherlands and Slovenia, are the with innovation performance below those of the Innovation leaders but close to or above that of the EU27 average.

iii) Moderate innovators - Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Poland, Portugal, Slovakia and Spain are with innovation performance below the EU27 average.

According the EIS (2009 and 2010) Portugal is a Moderate Innovator, with innovation performance below the EU27 average in 2008, 2009 and 2010.

The three dimensions of innovation performance captured in this document are the following (EIS, 2009: 7):

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5 First publication from 2000.
6 The EIS 2010 defined a fourth category - Modest Innovators - that includes Bulgaria, Latvia, Lithuania and Romania.
i) **Enablers** - captures the main drivers of innovation that are external to the firm as:
- Human resources (measures the availability of high-skilled and educated people);
- Finance and support (measures the availability of finance for innovation projects and the support of governments for innovation activities).

ii) **Firms Activities** - captures innovation efforts that firms undertake recognizing the fundamental importance of firms’ activities in the innovation process as:
- Firm investments – covers a range of different investments firms make in order to generate innovations;
- Linkages & entrepreneurship – captures entrepreneurial efforts and collaboration efforts among innovating firms and also with the public sector;
- Throughputs – captures the Intellectual Property Rights (IPR) generated as a throughput in the innovation process and Technology Balance of Payments flows.

iii) **Outputs** - captures the outputs of firm activities as:
- Innovators – measures the number of firms that have introduced innovations onto the market or within their organizations, covering technological and no technological innovations;
- Economic effects – captures the economic success of innovation in employment, exports and sales due to innovation activities,

In human resources indicators, Portugal shows the overall highest rates of improvement and in finance and support only Portugal and Spain show above EU27 average performance. In the second category Portugal (and Spain) has managed to improve their performance relative to that of the EU27 in firm investments: in linkages & entrepreneurship Portugal performing above average and in throughputs Portugal performs below average.

Portugal is one of the eight moderate innovators countries in 2009 (and maintain this position in 2010) that have grown faster than the EU27. It is one of the growth leaders, together with Czech Republic, Greece and Malta (EIS, 2009).

The diagnosis of Portuguese situation regarding the innovation processes characteristics in Portuguese firms, has been studied by several authors. In the following
In this study, we organize some characteristics of Portuguese firms regarding innovation, into four categories.

### Table 1 – Some characteristics of Portuguese firms regarding innovation

<table>
<thead>
<tr>
<th>Category analysis</th>
<th>Some characteristics of Portuguese firms</th>
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| Firms' position in what concern innovation | - Innovation effort is reduced to technological innovation. Almost no concern on social criteria for work organization;  
- No systemic concept of organization or ignorance of the possibilities of organizational and social innovation;  
- Priorities: productivity, technology improve, balanced growth and improvement of working conditions. |
| Organizational and social innovation    | - Organizational innovation is restricted to vulgar forms of employee participation;  
- Predominance of autocratic and bureaucratic models of organizing work;  
- Persistence of Tayloristic principles of work organization;  
- Low employee participation in decision-making, implementation, monitoring and evaluation of forms of work;  
- Persistence of hierarchical pyramidal structures of authority;  
- Prevalence of behavior based on obedience to coercive rules;  
- Flexibility in work organization is limited to job rotation and polyvalent groups with economic goals → increase productivity, improve quality, rapid answer to orders, flexibility of manpower, better use of workers' potential, job reduction, downtime reducing.  
- The most advanced forms of work organization are in the most technologically advanced companies;  
- Predominance of participation forms by delegation;  
- The direct participation forms are in the most technologically advanced companies;  
- Non-recognition of human resources as a strategic factor for competitiveness and business competition. |
| Portuguese management culture          | - Predominance of mechanical bureaucracy management models;  
- Deficit of entrepreneurship and low stimulation of employees' entrepreneurship;  
- Low level of qualifications and low level of recruitment of technical graduates in science and technology in SMEs;  
- Legal framework with strong employment protection, low mobility and instability of manpower.  
- Education and training systems far away from the qualification needs of firms;  
- Low investment in training of HR and ITC;  
- Low ability to marketing and to achieve economies of scale;  
- Paternalistic role of the state and employers dependency. |
| Portuguese innovative firms characteristics | - The largest firms have a greater capacity for innovation;  
- They belong to groups, are more productive, export more, have sales above the national average, are technologically superior, have more advanced work organization forms and direct participation forms;  
- Three most innovative industries: electrical equipment, chemical industry, rubber and plastics.  
- Main motivation for innovation: improving product quality, market growth and reduction of costs labor;  
- Barriers to innovation: high cost, lack of funding and lack of qualified staff. |

Source: Authors own elaboration from (Moniz, 1989; Ferreira, 1991; Kovács, 1994; Conceição & Ávila, 2001; Lopes, 2005).
The studies reviewed show the superiority of technological innovation at the expense of social or organizational innovation. The various types of innovation are not treated systematically. Technological innovations are considered essential and more easily adopted with positive and short-term effects for the company's competitiveness. The social and organizational innovations emerge in a diffuse way and find resistance in the rigidity of the structures and models of work organization. However, there is a positive relationship between technological innovation and social and organizational innovation - technological innovation seems to stimulate the adoption of other types of innovation. Another variable that seems to influence the adoption of innovations is the size of the company, i.e., larger firms are more innovative. Anyway, the main motivation of Portuguese companies to innovate is the economic factors, including improvement of products, the conquest of markets and cutting costs.

In a study coordinated by Freire (2001: 95-96) the author tried to understand the processes of change taking place in Portuguese companies. The research results pointed to the following aspects:

i) Technological innovation - the indicators used were the R&D activities in companies, patenting, improving existing products and services (incremental innovation) and the creation of new products or services (radical innovation). The results were very positive for all indicators except for the number of patent registered;

ii) Organizational innovation - the indicators used were the outsourcing of activities, practices of organizational flexibility, numbers of experts in the enterprise, improving skills levels of staff, importance of vocational training to the staff. The results show that outsourcing is a widespread practice especially for the use of knowledge from experts outside the firm. There were some organizational flexibility with regard to shortening the line of command; the recruitment of specialists with high qualification increased the professionalism. The investments in training still remain insufficient;

iii) Social innovation - refers to the innovative contributions that the company can export out of its walls and beyond the economic sphere helping to change behaviors and representations within the global society. The indicators used were: investment in marketing activities, investment in customer relationships (loyalty), improvements in inventory management
(just in time), flexible working hours for workers from the bottom (with social impact in terms of transport, family life, etc.).

3. The public policies supporting innovation

The Portuguese Operational Program for Competitiveness Factors (COMPETE) 2007-2013\(^7\) is presently one of the main Portuguese public policy supporting firms innovation. The COMPETE program is part of the Portuguese National Strategic Reference Framework (NSRF) 2007-2013 within European Union Cohesion Policy.

The central objective of Portuguese NSRF’s Operational Agenda for Competitiveness Factors is to stimulate economic growth to levels that will produce a sustained recovery of the Portuguese economy towards real convergence with the European Union – based on the competitiveness of the country and its regions, enterprises and geographical areas. The Portuguese economy aims for sustained growth and the ability to compete at the international level – objectives which are consistent with creating added value, regional qualification and more and better jobs – it faces a number of challenges and constraints.

Program’s specific objectives are the following:

i) Qualification of the productive fabric by upgrading specialization profiles and business models;

ii) Better adjustment of the Portuguese economy to international markets by increasing production for trade or internationalization;

iii) Qualification of the Public Administration system and State action efficiency through modernization of the Public Administration and promotion of a public service culture centered on citizens and enterprises;

iv) Promotion of an economy grounded on knowledge and innovation through stimulating scientific and technological development and fostering entrepreneurship.

COMPETE is structured on 6 strategic axes and its support to innovation is focused mainly on four strategic axes - Science and Knowledge, Incentives to Enterprises, Collective Actions and Clusters and Other Collaborative Networks (Table 2).

\(^7\) http://www.pofc.qren.pt/
Table 2 – COMPETE main strategic axes supporting firms innovation

<table>
<thead>
<tr>
<th>COMPETE’ Axes</th>
<th>Objectives</th>
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| Axe 1 - Science and Knowledge      | - Encouraging the development and growth of the National Science and Technology System so as to make it more competitive and so as to increase the level of interaction between knowledge centers and the economic structure;  
- Intensifying the R&D effort and the creation of new knowledge, in order to foster the development of the country and increase its competitiveness. |
| Axe 2 - Incentives to Enterprises  | - Promoting innovation within the business structure, through the development of new goods, services and processes that foster its progression within the value chain;  
- Strengthening the adjustment of enterprises to international markets and fostering qualified entrepreneurship and structural investment in new areas with a growth potential. |
| Axe 5 - Collective Actions         | - Qualifying the productive fabric by upgrading specialization profiles and business models;  
- Increasing the processes of internationalization and promoting better knowledge of the markets (effectiveness);  
- Stimulating entrepreneurship and the entrepreneurial dynamic, particularly qualified entrepreneurship;  
- Promoting the use of alternative sources of funding, namely venture capital and guarantees;  
- Reducing the negative externalities of the business structure;  
- Promoting an economy grounded on knowledge and innovation. |
| Axe 6 - Clusters and Other Collaborative Networks | - The aim is to promote co-operation and networking between enterprises, and between enterprises and those actors who are involved in the development of the sectors to which they belong and the regions where they are located. |


4. A New Methodological Approach for Policy Evaluation

The analysis model includes three core concepts - innovation, innovation systems (national and regional) and public policies to support innovation. We aim to join the analysis from within the firms with the analysis of the external environment of firms to assess the impact of public policies on the types of innovation adopted by firms.
The research strategy chosen is the case study approach and we chose this methodology because we recognize in it many advantages. According to Bruyne et al (1974) there are four modes of investigation - the case study, the comparison, the experimentation and the simulation - and they put it in a continuum according to the characteristics of the research field. In this continuum, the case study occupies an extreme position, because it provides the research field “more real”, “more open” and “under control” and these features allow the investigator to make a detailed study of particular cases (since the field research is perceived from the inside) and adopt a “comprehensive approach that involves active participation in the life of the subjects and observed an in-depth introspective type” (Bruyne et al, 1974: 210).

The case study also has the distinction of bringing together information so numerous and so detailed as possible in order to cover the totality of the situation under study. It is based on the use of various techniques for gathering information (e.g., observation, inquiry and document analysis) (Bruyne et al, 1974: 211).

The case study as a research strategy has in Bruyne et al (1974) the same meaning given to it by Yin (2005), i.e., it forms “an empirical inquiry that investigates a contemporary phenomenon within the context of his real life, especially when the boundaries between the phenomenon and the context are not clearly defined” (Yin, 2005: 32). In fact, the case study allows the researcher to focus on contemporary events, with the advantage of being able to observe directly and ask them the subjects involved (Yin, 2005: 26).
Both Bruyne et al. (1974) and Yin (2005) recognized two variants of the case study as a strategy research: the study of a single case and multiple case study. In any analysis of the variants of the contextual conditions in which the case is located is essential, although the boundaries between context and if they cannot be well defined. The multiple case studies enable comparison of various cases and seek to find convergence between these cases and, as a single case study, can frame the collection of observation data for a single or multiple units of analysis (Yin, 2005).

In this case, the strategy or way of selected research was the multiple case study. Thus we tried to obtain a thorough understanding of the phenomena under study, as well as their interactions in the specific context of selected business realities.

The cases, or units of analysis, are industrial SMEs in Continental Portugal – NUTS II (Alentejo, Algarve, Centro, Lisbon and North regions) that have benefited from financial support under the COMPETE Program (2007–2013) public policy.

The ultimate goal of this research is to create a national system for monitoring and evaluate the outcomes and impacts of public policies to support innovation on small and medium enterprises, which should, in its final version, to evaluate and monitor the entire universe of companies that received financing of these public policies.

Thus, in the initial phase of implementation, the system will be based on monitoring a set of companies selected on the basis of case study methodology.

Among all the small and medium-sized Portuguese companies that have received funding from the COMPETE Program, in the time period from 2007 to 2011, will be studied, for each of the NUTS II Portuguese regions, six small and six medium-sized companies.

Regarding the six medium-sized and small companies to consider for the study, will be selected for analysis, in each region, three medium-sized and three small companies in which the end result of implementing the financing of the COMPETE Program was considered as an exemplary case of success in terms of intensity of innovation and economic performance; and three medium-sized and three small companies in which the result of applying the funding of the COMPETE Program was considered average in terms of intensity of innovation and economic performance.

The companies that will be studied are sectorally framed in the Section C – Manufacturing Industries - of the Portuguese Classification of Economic Activities, Revision 3 (CAE-Rev.3) and the analysis should be developed in order to consider the different specificities of each of the sub-sections that comprise it.
In the final implementation phase of the evaluation and monitoring system will be considered in the analysis all the small and medium industrial enterprises that have received funding from these public policies and also all the others companies that have not benefited or not even applied for.

The gathering information process is based on quantitative and qualitative techniques (namely questionnaires, interviews, documental observation and direct observation). In information handling process will be used content analysis techniques (for qualitative data) and the study of the relationship between variables (for quantitative data).

Now we present the twenty new dimensions for evaluation we defined:
1) Innovation improvement in firms resulting from the support of the science and knowledge system;
2) Innovation improvement in firms resulting from the support of the public incentives directly to firms;
3) Innovation improvement in firms resulting from the support of the public incentives supporting national and regional industrial policies, namely, clusters and collaborative networks;
4) Innovation improvement in firms resulting from the support of the public incentives supporting “collective actions” on territorial bases;

Figure 3 – Innovation improvements in firms resulting from public incentives

5) Changes in the science and knowledge system resulting from firms’ performance and demand for innovation;
6) Changes in the national and regional industrial public policies resulting from firms’ performance and demand for innovation;

7) Systemic changes in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) resulting from firms’ performance and demand for innovation;

Figure 4 – Changes in public policy resulting from firms performance and demand on innovation support

Source: Authors own elaboration

8) Positive impacts in firms’ internal environment as a consequence of the innovation improvement in firms resulting from the support and nature of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

9) Negative impacts in firms’ internal environment as a consequence of the innovation improvement in firms resulting from the support and nature of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

10) Positive and negative impacts in firms’ internal and external environment as a consequence of the nature and focus of the supporting public policy itself;
11) Systemic changes in firms’ external environment as a consequence of innovation improvement in firms resulting from the support of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

12) Systemic changes in firms’ internal environment as a consequence of innovation improvement in firms resulting from the support of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

13) Systemic changes in firms’ internal and external environment as a consequence of changes in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) resulting from firms’ performance and demand for innovation;

Figure 5 – Analysis of impacts in firms internal environment

Source: Authors own elaboration

Figure 6 – Analysis of impacts on firms external environment

Source: Authors own elaboration
14) Systemic changes in the territorial contexts of firms’ as a consequence of innovation improvement in firms resulting from the support of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

15) Systemic changes in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) resulting from firms’ performance and demand for innovation;

16) Systemic changes in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) resulting from firms’ and territory performance and demand for innovation;

Figure 7 – Analysis of public policies impacts on firms and on territorial competitiveness

![Diagram showing the relationship between public policies, firms' innovation processes, performance, economic and social performance, and territory development and competitiveness.]

Source: Author's own elaboration

17) Positive and negative impacts in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) as a consequence of the nature and focus of the supporting public policy itself;

18) Positive and negative impacts in the four systems (science and knowledge, incentives to firms, collective actions and industrial policies) resulting from firms’ performance and demand for innovation;
19) Geographical cartography of impacts on firms resulting from the innovation improvement in firms resulting from the support and nature of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies);

20) Geographical cartography of impacts on territorial context of firms as a consequence of the innovation improvement in firms resulting from the support and nature of the four systems (science and knowledge, incentives to firms, collective actions and industrial policies).

Figure 9 - Geographical cartography of systemic impacts at different territorial scales

Source: Authors own elaboration
Conclusions

It seems very appropriate to foster and enhance the multiple points of contact between economics and sociology in the study of innovation. In theoretical framework we realize that there is no consensus on innovation concept definition because it is a multidimensional and complex process. There are many kind of innovation as we saw but, while recognizing the need to adopt a systemic perspective of innovation, it seems that technological innovations are more easily implementable than social and organizational innovations. This is particularly true for the intermediate developed countries such as Portugal.

The objective of the methodological model is to answer the questions initially formulated and seeks to understand a complex universe with so many variables. The twenty dimensions defined for evaluation can be grouped in six categories of analysis: i) innovation improvements in firms resulting from the considered axes of the public policy; ii) systemic changes in public policy due the influence of firm’s performance and demand for innovation; iii) positive and negative impacts in firm’s internal and external environments as a consequence of the innovation improvement resulting from the public policies support; iv) systemic changes in territorial context of firms as a consequence of innovation improvement in firms resulting from the support of public policies; v) positive and negative impacts in public policies resulting from the supporting public policy itself and from firm’s performance and demand for innovation and vi) geographical cartography of the impacts on firms and on territorial context.

Usually, innovation studies consider different factors affecting innovation processes but few contributions focus on the interplay of these factors. The proposed methodological model opts for a systemic analysis to overcome the fragmentation of the level of analysis and encourages the connection between the analyses, those inside the organizations with the analyses of the external context in which firms operate.

This methodological approach for the evaluation of public policy supporting innovation evaluation in a territorial basis aims to contribute to reinforce the innovation effectiveness in firms and territory development resulting from support of public mechanisms. The dimensions defined above seeks to contribute for a better understanding the all complex universe of the innovation processes with so many variables involved.

But why the importance of enhancing the effectiveness of innovation? Considering effectiveness is one of the five good governance principles defined by European
Commission, make sense to give all attention to this issue. This concept means that policies must be effectively and timely delivering, on the basis of clear objectives, considering its future impacts and experiences from the past. Effectiveness focus more in impacts than the outputs and inform about the achievement of objectives and its impacts of an activity.

In the new competitive pattern based in innovation firms must develop their strategic and organizational skills. In this context, knowledge (all kind of knowledge useful for innovation) and human resources development are key elements for strength innovation.

References


