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The Determinants of Innovation In SMEs: Proposal for a Conceptual Model.

Auteur 1 : BOUZGGD Mohamed.
Auteur 2 : ELBOURKI Mohamed.

BOUZGGD Mohamed, (PhD)
1 Faculty of Law, Economics, and Social Sciences (FLES), Ait Melloul, Ibn Zohr University, Morocco

ELBOURKI Mohamed, Research Professor)
2, Faculty of Law, Economics, and Social Sciences (FLES), Ait Melloul, Ibn Zohr University, Morocco,

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Abstract

Innovation is recognized as a central pillar of economic growth and business competitiveness. It manifests in various forms, whether technological, organizational, process-based, or commercial. According to classical theories initiated by Schumpeter and enriched by evolutionary and institutional approaches, innovation results from a complex dynamic involving both internal and external interactions. Internal factors include employee creativity, financial and technological resources, and organizational strategy. At the same time, the external environment plays a decisive role through collaborations with partners, institutional support, and territorial dynamics such as clusters and industrial districts. These dimensions show that innovation goes beyond the individual framework of the company to become a systemic phenomenon where the ability to absorb and integrate new knowledge is crucial.

This work aims to structure and analyze the multiple determinants of innovation by proposing a detailed conceptual model. This model contributes to the development of organizational strategies and public policies that enable businesses to strengthen their innovation capacity and adapt to market transformations. Thus, this research plays a strategic role in providing an analytical framework to stimulate innovation and foster sustainable, competitive growth.

Keywords : Innovation, internal determinants, external determinants, conceptual model.

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Introduction:

Innovation is now recognized as the primary driver of economic growth and commercial specialization of countries, as affirmed by the OECD (2005). In a global environment marked by rapid technological transformations, intense competitive dynamics, and increasing consumer expectations, innovation emerges as a crucial factor to ensure the survival, growth, and development of companies (Acs & Audretsch, 1990). It has become a major strategic issue because it enables companies not only to strengthen their competitiveness but also to adapt to changes and seize new market opportunities. In this sense, innovation is no longer merely a competitive advantage but an essential condition for thriving in a constantly evolving economic world.

The concept of innovation has been the subject of extensive theoretical and empirical research. One of the pioneers of this reflection is Joseph Schumpeter (1934), who remains a major reference in the field of innovation. He presented innovation as the primary source of economic growth, highlighting its central role in the development of businesses and economies. His work subsequently opened new avenues for investigation into the issue of innovation, explored by researchers such as Nelson and Winter, Teece, Dosi, and Freeman, who are considered evolutionists in their studies. They enriched this approach by defining innovation as an interactive and complex process. Subsequently, other schools of thought emerged, notably institutional theories, the innovative milieus school, and the learning school, each providing different insights into the dynamics of innovation and the factors that shape it. These studies have contributed to a better understanding of innovation as a multidimensional phenomenon, influenced by internal and external interactions within companies and economies.

The ability of companies to innovate depends on numerous determinants. Identifying and analyzing these determinants is complex because they result from interactions between internal and external factors, influenced by specific contexts. Some determinants stem from a company's internal resources, such as creativity, talent management, and organizational strategy, while others depend on the institutional, political, or competitive environment. Thus, innovation emerges as a systemic phenomenon, where interactions between these different dimensions play a central role.

Therefore, innovation is not limited to the mere adoption of new technologies but also encompasses organizational, social, and institutional dimensions. Understanding the determinants of innovation is thus a priority for businesses, policymakers, and researchers.

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Drawing on a critical review of the literature, an in-depth analysis, and concrete examples, this article aims to answer fundamental questions: **What factors influence a company's decision to innovate or not? What are the characteristics and competencies of a company that affect its ability to innovate? How can these be structured to better understand their dynamics?**

To answer these questions, we will first present a literature review on the concept of innovation. We will then discuss the determinants of innovation by highlighting the role of the company's internal and external environment. This approach will allow us to develop, by the end of this article, a conceptual model to identify the main factors influencing companies' innovation capacity. This model could serve as a foundation for the development of public policies and more effective business strategies to stimulate economic growth.

This article, which is primarily theoretical, aims, on the one hand, to contribute to a better understanding of the determinants of innovation by drawing on an in-depth review of the literature. On the other hand, it seeks to provide an analytical tool for empirical studies and innovation policies.

The ultimate goal is to contribute to an integrated understanding of innovation by offering an operational framework for companies and researchers aiming to navigate this complex, competitive, and constantly evolving economic environment.

1. Literature Review

1.1.Definition of Innovation :

Terms such as creativity, discovery, and invention are often considered synonymous with innovation. The polysemous nature of the term is a source of confusion regarding its usage. A comparative analysis of different approaches to innovation should help clarify these ambiguities.

Innovation is a polysemous, polymorphic, and complex concept that has been the subject of extensive literature. The term originates from the Latin "innovare," meaning to create something new. Defining this concept proves to be a challenging task due to the diversity of criteria used by various authors. Indeed, one of the main difficulties in analyzing innovation is the lack of consensus on the meaning of the term. However, the consulted authors agree that innovation has a commercial purpose and is synonymous with novelty.

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For Schumpeter (1934), innovation is the commercial exploitation of an invention or its introduction to the market. It can take five forms :

- The creation of new consumer goods;
- The introduction of new methods of production or new means of transportation;
- The acquisition of a new source of raw materials or semi-finished products;
- The opening of new markets;
- The implementation of new types of industrial organization.

"Innovation is an iterative process initiated by the perception of a new market or service opportunity for a technological innovation, leading to development, production, and marketing activities aimed at the commercial success of the invention."

This definition focuses primarily on technological innovation. However, innovation can also encompass organizational or marketing aspects. Therefore, this definition is restrictive.
Subsequently, to account for the complexity of the innovation process and the diversity of ways in which firms innovate, and to better address the reality of service companies and non-technological innovation, the OECD, a global authority on innovation, proposed the following definition in the 2005 third edition of the Oslo Manual:
"Innovation is the implementation of a new or significantly improved product (good or service), process, new marketing method, or new organizational method in business practices, workplace organization, or external relations" (OECD, 2005).

This definition highlights two important aspects of the concept of innovation. The first is that, implicitly, innovation must be materialized and marketable. This distinguishes the concept of innovation from that of invention, which may not have a practical application (Read, 2000). An invention is the creation of new ideas (Bamberger, 1991; Osborn, 1988), while innovation involves the realization and commercialization of that invention (Osborn, 1988; Garcia & Calantone, 2002). Thus, to become an innovation, an invention must eventually be implemented.

A second important aspect of the concept of innovation concerns the dynamic nature of the phenomenon. Indeed, innovation results from an interactive learning process, more or less organized, which induces an initial change that often necessitates further changes, leading to a chain of transformations (Carrier & Julien, 2005). For example, a product innovation can lead to a process innovation, which in turn may require an organizational innovation to better utilize these processes. Moreover, this process may result in the initial implementation of an

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innovation followed by improvements to that innovation, leading to multiple typologies of innovation.

This definition encompasses four main types of innovation: product innovation, process innovation, organizational innovation, and marketing or commercial innovation.

1.2.Typologies of Innovation :

The literature offers a variety of classifications of innovation types. Generally, three typologies can be distinguished based on the nature, the object, and the degree of novelty introduced by the innovation. These typologies are sometimes complementary and help to better characterize innovation.

1.2.1 Typology Based on the Object:

The first distinction is made from the perspective of innovation's intervention in company activities, primarily whether it concerns production processes or the products offered by the firm. According to the Oslo Manual (2005), four specific levels of innovation intervention can be identified:

- **Product Innovation :**

This refers to "the introduction of a new or significantly improved good or service regarding its characteristics or the intended use" (Oslo Manual, 2005). Product innovation significantly impacts sales growth and improves the company’s profitability. This type of innovation generally relies on interface skills between two business environments: internally, research and development (R&D) and marketing; externally, the users of the good and competitors, who are sources of new opportunities.

- **Process Innovation :**

This involves the development or adoption of new production or distribution methods. The goal of these innovations is to improve the efficiency or effectiveness of production. They primarily aim to reduce prices and production or distribution costs, while also enhancing quality and developing new or improved products. Process innovation typically relies on skills oriented toward suppliers, especially equipment suppliers. Internal interface skills mainly concern the relationship between R&D and production, rather than R&D and marketing.

- **Marketing Innovation :**

This refers to "the adoption of a new marketing method involving significant changes in product design, packaging, placement, promotion, or pricing" (Oslo Manual, 2005). By adopting marketing innovation, companies aim to better meet consumer needs, open new markets, or reposition their products in the market to increase revenue.

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- **Organizational Innovation :**

This refers to "new forms of work organization, knowledge management systems, methods of mobilizing worker creativity, and new forms of relationships between companies and their economic environment" (Oslo Manual, 2005). Organizational innovation is demonstrated through individuals, teams, and management practices. It fosters an innovative culture and enhances overall receptivity to new ideas (Wang & Ahmed, 2004). **1.2.1Typology Based on the Degree of Innovation:**

The degree of novelty for the market and the company are two dimensions that help define innovation models. Innovations can be categorized based on the type of change they bring and their impact on the market or technology. This classification primarily includes two types of innovation: radical innovation and incremental innovation.

- **Radical Innovation :**

This is defined as the introduction of a product/service or process that is entirely new to both the company and the market. According to Pedersen and Dalum (2004), radical innovation represents a significant change involving revolutionary technological modifications. As such, it creates a high degree of uncertainty for companies and even entire industries.

- **Incremental Innovation :**

This involves improving an existing product/service or process through minor changes or small technological enhancements (Oslo Manual, 2004, cited in Popadiuk & Choo, 2006). Incremental innovation is progressive and cumulative, representing gradual changes that stem from radical innovations. Its goal is to gradually improve products, services, processes, or equipment to better meet market needs. Incremental innovation includes enhancements to existing products on the market or the adoption of new equipment and components developed externally (Encaoua et al., 2004; Caccomo, 2005). These innovations are often carried out by companies that make limited use of patents and external licenses.

1.2.2 Typology Based on the Nature:

Innovation can be technological or administrative. The distinction between technological and administrative innovations is based on the degree of change related to the core functioning of the company (Cooper, 1998).

Indeed, "technological innovation consists of knowledge and techniques, while administrative innovation involves transforming collective cognitive systems, enabling a group to achieve overall efficiency goals through learning" (Cadix & Pointet, 2002).

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1.3.Determinants of Innovation :

1.3.1. Internal Determinants:

1.3.1.1.The Role of the Entrepreneur:

The entrepreneur is a true catalyst for change and creativity. They play a central role in the innovation process, combining strategic vision, leadership, and the ability to mobilize both internal and external resources necessary to evolve their organization. Karlsson and Olsson (1998) emphasize the importance of the entrepreneur's interest in innovation, their ability to generate new ideas, and their support for entrepreneurship, which are essential elements for maintaining a "creative" climate conducive to the development of innovation. This climate is crucial for stimulating the emergence of innovative solutions and maintaining a competitive advantage. De Jong and Brouwer (1999) add that, in order to succeed in a competitive context, the leader must tolerate risk, adopt a positive attitude toward innovation, and commit to promoting it not only to stand out from the competition but also to meet customer expectations. Schumpeter views the entrepreneur as an innovator who transforms discoveries into practical applications, integrating these innovations into the economic fabric.

1.3.1.2Company Size:

The relationship between company size and its ability to innovate remains a topic of debate among researchers. According to Schumpeter, the size of companies directly influences their innovation capacity. In his early analyses in The Theory of Economic Development (1934), he attributed innovation mainly to small businesses, before revising his position in Capitalism, Socialism, and Democracy (1942), where he argued that large companies, due to their resources and organization, are better equipped to innovate.

1.3.1.2.Resources and Capabilities :

Resources and capabilities play a central role in the success of innovation activities, serving as strategic pillars for businesses. They are inseparable elements necessary to guarantee the success of innovation. Grant's (1991) work highlights an essential distinction: resources are the fundamental inputs of a company, such as employee know-how, equipment, or patents, which must be mobilized in alignment with the company's innovation strategy. Meanwhile, capabilities refer to the company's ability to coordinate and utilize these resources efficiently to achieve its strategic objectives. According to Huang, Soutar, and Brown (2001), the diversity of mobilized resources, including technical, marketing, and technological skills, directly influences the effectiveness of the innovation process, especially in the development of new products. These authors also emphasize the importance of technical resources needed to exploit

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new technologies and the contribution of skilled and competent human resources to transform ideas into concrete innovations.

- **Human Resources :**

The quality and diversity of human resources are a major lever for innovation. Employees' technical, managerial, and strategic skills, as well as their experience and training, allow them to effectively utilize available information and technologies. St-Pierre and Mathieu (2003) show that the early stages of the innovation process rely on specific knowledge and skills, often acquired through qualified personnel. According to Freel (2003) and Vinding (2006), highly educated, technically skilled, and experienced employees with diverse training significantly increase the capacity for both incremental and radical innovations. These human resources are not limited to technical expertise: they also include engineers, technicians, and designers who can transform ideas into concrete solutions while fostering collective creativity (Carrier and Julien, 2005).

- **Financial Resources:**

Financial resources are essential to support research and development (R&D) activities and to accompany investments necessary to transform ideas into marketable products or services. Becheikh et al. (2006a) emphasize the importance of financial autonomy and a specific budget dedicated to innovation. The study by Galende and De la Fuente (2003) highlights that while incremental innovation may sometimes be achieved with limited resources, radical innovation requires substantial investments and proactive risk management.

- **Technological Resources:**

Technological resources encompass technical means such as instruments, tools, and equipment, but also processes, patents, and related methods necessary for production and R&D. According to St-Armand and Renard (2006), these tangible resources, such as machines and software, must be regularly updated to maintain their relevance and competitiveness. Romijn and Albaladejo (2002) demonstrate that internal technological efforts, such as R&D spending and the acquisition of technological licenses, are strongly correlated with the success of innovations. Advanced technologies not only reduce production costs and lead times but also improve the quality and novelty of the developed products (Landry, Amara, and Lamari, 2002; Becheikh et al., 2006b).

- **Informational Resources :**

Informational resources, both internal and external, enable the structuring of data from various sources such as customers, competitors, or partners. Croteau (2003) argues that optimal

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use of this information facilitates its transformation into useful knowledge for innovation. Information technologies, as a subcategory of technological resources, play a key role in managing this information and automating processes. These digital tools, when well in tegrated, improve collaboration among teams and accelerate development cycles.

1.3.1.3.Organizational Structure of the Company:

The organizational structure plays a fundamental role in the innovation dynamics within companies. Implementing practices that foster innovation represents a complex challenge for businesses, often requiring deep adjustments to their structure and work processes. Indeed, an adapted work organization proves to be a fundamental lever for innovation, whether technological or organizational. Companies that introduce innovative products or processes often adopt advanced organizational practices, demonstrating that technological innovation goes hand in hand with structural innovation.

Innovation relies on several key factors, including employee engagement, their active involvement in innovative initiatives, and the organization's ability to collect, process, and integrate information effectively. Moreover, the success of these initiatives largely depends on creating a conducive work climate, characterized by a stimulating, collaborative environment that fosters creativity. In this context, it becomes imperative for companies wishing to innovate to adopt an organizational structure that is flexible enough to adapt to the changing needs of their environment. Although few studies have explored the role of organizational structure as a determining factor of innovation, strong arguments support a positive correlation between effective organizational integration and the success of innovative projects.

In the following paragraphs, we will discuss the influence of important organizational characteristics, such as flexibility and work climate, employee participation, and organizational integration, on innovation.

- **The Work Climate as a Driver of Innovation**

A positive work climate is a crucial foundation for stimulating innovation within companies. Fundamentally, it is human factors, such as employee motivation and creativity, that foster innovation more than technologies themselves (Prajogo and Ahmad, 2006). A healthy organizational climate is based on practices that encourage the physical and psychological well-being of employees while promoting their engagement. Lebeau and Vinais (2006) emphasize that this environment contributes to employee retention and better knowledge flow, both critical elements for generating new ideas.

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- **Internal Collaboration, a Key Factor of Organizational Integration**

Functional integration and internal collaboration play a central role in companies' ability to innovate. An integrated organizational structure facilitates interactions between different departments, promoting smooth communication and better coordination of activities. Parthasarthy and Hammond (2002) demonstrate that functional integration increases the frequency of new product development by establishing interactive cooperation between organizational units.

- **Employee Participation, a Catalyst for Innovation**

Active employee participation in decision-making processes and innovation activities is a key determinant for the success of innovative projects. Jung, Chow, and Wu (2003) and De Jong and Vermeulen (2006) emphasize, in addition to employees' knowledge and skills, the importance of their engagement, not only for their direct contribution to innovation but also for their ability to understand and support the company's strategic objectives. Participatory practices offer employees increased autonomy, encouraging them to propose innovative ideas and continuous improvements. Gudmundson, Tower, and Hartman (2003) demonstrated that considering employees' suggestions not only improves the speed of new product development but also the quality of the final outcomes. The most innovative companies frequently involve their employees in both direct and indirect forms of participation, which strengthens knowledge flow and collective commitment to strategic initiatives.

1.3.1.4.Business Strategy :

According to Porter (1986), a company's strategy is based on competitive positioning, with innovation as a key lever. It involves setting clear objectives and deploying a set of actions, whether offensive or defensive, to ensure sustainable competitiveness. These actions may include launching new products, differentiation, or continuous improvement of existing products. Furthermore, Vaona and Pinta (2008) emphasize that dynamic and innovative small businesses focus on developing new products to strengthen their competitiveness, while large companies adopt a strategy focused on market power, investment in R&D, and the acquisition of modern technologies.

1.3.1.5.Business Practices and Ways of Doing Things:

Innovation is not just about having resources; it also requires knowing how to effectively utilize them through business practices oriented towards innovation activities. Certain business practices play a key role in the success of innovation. Among the most influential are creativity, research and development activities, continuous improvement, human resource management,

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and strategic monitoring. We will examine the importance of each of these practices in the innovation process.

- **Creativity :**

Creativity, according to Boly (2004) and Carrier (1997), is defined as the ability of an individual or group to combine knowledge and experiences in innovative ways to generate new, useful, and valid ideas. These ideas can translate into new or significantly improved products, services, processes, or procedures, particularly in an organizational context. The work of Woodman and Sawyer (1993) shows that innovative companies place creativity at the heart of their strategy, as it forms a fundamental foundation for innovation and change. In fact, innovation, synonymous with novelty, relies on creativity, which represents the ability to design and organize elements in new ways.

- **Research and Development Activity:**

Research and development (R&D) activity is a central pillar of the innovation process, although it is not always indispensable or sufficient to guarantee innovative results (Baldwin, 1997; Baldwin, Hanel, Sabourin, 2000; St-Pierre and Mathieu, 2003). R&D allows companies to create new, actionable knowledge in the form of innovative products or processes, contributing to the maintenance and improvement of organizational competencies (Brouwer and Kleinknecht, 1996; Karlsson and Olsson, 1998; Landry et al., 2002; Croteau, 2003; Becheikh et al., 2006a, 2006b). In this sense, Karlsson and Olsson (1998) argue that R&D plays a key role in increasing a company's ability to assimilate and use external information, acting as an essential driver of innovation.

- **Human Resource Management (HRM) :**

Human Resource Management (HRM) is a fundamental strategic lever for fostering innovation, as emphasized by numerous studies (Michie and Sheehan, 2003; Souitaris, 2002; Laursen and Foss, 2003; St-Pierre and Mathieu, 2003). An effective HRM policy relies on a set of key practices, including the recruitment of qualified employees, tailored training programs, and systems for employee recognition and retention. These practices aim to develop the strategic, technical, and marketing skills necessary for innovation while ensuring increased employee motivation, an essential factor in maximizing their performance (Romijn and Albaladejo, 2002). These authors show that SMEs that have implemented formal training programs to enhance their employees' skills record a higher innovation rate.

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- **Monitoring Activities :**

Innovation is a complex and uncertain process that requires having a comprehensive view of the environment, detecting new products from competitors, identifying the best partners, and tracking market developments.
Monitoring activities constitute a crucial strategic approach for companies aiming not only to survive but also to grow in an economic context marked by increasing uncertainty and rapid transformations in markets and technologies. It is essential to gather information to anticipate market needs. As Audet (2003) highlights, implementing a monitoring system allows companies to transform threats into opportunities by feeding the strategic decision-making process.

- **Protection of Innovations :**

In a context where innovation is a key driver of competitiveness and competition, implementing a policy to protect innovations becomes a strategic priority for businesses. A company's success largely depends on its ability to commercialize unique offerings, innovative products, or services, which provides a significant advantage, especially for early market entrants who benefit from a dominant position in terms of market share and profitability compared to their competitors. However, as Baldwin, Hanel, and Sabourin (2000) point out, to fully leverage the benefits of innovation, it is essential to implement an effective protection strategy to counter counterfeiting and unfair practices.

1.3.2. External Determinants :

Collaboration with the external environment is a major lever for increasing the innovation capacity of businesses, particularly small and medium-sized enterprises (SMEs) (Perez, Brabet, and Yami, 2004). According to Landry and Amara (2002), Becheikh et al. (2006b), belonging to collaborative networks significantly promotes the implementation of innovations, particularly radical ones. These networks enable companies to access diversified resources and competencies that they may not always be able to develop internally. The emergence and success of innovation, as noted by Djeflat (2003), involve a set of actors located in specific geographical spaces. These spaces facilitate capturing the necessary conditions for partnership, which must be strengthened by strong relational proximity. Bas, Picard, and Suchecki (1998) highlight that technological and scientific relationships established with external partners are a key element to ensure not only the initiation but also the success of the innovation process.
It is possible to identify two main types of partners for SMEs in these collaborative networks. On one hand, actors directly related to the market, such as suppliers, customers, end-users,

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professional associations, and public economic support organizations. On the other hand, partners specializing in scientific and technical fields, such as research centers, higher education institutions, and consultants. These collaborations, whether commercial or technological, provide essential support for innovation by facilitating access to complementary expertise and key resources.

Collaboration with the external environment is a fundamental pillar for business innovation. It relies on close relationships between actors in territories or systems conducive to innovation, such as clusters and competitiveness poles (Storper, 1997; Djeflat, 2003). To maximize the benefits of these partnerships, SMEs must invest in developing their absorptive capacity and relational skills. These efforts will not only help them overcome internal limitations but also transform collaborations into a strategic lever for sustainable and competitive innovation. As highlighted in the literature, the ability to collaborate with external actors is a key success factor in an economy where knowledge and innovation are at the heart of business competitiveness.

1.3.2.1.Geographical Determinants of Innovation :

Geographical determinants play a crucial role in the development of innovation by integrating the spatial dimension into economic dynamics. They highlight the interactions between space and companies, particularly through concepts like industrial districts, technopoles, science parks, high-tech clusters, and innovative environments. These spatial forms, as demonstrated by Massard and Torre (2004), allow for the exploitation of proximity effects and positive externalities to stimulate creativity and performance in businesses.

Since the 1980s, through the foundational work of Marshall, followed by authors like Feldman (1994), Carrincazeaux et al. (2001), these concepts have been the subject of substantial theoretical production aimed at understanding how certain regions become innovation hubs through proximity effects and positive externalities. These approaches confirm that innovation often benefits from strong geographical concentration, enabling businesses located in the same region to take advantage of knowledge transfers, a common culture, enriched human capital, collective learning, and the diffusion of innovations.

Key concepts include :

- **Localized Innovation Systems**, analyzed by researchers such as Feldman (1994), are at the heart of this dynamic. They describe the local conditions favorable to innovation, particularly through collaboration between businesses, universities, and research centers, thus promoting collective learning and knowledge transfer. These systems generate dynamic regions capable of producing new technologies, products, and jobs.

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Feldman (1994) emphasized that these environments create a competitive advantage for the businesses located within them.

- **The innovative environment**, a concept studied by authors like Aydalot (1986), aim to reduce the uncertainties associated with innovation while sustainably supporting learning processes. It enables tacit knowledge transfer between businesses, creating an environment conducive to innovation. This approach emphasizes the role of cooperation between local actors and the sustainable development of innovation capabilities.
- **Industrial Districts**, theorized by Becattini (1990), highlight the role of local networks of interconnected businesses that share resources and competencies, thus enhancing their innovation capacity.
- **Clusters**, popularized by Porter, refer to the concentration of companies within the same geographical space. They focus on the benefits of geographical proximity for businesses in a specific field. This concentration facilitates the flow of knowledge, sharing of a common culture, and strengthening of human and social capital. These clusters, often located in technopoles or science parks, are strategic places for innovation, where cooperation and competition coexist to boost regional performance. Massard and Torre (2004) confirmed that these groupings offer a competitive advantage by intensifying local interactions.
- **Innovation Networks**, identified in two main forms, help structure relationships between large companies. Monofunctional networks, like those solving specific problems for large companies, and more complex networks, covering technical feasibility, product development, or commercialization. They play a complementary role in the development of innovation ecosystems.

1.3.2.2.Institutional Determinants of Innovation :

Institutional determinants of innovation are at the heart of economic development, highlighting the importance of institutions in the creation and diffusion dynamics of innovations. They manifest in several interdependent dimensions that shape the environment in which businesses operate. According to Dufourt and Kirat (1996), business innovation is closely linked to national institutional factors, such as the legislative and macroeconomic framework, including intellectual property rights, patent law, corporate governance, the financial system, and the fiscal framework. These elements constitute an essential infrastructure, offering businesses a secure, conducive, and predictable environment for

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innovation, while benefiting from legal and economic protections that regulate the rights and responsibilities of economic actors.

- **The Scientific and Technical System:**

The scientific and technical system acts as a strategic and essential lever for innovation. It encompasses both public and private research laboratories, as well as higher education and technical training. It not only facilitates the production of fundamental and applied innovative knowledge but also its diffusion within the economic fabric.

- **The Educational System :**

The educational system plays a central role in renewing and reproducing the skills necessary for innovation. A skilled workforce enables better assimilation of advanced technologies, thus increasing productivity gains. Lundvall's work (1992) emphasizes the correlation between education, continuous training, technical skills, and innovative performance, highlighting that investment in education is a prerequisite for economic development.

- **Partnership between Companies and Universities:**

The partnership between companies and universities illustrates the importance of institutional collaborations. While this partnership is often challenging due to the divergent objectives of these two entities, their complementarity can generate major synergies, produce significant results, and become an innovation driver when a common valorization policy is implemented. This policy can constitute the intersection between research policy and innovation policy.

- **The Financial System :**

The financial system is essential for encouraging businesses to innovate and supporting innovative projects. Governments, through public incentives such as tax relief and direct grants, support innovation initiatives and facilitate the emergence of innovative projects. However, these public aids are often insufficient to meet the financing needs of innovation. This forces businesses to mobilize external resources to address their innovation financing needs. Hall and Lerner's work (2010) shows that access to external capital and financing, combined with effective public measures, is essential to support innovative projects, especially in the early high-risk phases.

- **National Innovation Systems:**

National innovation systems (NIS) are essential determinants of innovation as they constitute an institutional and organizational framework that promotes the emergence, diffusion, and adoption of technologies within a country.

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Introduced by Lundvall in 1985, the concept of NIS is based on three main contributions: the theory of interactive learning (Lundvall, 1992), evolutionary theory (Dosi et al., 1988; Nelson, 1993), and institutional theory (Freeman, 1987). Interactive learning plays a decisive role in the performance of NIS. Lundvall (1992) emphasizes that innovation is a collective process rooted in social, economic, and institutional interactions.

According to Nelson (1993), an NIS consists of a set of institutions and rules whose interactions determine the economic performance of national firms. Among these institutions, the following can be distinguished:

- ✓ **Governments:** They intervene through regulation policies, standards, and funding to support basic research and establish public-private partnerships.
- ✓ **Companies:** They are both creators and users of technological innovations. They invest in R&D and product improvement to maintain their competitiveness.
- ✓ **Universities:** Lundvall (1992) emphasizes their role in producing theoretical knowledge and in training a qualified workforce. These institutions are centers for fundamental research in constant evolution.
- ✓ **Research Laboratories and Institutes:** These structures, often funded by private funds, play a key role in technological development and sectoral innovation. They provide specific technological solutions and a competitive advantage to partner businesses.

1.3.2.3.Demand and Customer Needs :

Demand occupies a central position in innovation mechanisms, playing a dual role as both a stimulus and a guide for businesses. As the main driver of innovation, it is at the heart of the "demand-pull" approach, which emphasizes the influence of consumer preferences and needs. According to Rahmouni and Yildizoglu (2011), changes in demand conditions directly affect the knowledge and technologies of companies, prompting them to adapt their production to better meet customer expectations. Guellec (2017) strengthens this idea by asserting that demand acts on two levels: by its scope, which encourages companies to invest in innovation to maximize profits by reducing unit costs through increased sales, and by its structure and price elasticity, which influence the profitability of innovations. High price elasticity favors process innovations, as they significantly impact sales, while low elasticity directs efforts toward product innovations, enhancing quality even at a high cost.

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- **Market Structure:**

Market structure is a fundamental element in the dynamics of innovation, influencing both the incentives to innovate and the types of innovations produced. Crampes and Encaoua (2005) emphasize that market structure and competitive pressure directly influence companies' innovation strategies. This pressure often leads firms to adopt new processes or organizational structures to maintain competitiveness (Rahmouni & Yildizoglu, 2011), in contrast to product innovation driven by changing demand and consumer purchasing power, as previously explained. Thus, a successful innovation must align with the market's evolution stage and structure. This allows companies to effectively meet the needs of mature markets and maintain their competitive position (Morck & Yeung, 2001; Rahmouni & Yildizoglu, 2011).

1.3.2.4.Competitive Pressure:

Competitive pressure is a key factor influencing a company's ability to innovate. According to Rahmouni and Yildizoglu (2011), it acts as both a selective constraint and a lever for technical progress by stimulating firms to develop innovative strategies. Two main theoretical perspectives can be distinguished:

- **The static view**, where intense competition in a perfectly competitive market reduces profit margins, thereby limiting resources and incentives for innovation (Rahmouni & Yildizoglu, 2011; Guellec, 2017).
- **The dynamic view**, supported by Schumpeter, which argues that imperfect competition fosters innovation. High margins generated by monopoly situations allow for funding research and developing differentiated products or improved processes (Guellec, 2017; Morck & Yeung, 2001).

Two major effects influence the incentive to innovate:

- **Efficiency effect**: A monopoly innovates to maintain its competitive advantage against potential entrants.
- **Replacement effect**: Potential entrants are motivated to innovate, particularly in cases of technological breakthroughs, to overshadow existing monopolies (Guellec, 2017).

1.3.2.5.Industry Sector:

The industry sector plays a crucial role in the dynamics of business innovation, as innovation is inherently sector-specific. Research shows that companies in the industrial sector tend to have a higher capacity for innovation compared to those in the commercial and services sectors, due to their strong dependence on research and development (R&D), which is a central pillar of their success (Mongo, 2013; Wamba et al., 2017; Becheikh et al., 2006). The diversification of

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innovation behavior in response to sectoral variation is typically explained in the literature by differences in technological opportunities. These opportunities, defined as the potential for technical progress in a sector, directly influence the productivity of research and development activities (Crampes & Encaoua, 2005).

2. Conceptual Model of Innovation Determinants:

Based on our theoretical model of the determinants of innovation behavior in companies, we propose a conceptual model that aims to answer the following research questions:

- ✓ **What are the reasons influencing companies' decisions to innovate or not?**
- ✓ **What are the characteristics and capabilities of companies that affect their ability to innovate?**
- ✓ **How can these be structured to better understand their dynamics?**

Identifying and analyzing these determinants is complex, as they result from interactions between internal and external factors, influenced by specific contexts. To address this challenge, this article proposes a conceptual model that structures the determinants of innovation into two main categories:

- **Internal determinants**: These factors are intrinsic to the company and concern its internal functioning. They include the entrepreneur's characteristics, the company's size, its resources, business practices, organizational structures, and overall strategy.
- **External determinants**: These factors are related to the environment in which the company operates. They encompass market dynamics, interactions with customers, the institutional environment, and environmental pressures.

This model constitutes a synthesis of current theoretical and empirical knowledge on the emergence and success of innovation within companies. It is presented schematically in the following figure:

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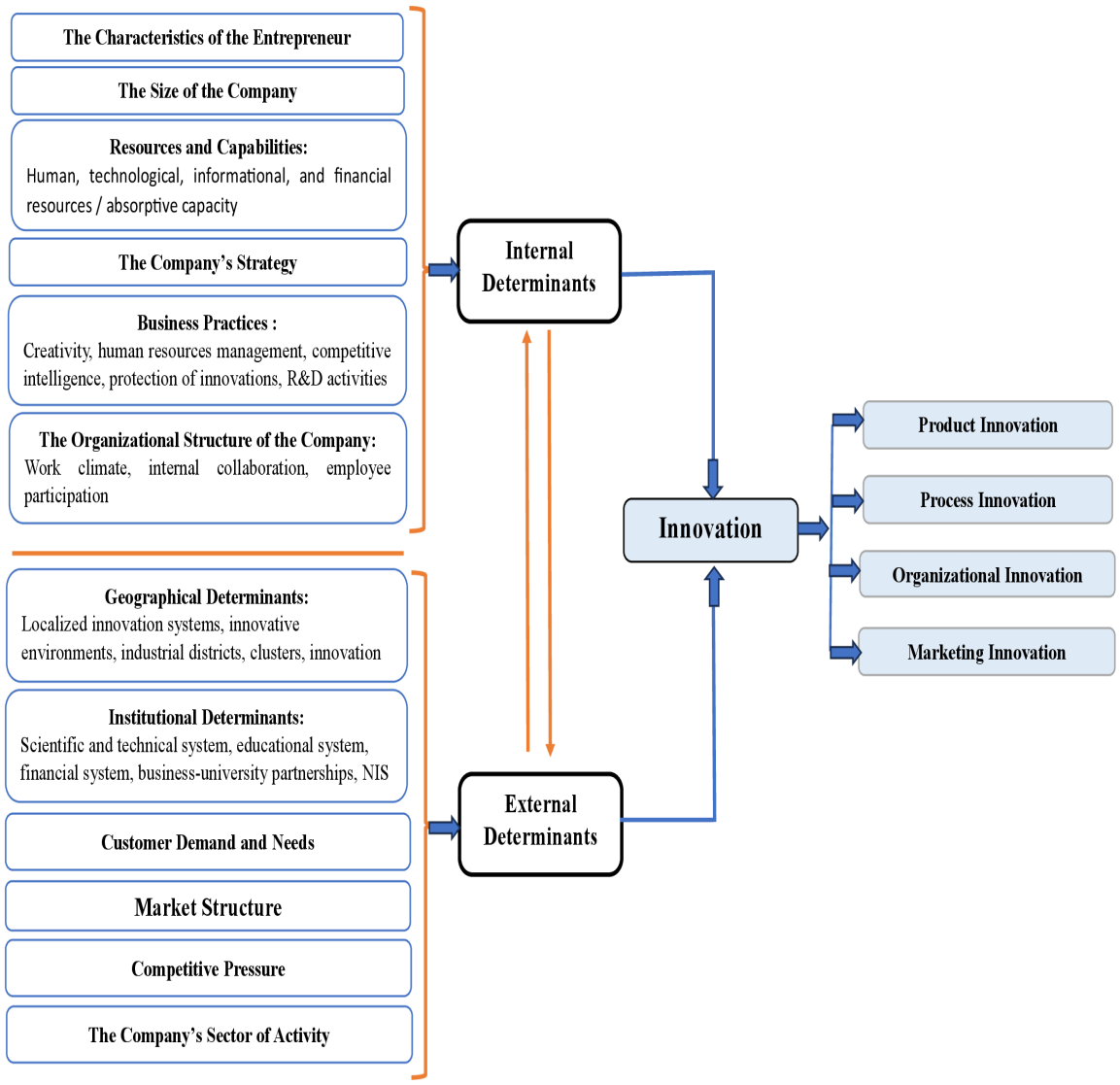
Figure 1: Conceptual Model of the Determinants of Innovation Emergence and Success in SME



Source: Developed by the authors

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Conclusion:

Innovation, as a key driver of competitiveness and economic development, plays a crucial role in the evolution of businesses and economies. It is reflected in the ability to transform ideas into new products, processes, or practices that meet market needs and anticipate future changes. Understanding the determinants of innovation is therefore crucial to maximizing its potential.
In this article, we have proposed a structured analysis of the main determinants of innovation, grouping them into two broad categories: internal and external determinants. Internal determinants encompass entrepreneurial characteristics, organizational resources, management practices, and strategic capabilities that directly influence the success of innovation initiatives. For example, creativity, research and development, organizational flexibility, and employee participation are identified as essential drivers for stimulating innovation and ensuring an effective response to market challenges.

External determinants, on the other hand, relate to the institutional environment, competitive context, and dynamics of cooperation with external partners. Integration into innovation networks such as clusters, competitiveness hubs, and collaborations with universities and research centers promotes access to the skills and resources necessary for sustainable innovation. This conceptual model, while remaining theoretical, provides a relevant analytical framework for understanding the complex interactions between these internal and external factors and their impact on companies' innovation capabilities.

Therefore, this work contributes to a better understanding of the levers to stimulate innovation and offers a solid foundation for developing effective strategies. It also opens avenues for empirical research aimed at refining this model and adapting recommendations to the specific realities of businesses, particularly SMEs. By promoting sustainable and competitive innovation, companies can better adapt to technological developments and the demands of the globalized market.

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