

Innovation Practices and Organizational Learning

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ABSTRACT: *The organization's ability to innovate is a prerequisite for the successful use of inventive activity of resources and new technologies. Indeed, the introduction of new technologies presents complex opportunities and challenges for organizations, leading to changes in management practices and the emergence of new organizational forms. Thus, innovation is an important source of growth and a determinant of competitive advantage for many organizations. Indeed, achieving innovation requires coordinated efforts of many actors and the integration of activities across specialized functions, domains and contexts of knowledge application. Our goal is to provide a perspective on organizational innovation and to identify the importance of organizational cognition and learning to improve innovation.*

KEYWORDS: innovative organization, types of innovation, innovation measures

INTRODUCTION

Companies are increasingly operating in environments where technological advances and innovation are essential factors in obtaining competitive advantages. For all countries, innovation has become a major concern of which specific measures and policies are taken for the establishment of an innovation system (Francis Donbesuura et al, 2020). The organization's ability to innovate is a prerequisite for the best use of resources and new technologies. Conversely, the introduction of new technologies offers opportunities and presents complex challenges for any organization, leading to managerial

practices and the emergence of new organizational forms. Organization and technological innovations are closely linked. Generally speaking, the term “organizational innovation” refers to the creation or adoption of a new idea or behavior for the organization (Amankwah-Amoah, 2019).

The existing literature on organizational innovation is diverse but it is not integrated into a coherent theoretical framework. Literature is classified into three different main streams. Organizational design theories primarily focus on the link between structural forms and an organization's propensity to innovate (Burns and Stalker, 1961; Mintzberg, 1979). The main objective of the research is to identify structural characteristics to determine the effects of organizational structural variables on the product and innovation process. This strand of literature is the most influential and most integrated in the technological innovation literature (e.g., Teece, 1998). In contrast, organizational theories of cognition and learning tend to focus on the micro-level process of developing new ideas for problem solving in order to emphasize the foundations of organizational innovation, which relate to learning and the process of creating organizational knowledge (Agyris and Schon 1978; Nonaka 1994; Nonaka and Takeuchi 1995). This field of research provides a microlens for understanding the capacity of organizations to create and exploit new knowledge necessary for innovative activities. In this context, innovation is considered as an ability to respond to, influence and shape changes in the external environment (Schniederjans, 2017).

The goal of this chapter is to provide a new perspective on organizational innovation. The first objective is to identify innovation and present the measures undertaken to innovate. On the other hand, we will discuss the presentation of an innovative organization. Finally, we will present the importance of organizational cognition and learning to improve innovation.

Definitions and measures of innovation

Definition of innovation

According to Reichert (2004), there is no universal theory of innovation which ultimately leads to a large number of definitions of the concept of innovation. However, most approaches refer to the idea of "novelty" and "change". Among the countless definitions of innovation, selection represents the correspondence between the nature of innovation and its challenges. One of the initial definitions of innovation is attributed to the economist Joseph Schumpeter (1934). He used the notion of “creative destruction” and “new combinations”, which are linked to: the production of a new good or a new quality of a good, the invention of a new method of production, the development of a new market, gaining new access to raw and semi-finished materials, and organizational change.

German innovation researchers Jürgen Hauschildt and Klaus Brockhoff described innovation processes (Hauschildt, 1997; Brockhoff, 1997). On the one hand, Brockhoff clearly differentiates between the notions of emergence of ideas, invention and development of a product ready to be sold. Each stage includes decision-making processes based on an acceptance or rejection of the idea, technological feasibility and proposed economic success. Furthermore, he made a distinction between planned and unplanned invention and also considered innovation as the result of successful planning. This understanding of this evolutionary process from an idea to a new “product” implies that innovations are the fruits of professional creativity and the management of research and development (R&D). This therefore indicates the employment of more or less linear procedures which can be followed by an understanding accepted with recognition by practitioners.

Furthermore, the British psychologist Michael West follows an approach which takes into account the potential creativity of individuals or groups. It views innovation as a non-linear process. It distinguishes between the creative process of coming up with ideas and the procedure of developing those ideas into “products.” Innovation is seen as creativity. According to Amankwah-Amoah et al (2018), organizational creation is fundamental to the innovation process. However, the emergence of ideas cannot be controlled from the outside. *“Creativity is thinking of new things, implementing innovation is producing new things”* (West and Rickards, 1999).

West added that “innovation is defined as the set of stages - the development of ideas - creativity - the follow-up of their application - the introduction of new products. Everett Rogers is considered among the most recognized researchers in the field of innovation, who defined innovation also to an idea, an object or a practice. It therefore develops the traditional vision of innovation of a new product towards a more open vision which takes into consideration both processes and social changes. According to Rogers, initial empirical research on innovation in the late 1950s and 1960s focused on the adoption of new technologies in developing countries (Rogers, 1962). Rogers introduced the idea of subjective novelty. Innovation is attributed if an object is new in the individual perception of people or groups. Also, an innovation is described as an idea, an object or a practice perceived as new by an individual or an adopting unit. When it comes to human behavior, an idea is “objectively” new, measured by the amount of time since its first use or discovery. The perceived novelty of the individual's idea determines his reaction. If an idea seems new to the individual, it is an innovation” (Rogers, 2003).

Swiss psychologist Christoff Baitsch (2000) defines innovation as radical change in various fields. As a criterion for labeling an innovation as novelty, it suggests the acceptance of a “product” as novelty. This retrospective approach includes a change of perspective: it is no longer the innovation generation

system which decides to attribute the novelty but the environment which is affected by the invention. Baitsch describes in more detail the system of change as a result of innovations from both sides in innovators and customers. If the innovations are in the field of mobile communication, they have consequences for a company like Nokia, for local business environments and for customers. This aspect therefore becomes obvious. Innovations are radical technological or social novelties, characterized by the collective acceptance or attribution of the label “novelty”.

To have an innovative organization, it is of great strategic importance to evaluate the potential of an idea in terms of the degree of technological novelty and possible markets. On the other hand, each of these technological steps can serve existing markets or the creation of new markets.

In terms of technology, we can speak of fundamental or radical innovation while the other stages represent incremental innovations (Kroy, 1995). Particularly, in a technologically advanced world, new inventions in new markets can change customer behavior. On the other hand, innovation is the most well-known area of technology in existing competitive markets. Furthermore, innovation does not always mean the use of high technologies. Rather, it is more about thinking and creativity expressed through the development of new products, processes or services. In this context, innovation management techniques are seen as a set of methods that help companies adapt more easily to conditions and requirements. The impact of these techniques on the development of competitiveness is increasingly important and knowledge is exploited appropriately in the knowledge-based economy.

Innovation management measures

The measurements of the innovation process are fundamental for practitioners and the academics, but the literature is characterized by a diversity of approaches, of prescriptions and practices which can be confusing and contradictory. Conceptualized as a process, there measure of innovation lends itself to there disaggregation into a series of separate studies. The consequence of this is the absence of a global framework covering all the activities necessary to transform the ideas into useful and marketable products.

We will develop first, a synthesized framework of the innovation management process composed of seven categories: entrant management, knowledge management, there innovation strategy, there organizational culture and structure, there portfolio management, project management and there marketing. The literature of innovation is a fragmented corpus. In this context, many researchers adopt a variety of epistemological positions to investigate and analyze a complex and multidimensional phenomenon (Wolfe , 1994) . More precisely, this diversity is reflected in the

multitude of approaches and measures. The representation of this diversity in a framework of synthesis is a difficult task. Next, we used these seven derived inductive categories to define an organizational framework to lead a constructive discussion on measuring innovation management. For each of these categories, we conducted a review of the diverse, relevant literature in order to be able to measure this typological category. Within each category, a series of measurement focus subdimensions are identified, reflecting distinctions in the literature.

Input management

Input management is concerned with the resourcing of innovation activities which includes factors ranging from financial, human and physical resources to generate new ideas. Intense research and high interest in research and development are not always evidence of good innovation practices. They may indicate a lack of efficiency in the process (Dodgson and Hinze, 2000). However, adequate funding is clearly an essential contribution in the innovation process. However, these measures mainly tend to be quantitative which shows the level of innovation project funding.

Kerssens-van et al (1999) indicate the absence of procedures and measures to help managers diagnose the performance of the concept of innovation or improvement of support. Human resource factors are measured by the number of people engaged in the task of innovation, in terms of innovation tendency, skills, experience and education level. Although Baldrige and Burnham (1975) argue that demographic characteristics (gender, age, etc.) do not influence the innovative behavior of individuals.

More recent research by Anzola-Román et al (2018) suggests that innovative groups should include individuals with different demographic characteristics. Members with higher levels of education and high self-esteem increase the effectiveness of R&D project teams (Kessler and Chakrabarti 1996), and people with higher levels of education from diverse backgrounds are associated to more innovative teams (Bantel and Jackson, 1989). An individual's propensity to innovate has received considerable attention, but it is difficult to measure.

Finally, the Potential Innovation Indicator (Patterson, 2003) provides a framework for investigating individual behaviors that promote or inhibit innovation in the workplace. This measure is built around four dimensions: the individual's motivation, behavioral problems, preferred approach and preference for reliable work methods. Unused capacity is considered the important catalyst for innovation. Slack provides the opportunity for diversification and fosters a culture of experimentation that protects against the uncertainty of project failure (Kimberly 1981). Typically, Slack financial metrics are used (Daman, 1991), although Miller and Friesen (1982) use both financial and human measures of Slack.

The use of systems and tools is an important contribution to the innovation process (Anzola-Román, 2018). The measures identified tend to relate to the organization in favor of supporting innovation. These can be of different kinds, such as the availability and use of tools and techniques for promoting creativity (Gunday, 2011) or the existence and use of quality control systems like informal methods for specific techniques such as total quality management (Souitaris 2002) . Although there is a focus on financial measurement of inputs, there is less emphasis on measuring other aspects of the category.

Even in financial measures, few attempt to determine the relevance of funding for the innovation project. Furthermore, most measures reflect a concern with R&D rather than other forms of innovation (e.g., process, business model). In particular, skill and knowledge inputs are poorly represented by measurement instruments. Tacit knowledge input cannot be captured by existing measures, and no measures of appropriate skill levels are developed. This is an imbalance that is being addressed by further work to develop a balanced set of measures covering all sub-dimensions of the entry category.

Knowledge management

Knowledge absorption is “the organization's ability to identify, acquire, and use external knowledge.” This notion is critical for the success of the company (Zahra and George, 2002) . The concept of knowledge has received a lot of attention in recent years (Assunta Di Vaio, 2020) and it plays an essential role in the innovation process. Knowledge management involves collecting ideas and information that drives idea generation, absorptive capacity and networking. Knowledge management covers the explicit and implicit knowledge held by the organization (Abubakar , 2019) as well as the processes of collection and use of information. The importance of generating a sufficient number of ideas is well established in the literature. Ideas are the raw materials for innovation. It is relatively inexpensive to produce and filter ideas, but it can have a significant impact on the success or failure of the organization (Francisco, 2020). Several authors have conceptualized the early stages of the innovation process as a rather vague period, including the identification and analysis of opportunities, the emergence and selection of ideas, and the development of concepts (Jaskyte, K, 2018) .

At the beginning of the innovation process, measurements tend to be more often quantitative than costly and timely. Metrics involve a hypothesis whose goal is to generate as many ideas as possible through the use of generative tools. Several measures attempt to count the number of ideas during a given period (Lee et al. , 2012). Furthermore, if knowledge is fundamental to innovation, then it is possible to measure the accumulated knowledge of the firm. One aspect of innovation concerns the combination of new and existing knowledge, which prioritizes the contribution of internal and external knowledge within the organization (Shin, 2019). This perspective encapsulates the idea of “absorptive

capacity.” Absorptive capacity means putting new knowledge to work for companies that have the capacity to recognize the value of new external knowledge to assimilate it and apply it for commercialization” (Ammirato, 2019). Firms with strong absorptive capacities are more likely to acquire knowledge and learn effectively from the outside. Better levels of absorptive capacity are positively related to innovation and performance (Chen 2004; Tsai 2001) but it is impossible to predict the degree of the level of investment in absorptive capacity for any individual business (Shin, 2019). However, conceptual development and empirical studies infer or imply a range of organizational knowledge.

More recently, the validity of patent statistics has been questioned. Patents vary in their usefulness to organizations. Thus, their input value to innovation is appropriately judged in terms of price (Jaskyte, K. (2018). Kleinknecht (1987) developed a question designed to identify informal R&D hours and they hypothesized that these hours could be devoted to other activities or simply correspond to official working hours. Patents represent codified knowledge but the importance of tacit knowledge to organizational innovation is emphasized in the approach based on resources (Barney,1991; Grant,1996) . Tacit knowledge is an important resource for any organization. It is difficult for competitors to imitate. Tacit knowledge is particularly difficult to measure in organizational research. Ambrosini and Bowman (2001)), proposed an approach that involves performing causal mapping facilitated by storytelling and the use of metaphors. Other attempts to capture tacit knowledge and group memory are reported by Oliver et al. (1997). Tacit knowledge is not well captured by existing measures.

Information flows within the company are important in triggering ideas and will enable the development of innovative concepts. Three approaches to measuring information flows are identified: first, measurements of the links between the innovating group with external organizations and sources; second, measures to collect information from internal processes; third, consumer information measurements. Determining linkage measures is to maintain external links with other organizations or sources of information, for example participation in research projects, academic links or attending trade fairs. These are primarily dichotomous measures that involve some sort of qualitative assessment of the nature of the connections.

Measures by Cebon and Newton (1999) suggest that the quality and diversity of links are considered an important factor, for example, visits to projects. Statistics on the use of formal information collection methods such as project reviews and the use of technical reports (Oliver et al., 1999), provide a frequently used approach to measuring information collection . Cebon and Newton (1999) suggest

collecting information from competitors' activities, in order to assess how well the activity is being carried out. This is another important area where a business needs to understand relevant information from its customer base. Atuahene-Gima (1995) lists a series of measures aimed specifically at examining how organizations view customers as a source of information and understanding measures assessing the adequacy of customers' time and information (Lee et al. 2012 ; Miller and Friesen, 1982)

Innovation strategy

Ramanujam and Mensch (1985) defined innovation strategy as a synchronized sequence of consistent and conditional resource allocation decisions to achieve the organization's objective. The activities are consistent with an overall organizational strategy which implies that management must make conscious decisions regarding innovation objectives. This technological view predominates in the literature through innovative initiatives (e.g., the adoption of new techniques and management practices) and in the conceptualization of innovation strategy (such as the development of existing or new products on the walk).

Based on the literature, researchers mainly adapt strategic management research measures to explore the existing solutions and scope of innovation strategy. Alan et al. (2003) use three elements of the strategic posture of organizational entrepreneurship designed by “Mintz-berg (1978)”. These studies classify organizations based on their approaches to innovation using ontological classifications rooted in the assumption that innovation direction is deciphered from quantitative interpretations of new products and market activity. Li and Atuahene-Gima (2001) suggest that evidence of an integrated innovation strategy is subjective and includes organizational assessments, such as resource allocation.

Xu et al (2018) describe three main elements: risk taking, responsiveness and persistent commitment to innovation. Shin and Choi (2019) demonstrated that new product performance is determined by strategy. Two distinct types of strategic direction measures are identified in the literature. First, the organization evaluates the innovation strategy through commitment to differentiated financing, explicit expression and importance of new products and services. The second type of measurement concerns strategy as a dynamic instrument that shapes and directs innovation in the organization.

Indeed, senior management is responsible for the vision of development and communication for innovation while being favorable to the adoption of a tolerant attitude to change and the defense of the notion of innovation within the company. 'organization. Managerial tolerance for change creates a climate conducive to the implementation stage of innovation, where conflict resolution is necessary (Damanpour 1991) . Managerial attitude is reflected in standards or support for innovation. These are

the expectation, approval and support to introduce new practices and improve skills in the work environment. The measures are mainly qualitative in nature and allow perceptions to be explored.

Singh et al. (2008) suggest a series of reflective questions aimed at enabling organizations to determine for themselves the expectations and understanding of the leadership role. For example, the organization makes it possible for staff who work in the field of innovation to comply with the rules of the organization to develop innovative projects or to be authorized to bypass certain procedures to further engage in innovation. 'innovation. It is evident that the most innovative companies adopt different operational strategies to promote the flexibility and capacity of their qualified employees (chiva et al, 2007), and to maintain organizational structures (Brown and Eisenhardt 1997). It is clear that any transition to an innovation strategy will likely take several years due to the resources and energy that are required.

Culture and Organizational Structure

Burns and Stalker (1961) described a contingency approach to innovation management, later developed to include concepts based on differentiation, specialization, and integration (Lawrence and Lorsch 1967). This suggests that environmental changes enable the fit between strategy and structure. In other words, the organization is differentiated, specialized and adequately integrated. The characteristics of the organization that follow an innovation-driven strategy are therefore consistent with the contingency approach.

In what follows, we will focus on the dimensions of culture and structure that are identified to differentiate between innovative and non-innovative organizations. Organizational structure concerns how staff are grouped and the organizational culture in which they work. There has been considerable work on the situational and psychological factors supporting innovations in organizations. Indeed, it is widely demonstrated that the perceived work environment (including both structural and cultural elements) has an impact on innovation in organizations (Ama bile et al. 1996) . Creative and innovative behaviors are promoted by work environment factors. Indeed, it is clear that organizations can create environments in which innovation is encouraged or hindered.

According to Shrivastava (1987), organizations must provide sufficient freedom to their staff to enable exploration of creating and managing innovation effectively. Ernst (2002) specified a range of generic characteristics of project groups dedicated to assigning the task of innovation: multidisciplinary, communication and cooperation between functions, qualifications and know-how of the project manager, the team autonomy and process responsibility. Lewin (1999) developed a conceptual model

of alternative flexible organizational forms to better respond to different types of competition. Yet, despite its importance, there are existing measures of flexibility in the literature. Ekvall (2008) proposed a range to measure organizational flexibility and production flexibility, such as “corporate change flexibility and responsiveness”. Lahti (2002) estimates the flexibility of resource allocation in which several measures of personnel flexibility are evident, such as "the adaptability of R&D personnel to technological changes" (Lee et al, 2012) and " the willingness to try new procedures and experiment with change, in order to improve a situation or process.

At the corporate level, Liao (2007) introduces a similar construct: “organizational responsiveness”. Organizational complexity, specialization and task differentiation have a positive relationship (Damanpour 1996), although Wolfe (1994) suggested that it favors initiation over knowledge acquisition. Administrative intensity, which is the ratio of senior managers to all employees, promotes administrative innovation (Damanpour 1991) . Centralization, concentration, and formalization of decision-making power at the top of the organizational hierarchy have a negative impact on organizational innovation (Burns and Stalker, 1961; Damanpour, 1991) . Indeed, the rigidity of rules and procedures can prohibit organizational decision-makers from seeking new sources of information (Adams et al., 2003) .

Work environment concept trend is an issue related to human resource management and the creation of a culture or climate in which individuals perceive innovation as a desired and supported organizational goal. There has been considerable empirical work on organizational climates supporting the innovation process and several measurement instruments have been developed (Mathisen and Einarsen, 2004). According to Anderson and West (1998), ICT (Information and Communication Technologies) and work environment assessment instruments for creativity (Amabile et al., 1996) are robust and rigorous. ICT has been applied and validated in several studies (Anderson and West 1998) . ICT is based on four main factors: participatory security (such as participatory team in decision-making procedures), support for innovation, vision and task orientation (team commitment to achieve the highest standards of task performance, the use of constructive progression procedures) (Anderson et al, 2000) . Kivimäki et al. (1997) proposed a fifth factor, “frequency of interaction” relating to the regularity of contacts and communication within the project team.

There is general agreement on the importance of individual and collective autonomy in the innovation process (Amabile, 1998) . Zien and Buckler (1997) emphasized the need for freedom to experiment. Zien et al add that measures of autonomy combine both qualitative and quantitative approaches, for example, “the degree of staff freedom”. Several authors have proposed general measures of autonomy such as “the freedom to make operating decisions” or “the degree of autonomy” (FrancisDonbesuur,

2020). However, morale and motivation are the dimensions of the innovative organization that relate to individuals in which staff are well rewarded. According to Michael (2012), the reward system focuses on the individual in the group and the organization as a whole. Aspects of morale and motivation that are measured include confidence (Miller and Friesen, 1982) and job satisfaction.

Organizational culture includes a shared vision as an accelerator of innovation, because the latter allows the development of new ideas (Amankwah, 2019). Mills and Smith (2011) found that the only factor needed is the predictive power in terms of potential success in innovation processes (design, planning, and execution) to have a clearer vision. Another aspect of culture is the propensity to take risks. Misra (2003) describes this as a willingness to face risky opportunities and tolerate failure. Similarly, Amankwah (2019) demonstrated that higher levels of participatory security facilitate innovation. Participatory security is characterized by socio-emotional cohesion.

Indeed, the organization is like a workplace to undertake innovative activities as an indicator of the innovation climate, measured by the number of applicants for positions, and the age of scientists and engineers. Keller (1986) offers a slightly different perspective on participatory safety with the construct of “group cohesion,” using a measure of five established items. This opinion outlined a wide variety of proposed measures for organizational culture and structure. However, Holbek (1988) argues that organizational innovation must embrace contrasting structures and climates. Chesborough and Teece (1996), and Burns and Stalker (1961) assert that there is a relationship between organizational design and types of innovation. The importance of portfolio management to product innovation has recently emerged as a key theme in the literature. It is important because of the speed with which resources are used in the innovation process (Cebon and Newton, 1999).

How effectively an organization manages its R&D portfolio is often a determining factor in its competitive advantage. The portfolio management objective corresponds in fact to technological and strategic resource choices which govern the selection of projects and the future form of the organization (Cooper et al, 1999). The problems of resource allocation, evaluation, selection and termination of projects in achieving the optimal portfolio are widely studied. The purpose of the models is to determine ways to allocate resources to projects to achieve an optimal balance in the product development portfolio. The process of selecting innovation projects requires evaluation and allocation of resources under uncertain conditions. Mine Afacan et al (2015) suggested that the systematic process guided by clear selection criteria optimizes the use of limited resources and improves the competitive position of the organization. Following this, more sophisticated mathematical tools are

developed to solve this problem. Schmidt and Freeland (1992) described the constrained optimization problem to maximize yield (according to specified criteria).

More recently, models have tried to take into account these more qualitative factors involved in decision-making processes. Economic models attempt to calculate the cost/benefit or risk of pursuing a specific financial project, whereas mathematical programming approaches seek to optimize goals subject to specified resource constraints. Algorithms for complex variables require courage and significant data entry while surveys do not show widespread use of these techniques. These approaches are all based on financial measures such as internal rate of return, net present value and investment rate.

At the other end of the spectrum, qualitative approaches such as mind control review rely on subjective perceptions and measures of portfolio balance. Cooper et al. (2005) find that the most successful organizations use explicit tools formalized and applied to all projects considered as a portfolio. Another series aims to identify the extent to which portfolio assessment measures are formalized within the organization (Cebon and Newton, 1999; Chiesa et al, 1996; Farrukh et al, 2000; Miller and Friesen, 1982) . Another approach is to view project evaluation and selection as an organizational capability. There is also a series of ex post measures assessing the relevance of project selection in light of results and alignment with business objectives (Lee et al, 2016) .

Project management

Project management is concerned with the processes that transform inputs into an innovation. The innovation process is complex, comprising a multitude of events and activities, some of which can be identified. Having an effective process for managing innovation ambiguity is universally considered essential to innovation. The various approaches considered relate to modeling innovation processes, for example the series of events, as a social interaction (Voss et al. , 1999) and the series of operations (Nelson and Winter, 1982) and as a communication process (Farrukh et al, 2000) . There is debate in project management research as to whether events and activities within the process occur linearly in a sequential, discrete manner or whether events are more disorganized or even chaotic. However, despite these different points of view, there are a number of common elements that can be summarized as the main components of managing an innovation project. Efficiency projects are tools, communications and collaboration. Several studies make efforts to measure project management effectiveness, primarily in the form of comparisons between actual budgets (project costs, project duration). Another measure of managing project success is speed. Speed of innovation has been positively correlated with

product quality or the extent to which it meets customer requirements. Measures include speed, performance, and harshness of the process (Cebon and Newton, 1999).

To achieve a high degree of effectiveness, organizations establish formal processes and use tools and techniques to facilitate innovative efforts. The strategic process is the best known of these, but other methods for innovation project management exist, including progressive product development and time-to-excellence cycle. These approaches are highly structured to manage the innovation process that emerged in the 1990s. The use of structured tools and processes is measured by project process assessments, for example the use of formal survey, through the problem-solving cycle (Bessant, 2003), the use of formal post-launch evaluation procedures (Atuahene-Gima, 1995) or the use of certified processes (Chiesa et al, 1996) .

Communications are important in project management. Damanpour (1991) demonstrated the existence of a positive relationship between internal communication and innovation. Internal communication facilitates the dissemination of ideas within an organization, increases diversity and also helps to improve the “climate”. Communication is measured by various integration mechanisms, for example committees, number of meetings and contacts (Damanpour, 1991) . These measures of internal and external communication in the literature are based on subjective and objective assessments. Subjective measures always include suppliers' and customers' ideas about new products (Parthasarthy and Hammond, 2002) and the degree of involvement of organizational members and their participation in extra-organizational work activities (Damanpour, 1991) . It is widely recognized that collaboration with suppliers and customers can also contribute significantly to the innovation process (Jiang, 2009). Collaborative work metrics include cultivated clients, percentage of projects in cooperation with third parties. Furthermore, Lee et al (2016) identify certain characteristics of internal collaboration, namely that teams are characterized by their vigilance, synergy and transparency.

Marketing

Commercialization is considered the second of two phases in the conceptualization of an innovation process (Hung et al, 2010). Indeed, the successful introduction of new products and services to markets is important for the survival and growth of organizations. Carneiro (2000) suggests that commercialization is a transitional phase in which the organization becomes less dependent on its technological capabilities, but more dependent on market dynamics. While technological capabilities are important for the early stages of the innovation process activities and at the launch phase development and product implementation. Casper (2000) considers aspects of marketing under the headings of market analysis and monitoring, to be able to address customer and market planning.

In their description of the R&D process, Liao et al (2009) characterized the commercialization stage as the money-making that corresponds to market analyzes and organizational commitment. Most measures are much more sophisticated. Measurements are often limited to a number of products launched over a given period. However, some researchers, (Lawson and Samson, 2001) , have focused on market analysis. Nasser Mohammad (2014) used the set of competitive launch measures (sales force, distributive and promotional support) which directly address the relevance of the organization's facilities in these areas.

Indeed, the area of commercialization is the least developed among the multiple issues related to innovation management. This is a huge gap because without this last step, the previous steps of input assembly, project management, etc. would fall through the cracks. will not result in a commercially reliable result for the company. We believe that this area of innovation needs to be developed, from both points of view of theory and measurement. Therefore, measuring innovation management is an essential discipline for scholars and practitioners. The ability of organizations to innovate is determined by several factors that relate to both their own internal organization and their market environment.

The organization innovative

Innovation is an important source of growth and a key driver of competitive advantage for many organizations. Thus, achieving innovation requires coordinated efforts of many actors and integration of activities across specialized functions, domains and contexts of knowledge application. Thus, creativity within the organization is fundamental to the innovation process (Van de Ven et al, 1999). The organization's ability to innovate is a prerequisite for the successful use of inventive activity of resources and new technologies. Conversely, the introduction of new technologies presents complex opportunities and challenges for organizations, leading to changes in management practices and the emergence of new organizational forms.

Organizational and technological innovations are intertwined. Schumpeter (1950) saw organizational changes, alongside new products and processes, as well as new markets as drivers of “creative destruction”.

The existing literature on organizational innovation is very diverse and is classified into three parts. Organizational design theories primarily focus on the link between structural forms and an organization's propensity to innovate (Burns and Stalker, 1961; Lawrence and Lorsch, 1967; Mintzberg, 1979). The main objective of this part is to identify the structural characteristics of the

innovative organization. This section also focuses on organizational change and adaptation as well as the processes of creating new organizational forms (Lewin and Volberda, 1999). The main objective is to understand whether organizations can adapt to radical changes and technological disruptions in the environment.

In this context, innovation is considered as the ability to respond to changes in the external environment, to influence and shape the latter (Burgelman, 2002; Teece, 2007). This section examines the nature of innovative organizations and the relationships between organization and innovation from these three points of view. This argues that organizations with their different forms of structures vary in their modes of learning and knowledge creation, which engender different types of innovation capabilities. This will be followed by an analysis of the organizational adaptation of contemporary challenges facing businesses to support innovation.

Organizational structure and innovation

Structural and innovation archetypes

Classic organizational design theory is marked by a preoccupation with universal forms and by the idea of "one best way to organize." The most influential is the work of Weber (1947) on bureaucracy and Chandler (1962) on the multi-divisional form. However, the "one best way" hypothesis was challenged by research carried out during the 1960s and 1970s under the rubric of contingency theory which explains the diversity of organizational forms and their variations with a reference to the requirements of the context. Contingency theory maintains that "the appropriate structure" corresponds to a given operating contingency, such as scale of operation (Blau, 1970), technology (Woodward, 1965; Perrow, 1970), or environment (Burns and Stalker, 1961; Lawrence and Lorsch, 1967). This aspect of the theory allows us to understand the relationships between the nature of the task and the technological environment, structure and performance. These studies specifically address the question of how structure relates to innovation.

According to Burns and Stalker (1961), the typologies of "mechanistic" and "organic" demonstrate differences in technology and market environments, based on their rate of change and complexity, impacting organizational structures and innovation management. Their study found that businesses are grouped into one of two main types: the first more rigid and hierarchical, suited to the stable condition; and the second type, a more fluid set of arrangements, adapting to conditions of rapid change and innovation. No type is inherently good or bad, but the corporate environment eventually invites a structural response. Lawrence and de Lorsch suggest that mechanistic and organic structures can coexist and reflect in the contemporary debate the importance of developing hybrid modes of

organizations that are capable of coping with both evolutionary and revolutionary technological changes (Tushman et al , 2010). While Burns and Stalker treat the organization as the undifferentiated whole whether mechanical or organic, Lawrence and Lorsch recognize that mechanistic and organic structures can coexist in different parts of the same organization due to the different requirements of the subenvironments functional. The work of these authors has a profound impact on organizational theory. The Burns and Stalker model remains highly relevant to our understanding of contemporary challenges and to being able to move from the mechanical to the organic form of the organization, as innovation becomes more important and the pace of change in the environment s 'accelerated.

Another important contribution is the work of Mintzberg (1979) who synthesized much of the work on organizational structure and proposed a series of archetypes that provide basic structural configurations of companies operating in different environments. In accordance with contingency theory, the successful organization designs the structure according to its situation. In other words, effective structuring requires consistency in the design of parameters and contingency factors. The "configurational hypothesis" suggests that businesses are likely to be dominated by one of five archetypes identified by Mintzberg, each with different potential for innovation: the simple structure, the mechanistic, the professional bureaucracy, the divisional form and adhocracy. Two of these archetypes are classified as organic organizations with a strong capacity for innovation: the simple structure and the adhocracy. The former relies on the direct supervision of a person as in the case of a start-up. The latter is a flexible project based on the mutual adjustment of team problem solving. It is the capacity for radical innovation in a volatile environment. The other three remaining archetypes, the bureaucratic machine, the professional bureaucracy and the divisional form are more inhibited in their innovative capabilities and less able to cope with novelty and change.

Contingency theories represent the diversity of organizational forms in the technological environment. They assume that technology and product markets become more complex and uncertain, and task activities more heterogeneous and unpredictable. Organizations will adopt flexible structural measures by moving from bureaucratic to organic form.

Strategy, structure and innovative business

The work of micro-economists in the field of strategy considers structures as a strategic choice for market management. Organizational forms are constructed from the two variables of "strategy" and "structure". The overarching argument is that certain organizational types are more likely to improve innovative performance in an environment that encourages the reduction of transaction costs and addresses capital market failures. The multi-divisional system, or M-form, for example, emerged to

cope with the increasing scale and complexity of businesses. This form is associated with a strategy of diversification towards technological products (Chandler, 1962). Lazonick's theory of "firm innovation" (Lazonick, 2005; 2010) is rooted in the Chandlerian framework, as it emphasizes structure in determining the firm's competitive advantages.

The theory distinguishes the optimized company from the innovative firm while the supervisor seeks to maximize profits within the company taking into account technological capabilities and constraints. The supervisor seeks to transform technological and market constraints by developing organizational capabilities that are difficult to imitate by competitors. Lazonick identifies three social conditions that support the development of the innovative enterprise. The first condition is "strategic control" which refers to the knowledge and incentives to allocate firm resources in the face of market threats and opportunities. Conventional research on organizational innovation has explored the determinants of an organization's propensity to innovate. Although researchers have analyzed the influence of individual, organizational, and environmental variables (Baldrige & Burnham, 1975), most research has focused on organizational structure (Wolfe, 1994).

In the field of organizational design theories, there is a study of the links between environment, structures and organizational performance. Several studies have shown how organizational structures facilitate the creation of new products and processes, particularly with regard to environmental changes. Micro-economists emphasize the importance of certain organizational forms in types of business strategies and product markets (Teece, 1998). More recently, there has been a shift in theoretical research away from purely formal structures towards a greater interest in processes, relationships and organizational boundaries (Pettigrew and Fenton, 2000).

Industrial economy and innovative organization

The work of microeconomists in the field of strategy considers organizational structure as a cause and effect of strategic management choice in response to opportunities. Organizational forms are constructed from the two variables of strategy and structure. The central argument is that certain organizational types are more likely to produce innovative performance in the environment, they are more suited to reducing transaction costs and coping with capital market failures. The multi-divisional form is associated with a diversification strategy in the areas of products and related technologies (Chandler, 1962).

The theory of the "innovative firm", developed by Lazonick and West (1998), is similar to the Chandlerian framework, in that it emphasizes structure in determining the competitive advantage of

the firm. Lawrence and Lorsch (1967) also build on the conceptualization of organizational problems such as differentiation and integration. This theory assumes that firms in advanced economies must achieve a high degree of integration in order to maintain a competitive advantage. Lazonick and West also argue that companies in the United States (such as Motorola and IBM) also benefit from a high degree of organizational integration in order to maintain their competitive advantage. Integration within the organization is an essential determinant of business strategy and performance. Teece (1998) explains the links between firm strategy, structure and nature of innovation by specifying the underlying properties of technological innovation and proposed the related set of organizational requirements of the innovation process .

In the institutional framework, Teece suggested that formal modes (governance modes) and informal modes (cultures and values), as well as external corporate networks, influence a company's innovative activities. Based on the four categories of variables namely organizational boundaries, internal formal structure, internal informal structure (culture) and external links, Teece identified four archetypal modes of corporate governance: multi- product, the integrated hierarchy, the virtual corporation and the conglomerate. It argues that various organizational arrangements are suited to different types of competitive environments and different types of innovation. Teece (1998) distinguishes two types of innovation: “autonomous” and “systemic” and associated them with different organizational structures. An autonomous innovation is one that is introduced into the market without massive changes to related products and processes. For example, the transition to all-wheel drive of many automobiles in the 1980s does not correspond to autonomous innovation. This type of change is systemic innovation which is favored in integrated companies because it requires complex coordination between various subsystems. However, the propositions are not yet empirically verified (Teece 1998). The work of micro-economists highlights the interaction between market and organizational factors in shaping innovative performance. They focus on internal dynamics and social processes within organizations.

Organizational cognition, learning and innovation

The cognitive foundations of organizational innovation

The “structural perspectives” discussed above view innovation as “new ideas for solving problems” (Amabile 1988, Kanter, 1983). This approach defines an innovative organization as intelligent and creative (Glynn, 1996) that has the capacity to learn (Senge, 1990) and create new knowledge (Nonaka and Takeuchi 1995). Cohen and Levinthal (1990) argue that innovative products depend on the prior accumulation of knowledge that allows innovators to assimilate and exploit new knowledge. From this

perspective, the role of cognition and organizational learning in promoting or inhibiting innovation is of crucial importance. The terms "cognitions" or "cognitives" refer to the idea that individuals develop mental models, systems of knowledge structures that they use to perceive, construct and make sense of their worlds in order to be able to make decisions about the measures to be taken. Individuals are limited in their ability to process the complex variety of content stimulation in the external environment (Simon's problem of bounded rationality) and to develop mental representations to filter, interpret and reconstruct the information received.

Birkinshaw et al (2008) suggest that organizations develop models and patterns of interpretation that influence organizational decision making. Organizational cognition actually differs from individual cognition because it encompasses a social dimension. Thus, research focuses on socio-cognitive aspects and seeks to account for social processes in the formation of collective cognition and knowledge structures. The idea that organizations can think and act collectively helps encourage much research into organizational learning and knowledge creation. However, shared interpretation systems facilitate the ability to process and interpret information in a deliberate manner, promoting organizational learning and collective problem solving and thus improving one's potential (Fiol, 1993). The paradox seems that organizational cognition can both enable and disempower. Thus, organizations with structures vary in their modes of learning and knowledge creation and have different types of innovative capabilities. Organizational boundaries and learning contexts influence an organization's cognitive vision and capacity for radical change.

Organizational learning and knowledge creation

Innovation is defined as a process of learning and creating new knowledge to solve problems. Theories of organizational learning and knowledge creation aim at the transformation of individual knowledge into collective knowledge and organizational knowledge. While some researchers argue that learning is an individual activity (Simon, 1991; Grant, 1996), most theories of organizational learning emphasize the importance of collective knowledge as a source of organizational capacity. Collective knowledge is the stored knowledge accumulated by common rules, procedures, routines and standards that enable problem solving. Collective knowledge resembles the "Memory" or "collective mind" of the organization (Walsh and Ungson, 1991). Collective knowledge corresponds to the interaction of several members. According to (Glynn, 1996), individuals and organizations are learning entities. However, all learning activities take place in a social context.

The organizational learning literature emphasizes the importance of interaction, context, and shared cognitive schemas for learning and knowledge creation (Nonaka 1994, Agyris and Schon 1978).

Therefore, knowledge transfer requires social interaction, common understanding and common interpretation patterns.

Nonaka's theory of organizational knowledge creation is rooted in the idea that collective cognition and learning constitute the foundation of organizational knowledge creation (Nonaka 1994, Nonaka and Takeuchi 1995). At the heart of the theory is the idea that tacit knowledge constitutes the origin of all human knowledge. Thus, organizational knowledge creation is a process of mobilizing individual tacit knowledge and interacting with the firm's explicit knowledge base. Nonaka argues that knowledge needs context creation. He uses the Japanese word "ba", which literally means "Place", to describe such a context. "Ba" provides a shared social and mental space for the interpretation of information, interaction and emerging relationships that are grounded in knowledge creation. Participation in a "ba" signifies a limited cognitive perspective or social boundary for engaging in knowledge sharing and creation. In the same vein, the notion of "collective work" developed in the works of Lave and Wenger (1991), Wenger (1998) and Brown and Duguid (1991; 1998), suggests that the members of the organization construct their identities and their common perspectives through "practice," which is shared through their work experiences.

This practice provides a social activity that shares perspectives and cognitive repertoires that develop to facilitate knowledge sharing and transfer. Therefore, the working group provides an important site where intense learning and knowledge creation can flourish. Nonaka's theory highlights the critical role of semi-autonomous project teams in knowledge creation. Much of the recent literature focuses on new innovative forms of organization and also on decentralization. Many organization and management researchers view the firm as an important social context where collective learning and knowledge creation are necessary. Nonaka and Takeuchi (1995) speak of "the knowledge creation society". Argyris and Schon (1978) suggest that an organization is a cognitive enterprise that accumulates and develops knowledge.

"Organizational knowledge" essentially refers to the shared cognitive, schemas and common understanding distributed within the enterprise that facilitate the sharing and transfer of knowledge. It is similar to Nelson and Winter's (1982) concept of "organizational routines": a kind of collective knowledge rooted in shared norms and beliefs that aids in problem solving; and which support complex patterns of action in the absence of written rules. The notion of "core competence" (Prahalad and Hamel, 1990) implies that firms' learning and knowledge creation activities tend to increase. Firms tend to persist in what they do to preserve learning and knowledge that is embedded in social relationships, shared cognition, and existing knowledge (Kogut and Zander, 1992). Thus, shared

context and social identity, associated with group-level learning as well as the accumulation of knowledge processes can limit the evolution of collective knowledge. Businesses may find it difficult to unlearn past practices and explore alternative ways of doing things. Levinthal and Mars (1993) argue that organizations often suffer from "learning myopia." Leonardo Barton's (1992) empirical research illustrates how firms' core capabilities can turn into rigidity in new product development. Mars (1991) points out that a fundamental tension in organizational learning is balancing objectives with the competing goals of "exploiting old certainties" and "exploring new possibilities." Knowledge creation, in turn, is a product of an organization's ability to recombine existing knowledge and generate new applications. New learning tends to come from contacts from outside the organization who are in a better position to challenge existing perspectives and paradigms.

Empirical research has suggested that sources of innovation often lie outside an organization (von Hippel 1988; Lundvall 1992). External business alliances and network relationships, such as the use of new personnel to graft new knowledge onto existing learning systems, are important mechanisms for organizational learning and knowledge renewal in an environment characterized by rapid technological evolution and disruptive changes.

The "dynamic capability" perspective argues that the long-term competitive performance of the firm lies in its ability to build and develop firm-specific capabilities and, at the same time, renew and reconfigure its skills. in response to the environment marked by "creative destruction" (Teece and Pisano, 1994). Thus, a fundamental organizational challenge in innovation is not only to maintain a static balance between exploitation and exploration or stability and change. Continuity is therefore defined as a need to dynamically balance and coordinate the two in any organization.

Two models of innovative organization: "J-form" vs "Adhocracy"

Over the past decade, an extensive literature has discussed the new organizational model and concepts to support organizational learning and innovation. These models include "high-efficiency work systems" or "lean production" (Womack et al 1990), developed by Japanese companies in the automobile industry. More recently, concepts such as "cellular shapes" (Miles et al, 1997); "modular forms" (Galunic and Eisenhardt 2001) and "project-based networks" (DeFillippi, 2002) reflect the growth of flexible and adaptable organizational forms with a strategic focus on entrepreneurship and radical innovation in knowledge-intensive sectors of the economy.

A closer look at the literature on new forms suggests that different models of innovative organizations can be classified into two polar ideal types, namely, the "J-form" and "adhocracy". The first refers to

an organization that promotes learning and draws its innovation capabilities from the development of specific collective skills and the resolution of daily problems. The term J-form is used because its archetypal characteristics are best exemplified by the "Japanese type" of organizations, such as the "J-company" model and Nonaka and Takeuchi (1995) in the "knowledge creation" model. ". On the other hand, in the adhocracy model (Mintzberg, 1979) tends to rely more on the expertise of an organized individual specialist than on a project based on the flexible market, on teams capable of responding quickly to changing needs. knowledge and skills, and the integration of new types of expertise to generate radical new products and processes. Both "J-form" and "adhocracy" are learning organizations with strong innovation capabilities, but they differ significantly in their structural forms, learning modes and type of innovative skills. The J-form organization relies on knowledge that is incorporated into its operating routines, team relationships and shared culture.

Learning and knowledge creation in the J-form has taken a major place within the organizational community which integrates skills in problem solving, and intensive interaction and sharing of knowledge across different functional units . The existence of stable organizational careers, rooted in an internal labor market, provides an incentive for organizational members to commit to achieving organizational goals and to develop firm-specific knowledge for resolution problem solving and process improvement. New knowledge is generated by merging, synthesizing and combining the existing knowledge base. The J-form tends to develop a strong orientation towards pursuing an incremental innovation strategy and to do well in relatively mature technology areas characterized by combination possibilities and incremental improvements of existing components and products (e.g. example, electronic components industries and automobiles). But, the J-form focuses on integrated organizational development, tacit knowledge and its emphasis on continuous improvement of this knowledge to inhibit learning by radically creating new knowledge from external sources. The disappointing performance of Japanese companies in the fields of software and biotechnology during the 1990s constitutes evidence of difficulties encountered by J-form companies in entering and innovating in the rapid development of new technological fields (Lam 2002).

Adhocracy is an organic form that merges professional experts with varied skills and knowledge into adhoc project teams to solve complex and uncertain problems. Learning and knowledge creation in adhocracy occurs within professional teams that are composed of employees from different organizations. Careers are typically structured around a series of discrete projects rather than progressing within an intra-company hierarchy. The project-based career is anchored in a labor market that allows for the rapid reconfiguration of human resources to align with market demands and technological changes.

Adhocracy has a much more permeable organizational boundary that allows the insertion of new ideas and knowledge from outside. This happens through the recruitment of new members through the human resources manager, and the open professional networks of members of the organization. Adhocracy derives its competitive strength from its ability to quickly reconfigure the knowledge base to deal with high levels of technical uncertainty, and to create new knowledge to create innovative products in different industries of emerging countries. Adhocracy is a highly adaptive form of organization that facilitates dynamic learning and radical innovation. However, the fluid structure and speed of change can create problems with knowledge accumulation, since the competence of the organization is embodied in the professional expertise and know-how of its members. Adhocracy is prone to knowledge loss when individuals leave the organization. For example, Starbuck (1992) speaks of the “porous boundaries” of this type of organization and emphasizes that it is difficult to maintain unique and exclusive expertise.

The social integration of organizations and their innovation capacities

Although competitive pressures are felt by almost all organizations in leading economies, the emergence of new organizational forms are affected by their particular institutional contexts. Some of the literature contrasts the motives for innovation and technological change in different countries and the attributes of these differences with national institutional frameworks and the ways in which they shape organizational forms and innovative skills (Whitley 2000; 2003; Hollingsworth , 2000). Firms coordinate their skills and knowledge resources differently and pursue distinctive innovation strategies (Soskice 1999; Hall and Soskice, 2001).

However, coordinated market economies like Japan and Germany have developed institutions that encourage long-term employment and business relationships, facilitating the development of distinctive organizational skills conducive to continued innovation, but progressive. J-form organization is facilitated by this type of institutional context. Conversely, “liberal market economies” like the United States and the United Kingdom are better able to foster adhocracy in response to the rapid emergence of new industries through radical innovation. The more permissive institutional environment in the United States and the United Kingdom facilitates high labor mobility between firms and the reconfiguration of new knowledge and skills into flexible forms of organization that support risky entrepreneurial activities. In addition, labor markets and other functional institutions (such as education systems and financial markets) also influence the development of skills and the innovative capabilities of firms (Lam 2000; Casper 2000). The links between institutions, organizations and innovation are more complex than the stylized and simplified contrast between J-form and adhocracy. The ability of companies to innovate makes it possible to develop different learning habits and

innovative skills. Societal institutions create constraints on companies' possibilities to develop different types of organizations and innovation skills, giving rise to distinct innovative trajectories.

Organizational change and innovation

Organizational theories are considered the methods employed by organizations that evolve and adapt to their environment, including the influence of technological changes on the evolution of organizations (Tushman and Nelson, 1990). A main debate discusses whether organizations can change and adapt to major discontinuous technological changes and environmental upheavals or whether radical change in organizational forms occurs primarily at the population level during the selection process (Lewin and Volberda 1999). . This literature includes at least three broad theories about the nature of organizational adaptation and change. Organizational ecology and institutional theories, as well as theories of business evolution, emphasize the powerful forces of organizational inertia and argue that organizations respond slowly and incrementally to environmental change .

This stream of work focuses on how organizations select environments, and how this selection process creates changes in organizational forms. A second view, that of the punctuated equilibrium model, proposes that organizations develop during long periods of progressive and evolutionary change, punctuated by discontinuous or revolutionary change. Organizational evolution is therefore closely linked to the cyclical structure of technological change. The punctuated equilibrium model views organizational transformation as a discontinuous event over a short period of time. The third perspective, which is described as strategic adaptation, argues that organizations are not always passive beneficiaries of environmental forces, but also have the power to influence the environment. The strategic adaptation perspective emphasizes the role of action management and organizational learning as well as the importance of change and continuous adaptation to cope with environmental turbulence and uncertainty.

The incremental and evolutionary theory of organizational change

Environmentalists (Hannan & Freeman, 1984) argue that individual organizations rarely succeed in making radical changes in strategy and structure in the face of environmental turbulence because they are subject to strong forces of inertia. These strengths are inherent in the established structures of the organization that represent relatively fixed repertoires of highly repeatable routines. As a result, organizations respond slowly to threats and opportunities in the environment. Theories of organizational ecology posit that adaptation of organizational structures within industry occurs primarily at the population level, with new organization replacing old ones that fail to adapt. The institutional perspective within organizations also emphasizes the stability and persistence of

organizational forms in a given population or in the field of organizations (Zucker, 1987). An important source of resistance to change can be the normative embeddedness of an organization in its institutional context. Organizations are socially defined and operate according to a set of values, norms, rules and beliefs. From this perspective, organizational change consists largely of strengthening existing ways of thinking and organizing. In other words, organizational change is convergent change that occurs within the parameter of an existing archetype, rather than revolutionary change that involves moving from one archetype to another.

Evolutionary theories of the firm (Nelson and Winter, 1982) also argue that organizations are subject to forces of inertia. During their development, organizations accumulate know-how, tacit knowledge and organizational skills. This perspective is compatible with the common argument in the literature on technological innovation that it is generally new firms that are the inventors of new organizational forms and that take full advantage of radical changes (Schumpeter, 1950; Aldrich and Mueller, 1982). However, the importance of new participants relative to established organizations in the development of new organizational forms has been shaped by scale and pace of environmental change.

Some evidence suggests that the effects of technological change on organizational evolution depend on whether the new technology enhances the capabilities of existing organizations (Tushman and Anderson, 1986; Henderson and Clark, 1990). The general observation is that new entrants play a greater role in organizational evolution such as technological innovations. While organizations are in a better position to initiate changes to adapt to technological changes through “upskilling”. An organization's ability to adapt to technological change is influenced by the speed at which new skills and abilities can be developed to meet the demands of new technologies. This is another reason which confirms that the institutional context plays an important role in the dynamics of organizational change. New businesses played a much larger role and took advantage of the new opportunity offered by radical technological changes in the United States than in other industrial economies due to the flexibility of professional labor and capital markets. and risks.

In the market economies of Japan and Germany, new businesses are not created quickly due to the rigidity of the labor market and the absence of capital. As a result, organizations may have more time to create new organizational structures and the skills to be able to adapt to technological changes. The relative importance of selection versus adaptation as an underlying mechanism for the creation of new organizational forms may thus vary in different contexts. Evolutionary and ecological theories of organizational change tend not to take these contextual factors into account.

Strategic adaptation and continuous change

Theories of strategic adaptation and organizational change have focused on the role of managerial action and strategic choice in the development of organizational change (Child 1972; 1997; Burgelman; 1991). Individuals within the organization are seen as enjoying a kind of limited autonomy. According to Child (1997), organizational action is limited by the cognitive, material capabilities and internal and external relational structures of the organization. Organizational actors, through “their actions” and “their adoptions” (Weick, 1979), are able to redefine and modify structures in ways that provide new possibilities for future actions. Therefore, the choice of strategic perspective projects the possibility of creativity and innovative change in the organization.

Many strategic adaptation theorists view organizational change as an ongoing process encompassing the paradoxical forces of continuity and discontinuity in organizational change. Continuity preserves a sense of identity for organizational learning (Kodama, 2003), and provides political legitimacy to increase the acceptability of change (Child and Smith 1987). Burgelman argues that the success of organizations depends on combining autonomy processes into strategy in order to bring about organizational renewal. Instead, the process concerns autonomous initiatives that emerge outside the organization and provide opportunities for organizational learning. These processes are considered vital for the success of organizational transformation.

In a similar vein, Brown and Eisenhardt (1997) note that continuous organizational change promoting rapid product innovation becomes a crucial capability for firms operating in industries. Based on detailed case studies of multi-product innovations in six companies operating in the IT industry, the authors concluded that continuous changes and innovations are supported by organizational structures that are described as "semi- structures " , and the combination of “mechanistic” and “organic” characteristics for rapid adaptation in an uncertain and volatile environment.

CONCLUSION

Faced with a difficult environment, companies are forced to constantly innovate to maintain their competitive advantages. This is all the more difficult for companies established in developing countries like Tunisia which are increasingly exposed to competition and local and international requirements in terms of competitiveness and innovation. Innovative organizations are subject to pressure from external factors such as competition, resource shortages and customer demands, or from internal organizational choice, such as obtaining distinctive skills, and increasing the extent and quality of

services. In one way or another, the adoption of innovation aims to ensure adaptive behavior to maintain or improve performance.

For organizational effectiveness, the organization emphasizes the heterogeneity of rare, valuable, non-substitutable and inimitable resources and capabilities in the development of distinctive skills. Thus, the ability of companies to innovate makes it possible to develop different learning habits and innovative skills.

The objective of this chapter was to draw up a portrait of the knowledge regarding innovation management that the literature currently has. To do this, we devoted the first part to exposing definitions and measures of innovation. Then, the numerous definitions proposed clearly illustrate the complex nature of an innovative organization. Its complexity is reflected in the different theoretical models which have marked the evolution of cognitive foundations. However, we have focused that cognition is part of innovation and vice versa. Therefore, we have also exposed the different approaches that highlight the coherence between innovation practices and organizational learning.

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