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A CONTINGENCY APPROACH TO INNOVATION MANAGEMENT: A CROSS-CASE COMPARISON

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ABSTRACT

Building on prior theory and research on organizational innovation, this paper aims to examine the linkages between context and process factors. We examined how two contingency factors (i.e. type of organization and type of innovation) and determinants of an organization's culture interact and work together within six innovative companies. We used a multiple-case study approach through a combination of direct observations, document transcripts, and in-depth interviews with key informants. Three archetypes of innovators emerged, depending on the sector in which companies act, the type of innovative activity, the strategy, and the established culture and structure of the organization. Interestingly, as every category consisted of a large company and an SME, our findings give little support to the size-specific nature of innovation.

Keywords: innovation process; multiple-case study; organizational culture; organization size; sector; semistructured interviews

INTRODUCTION

Today's organizations operate in complex and turbulent environments and thus need to anticipate and respond to changes to ensure their survival. At the same time, organizations face the demands of increased efficiency, flexibility and growth (Isaksen & Lauer, 2002). They will only survive if they are flexible enough to manage the changing demands created by markets, consumers, shareholders, legal requirements, economy, suppliers, technology, and social trends (Paton & McCalman, 2000). Therefore, an organization's ability to continuously innovate is essential to its future success (Brennan & Dooley, 2005). However, creativity and innovation will only flourish under the 'right' organizational circumstances (Martins & Terblanche, 2003). Hence, innovative activities of organizations have consistently attracted the attention of organizational scientists who seek to identify the factors that enhance or impede innovation (Anderson, De Dreu, & Nijstad, 2004).

The literature on innovation has mushroomed over the last decades, resulting in a rising number of conferences, courses, and publications on this topic (Manimala, Jose, & Thomas, 2005; Salaman & Storey, 2002; West, 2002). As innovation research progressed, several general models have been proposed at different levels of analysis (Drazin, Glynn, & Kazanjian, 1999). By and large, organizational scientists have made strides forward in shifting the level of analysis from being purely at the macro-organizational level toward the individual and work group level (Anderson et al., 2004). For instance, each of the three major theories of organizational creativity – the componential theory of Amabile (1997), the interactionist theory of Woodman, Sawyer, and Griffin (1993), and the multiple social domains theory of Ford (1996) – includes the work environment as an influence on employee creativity. Perceptions of the work environment are generally referred to as 'organizational culture' (Patterson et al., 2005), which is a determining factor in most innovation models (e.g., Damanpour, 1991; Martins & Terblanche, 2003; West & Anderson, 1996).

Although innovation scholars unanimously confirm the culture–innovation relationship, there seems to be little agreement on the type of organizational culture needed to improve creativity and innovation (Martins & Terblanche, 2003). Damanpour (1991) was one of the first to suggest that the reason for the inconsistency in the innovation literature pertains to the lack of a clear specification of the context and/or types of innovation studied. Wolfe (1994, p. 424) exposed the enduring lack of "clearly specifying the characteristics of the innovation studied, the stages of the innovation process considered, and the types of organizations included in an investigation". West, Hirst, Richter, and Shipton (2004)

developed a model on team innovation, but admit: "we draw researchers' attention to the observation that we have relatively little understanding of the organizational context" (p. 292). In summary, few innovation scholars seem to include contingency factors that affect organizational innovation in their research, and findings are often generalized. Moreover, most organizational studies that did focus on context, only included one contingency variable, such as industry (e.g., Chatman & Jehn, 1994), sector (e.g., Malerba, 2005), size (e.g. Damanpour, 1992), or structure (e.g., Hage & Dewar, 1973).

As focusing on a single dimension of context fails to capture the combined effects of different contingencies on organizational innovation, we aimed at a multidimensional innovation study. We seek to answer the following research question: how do various innovative organizations configure themselves to deal with organizational innovation? Hence, the aim of this paper is to develop a deeper understanding of how contextual conditions and innovation processes interact and work together. More specifically, we seek to study the relationship between two contingency variables – type of organization and type of innovation – and dimensions of the organization's culture within six innovation-supportive firms. Our research question is presented in figure one.

Insert Figure 1 about here

In the following sections, we first elaborate on our theoretical framework, building on contingency and organizational innovation theory. We define organizational innovation and explain the context (i.e. type of organization and innovation) and the process dimensions (i.e. elements affecting an organizational culture) of our research study. Second, we explain our multiple-case study method. We then report on our cross-case analysis out of which our typology emerged. Finally, we conclude with a discussion of the most salient findings and suggestions for future research.

CONCEPTUAL FRAMEWORK

We define organizational innovation as the generation, development, and implementation of a device, system, policy, program, product, or service that is new to the organization (Damanpour, 1991). The dance of an innovative organization is shaped by the processes underlying organizational innovation (West et al., 2004). An organizational innovation process progresses through distinct though not necessarily sequential stages (Van

De Ven, Angle, & Poole, 1989). While creativity is often referred to as the generation of new ideas, innovation is the development and application of ideas in practice (Pretorius, Millard, & Kruger, 2005; West, 2002). Implementation of these ideas requires major changes in organizational structures or processes (Damanpour, 1991; Scott & Bruce, 1994).

Organizational context and innovation

According to the contingency perspective, an organization's ability to achieve its goals is dependent on the organizational context (Perez-Freije & Enkel, 2007). Most researchers have examined the singular effects of the contingency factors. The assumption underlying these studies is as though the organizational contingencies act in isolation in influencing the process of innovation. In reality, firms are subject to the pulls and pressures of multiple, rather than singular contingency factors (Gresov, 1989). Therefore, we investigated the influence of two contingency variables: type of organization and type of innovation. Following Damanpour (1991), who advocated that the type of organization should be a primary contingency variable, we selected firm size and sector as elements of the organizational context. Distinguishing these types is crucial, as the variance in environmental opportunities and threats for organizations of different types can influence their degree of innovativeness (Pavitt, Robson, & Townsend, 1989). We distinguished type of innovation as a secondary contingency variable.

Size. Organization size has long been considered to be one of the most significant contingency variables in macro-organizational studies (Chen & Hambrick, 1995). Organizational theorists usually use the total number of employees as the measure of organization size (Gopalakrishnan & Damanpour, 2000). Innovation scholars widely debated on the question whether small or large organizations are more successful at adopting innovations to respond to rapid environmental change. Damanpour (1992) found a positive association between organization size and innovation. Pavitt and colleagues (1989) found that the average size of innovative firms is increasing, while the average size of divisions within those forms is decreasing. It appears that large innovative firms are creating the required flexibility and autonomy needed for innovation by founding smaller, more specialized divisions, while maintaining the advantages associated with large size (Munier, 2006). Until now, academic research has not led to an unambiguous interpretation of the size-innovation relationship (Damanpour, 1992; Munier, 2006). Damanpour (1992) advocated analyzing the role of moderators in the size–innovation relationship. For instance Gopalakrishnan and

Damanpour (2000) tested the relationships between organization size, magnitude, speed and type of innovation. In a similar vein, we attempted to grasp the relationships between size, organizational culture, and organizational innovation.

Sector. The sector-specific nature of technological activities has long been recognized as one of the key factors explaining the variety of innovative behaviors and performances of organizations (Evangelista & Mastrostefano, 2006). Therefore, most scholars conducted research within one sector or one industry, such as the petroleum sector (Manimala, Jose, & Thomas, 2005), the energy sector (Sagar & Van der Zwaan, 2006), the manufacturing sector (Becheikh, Landry, & Amara, 2006), the banking industry (Gopalakrishnan & Damanpour, 2000), the wood industry (Wagner & Hansen, 2005), or the securities industry (Iwamura & Jog, 1991). Various streams of research tried to examine patterns and determinants across sectors. One example is the framework of Malerba (2005), who proposed a model for examining factors that affect innovation in different sectors. Based on an analysis in five sectors, Malerba (2005) found that technology, actors and networks are tremendously different from sector to sector. To get insight into sectorial differences, we tried to achieve variety across our cases and selected organizations operating in six different sectors.

Type of innovation. According to the above-mentioned definition of organizational innovation, there are different innovation types (e.g., product, process or administrative) affecting all parts of an organization (e.g. local or global) to varying extents (e.g. radical or incremental). Innovation is thus not confined to new technology of products, but also covers new business models, new ways of working with clients, new ways of packaging existing technologies, or new ways of working with partners to develop common areas of interest (Hamel, 2000). Furthermore, the degree of novelty of the innovation can differ, ranging from incremental to radical. Firms that innovate may seek incremental scientific improvements to serve existing markets, or may break away from the safety of existing products and markets to pursue radical new ideas or markets (Damanpour, 1991; Dewar & Dutton, 1986; Moch & Morse, 1977). Given the intended diversification of our study, we included organizations that innovated incrementally and/or radically, both in terms of products and processes, as in terms of management techniques or organizational structures.

Innovation-supportive dimensions and determinants of organizational culture

Process theory research of organizational innovation examines the nature of the innovation process. This type of research focuses on why innovations emerge, develop, grow,

and terminate (Wolfe, 1994). The innovation literature describes a long list of organizational dimensions affecting creativity and innovation. Central to most, if not all, models of organizational innovation are perceptions of the work environment, referred to as the organizational climate or organizational culture (e.g. Cummings & Oldham, 1997; Isaksen & Laurer, 2002; Ekvall, 1996; Oldham & Cummings, 1996; Sharman & Johnson, 1997). Organizational culture is therefore the main process variable in this inquiry (Patterson et al., 2005).

Organizational culture is defined as a set of shared values and norms held by employees that guide their interactions with peers, management, and clients (Patterson et al., 2005, Van den Berg & Wilderom, 2004). It was not until the beginning of the 1980s that organizational scholars began to pay serious attention to the concept of culture (Cameron & Quinn, 2005). The reason organizational culture has been ignored is that it refers to the taken-for-granted values, underlying assumptions, and expectations generally accepted as being rather intangible (Buch & Wetzel, 2001). Although the organizational culture cannot directly solve the problems of any specific innovation project, it can support innovation by creating an organizational climate which rewards innovation-supporting behaviors. Moreover, culture can provide an ideology and set of norms that guide organizational members through the uncertain process of innovation (Amabile, 1997; Russell, 1989). Organizational culture offers a shared system of meanings, which forms the basis of communication and mutual understanding (Martins & Terblanche, 2003).

At present, managers and scholars have widely accepted the notion that organizational culture is linked with positive organizational results (Gordon & DiTomaso, 1992; Martins & Terblanche, 2003). Researchers repeatedly found a positive link between organizational culture and success through innovation (Igo & Skitmore, 2006). Jassawalla and Sashittal (2002) found that organizational culture can serve as a powerful frame of reference for thinking and actions in terms of uncertainty and ambiguity engendered by changes in new-product processes. Succesful organizations have the capacity to absorb innovation into the organizational culture and management processes (Tushman & O'Reilly, 1997).

Several types and classifications of organizational culture have been proposed. Organizational researchers have shown that the form of an organization's culture can be expressed by balancing validated indicators (Igo & Skitmore, 2006). For instance, Hofstede (1983) posited that a culture could be classified by comparing the degree of individualism versus collectivism, the apparent power-distance metric, tendency towards uncertainty avoidance, and the bias between masculinity and femininity. One of the most commonly used

classifications is the theory of Cameron and Quinn (2005). Their model, validated in the *Journal of Organizational Behavior* by Patterson and colleagues (2005), is based on the Competing Values Framework of Quinn and Rohrbaugh (1983). One dimension differentiates criteria that emphasize flexibility and dynamism from criteria that place emphasis on stability and control. Some organizations are considered to be effective if they are changing, adaptable, and organic. Others are viewed as effective if they are stable, predictable, and mechanistic. The second dimension ranges from an internal to an external orientation. The internal focus refers to integration and unity, while the external focus comprises differentiation and rivalry. The Competing Values Framework leads to four types of organizational culture, which place a different emphasis on each of these dimensions: Adhocracy (i.e. flexibility and external focus), Market (i.e. stability and external focus), Clan (i.e. flexibility and internal focus) and Hierarchy (i.e. stability and internal focus).

Innovative cultures are associated with high autonomy, risk-taking, tolerance of mistakes, support for experimentation, and low bureaucracy (Anderson et al., 2004; Scott & Bruce, 1994). Organizational cultures that support innovation have been linked with environmental circumstances, strategic approaches, the values and actions of top management and organization structure (Martins & Terblanche, 2003). Table 1 provides a summary of the most cited determinants of organizational cultures that stimulate innovation. The list is not meant to be exhaustive, but is representative of the innovation field. These dimensions are expected to have an influence on the degree to which creativity and innovation take place in the organization (Martins & Terblanche, 2003). In this study, they are used as a starting point in investigating the relationships between context and process variables that affect organizational innovation.

Insert Table 1 about here

METHOD

Research design

The research design is case study research, which permits to fully comprehend a phenomenon within its real-life context (Yin, 1994). Case studies have frequently been applied in previous innovation research that aimed to get a rich and deep understanding of the context and processes involved (e.g. Brown & Eisenhardt, 1997; Cabello Medina, Carmona

Lavado, & Valle Cabrera, 2005; Jassawalla & Sashittal, 2002; Manimala, Jose, & Thomas, 2005; Storey & Salaman, 2005). Case studies are most appropriate for 'how' questions because they deal with operational links, rather than mere frequencies or incidence (Yin, 1994). The case study is a detailed investigation, with a view to providing an analysis of the context and processes involved in the phenomenon under study (Stake, 1995). The phenomenon is not isolated from its context but is of interest precisely because it is in relation to its context (Eisenhardt, 1989). Multiple-case designs allow cross-case analysis and comparison, and the investigation of a particular phenomenon in diverse settings (Yin, 1994).

Case description

As explained in the conceptual framework, we aimed to study various organizations in terms of type of organization (i.e. company size and sector) and type of innovation. These two contingency factors were used to select the cases, as they are considered to have a significant impact on innovation (Gopalarishnan & Damanpour, 2000). Furthermore, we included organizations that are market leaders in innovation within their respective sector. For selecting our large companies, we used the list of innovative companies belonging to the Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT). Experts of a prominent business school in Flanders were asked to indicate innovative SMEs that fulfilled the above-mentioned criteria. Table 2 describes the six cases we built on in this paper: *Build*, *Diverse*, *Energy*, *Furni*, *Multimed*, and *Pharma*.

Insert Table 2 about here

Build. *Build* is a medium-sized, international manufacturer of chemicals for the construction and manufacturing industry as well as for do-it-yourself. The company has 24 daughter companies worldwide. Ninety-three percent of the turnover goes to export. Since its foundation in the 1960s, the company has grown from a small family business to the multinational corporation it is today. Worldwide, about 800 employees work for *Build*. The company is mainly involved in incremental product innovations.

Diverse. *Diverse* is a multinational operating from the US. It is a technological diversified company, operating in a large amount of autonomous divisions clustered in six sectors. The company is oriented towards specialties and niche applications. About 67,000 people work for *Diverse* worldwide. The company opts for a broad spectrum of product,

process, and administrative innovation projects. *Diverse* used to go for radical innovations, but increasingly chooses for incremental innovations.

Energy. *Energy* is a Belgian SME specialized in tailor-made industrial energy systems. *Energy* has specialized knowledge in combustion technologies. *Energy* has 210 employees worldwide. The company has many innovation projects that are rather incremental in nature. *Energy* brings about product, process and administrative innovation projects.

Furni. *Furni* is a small SME that delivers tailor-made furniture for events, seminars, and fairs – such as tables, chairs, shelves, coffee machines, refrigerator, and freezer units. It is a logistics company that counts 25 employees. *Furni* is focused on incremental process innovations.

Multimed. *Multimed* is a Belgian SME, originally formed in 1946. This internationally operating firm develops and manufactures a wide range of products and solutions for multimedia and communication markets - such as transport, nurse call, conference, and multimedia learning. *Multimed* has a clear focus on innovative, leading edge technologies. The company employs 210 people. *Multimed* is technology-driven; 75% of its employees have a technical background. The company is involved in product, process, and administrative innovations. The innovations are incremental as well as radical.

Pharma. *Pharma* is a large, international pharmaceutical company. *Pharma* is a research-intensive organization, with a large amount of highly skilled employees. The company has 122,200 employees worldwide. *Pharma* has an international reputation for pharmaceutical innovation. *Pharma* was established in the 1950s, with the aim of conducting pharmacological research. The company is involved in product, process, and administrative innovations that are incremental as well as radical.

Data collection

Our data were collected through a series of semistructured interviews, direct observations, and document transcripts. Through interviews, researchers can access case participants' views and interpretations of actions and events (Yin, 1994). Furthermore, interviews ensured that the respondents understood what they were being asked, and enabled us to check any inconsistencies in the information that was being provided. We conducted 30 semistructured interviews with individual respondents during several site visits. All interviews were taped and transcribed. Interviews typically lasted 90 minutes. At each site, we interviewed three types of respondents: at least one director, vice president or senior manager

who was responsible for multiple projects, at least one project leader who was responsible for a single project and at least one employee involved in the project. There was a mixture of marketing, research and development, sales, human resources, and engineering informants. As all interviews took place on site, they coincided in all cases with a tour of the production or work area. Additionally, the researchers also examined available documentation, corporate presentations, and leaflets to provide convergent evidence regarding the innovative practices.

The interview guide had four sections. It began with the background of the respondent and the importance of innovation for the company and for the sector. In the second part of the interview, we sought to grasp the innovation-supportive determinants of a broad range of innovative projects within the organizations studied. The third part focused on the dimensions of organizational culture. The final part of the interview concentrated on how innovation was managed in the firm.

Data analysis

We coded all interviews along the different dimensions of our conceptual framework. The coding scheme enclosed a set of seven categories for analysis, incorporating 31 sub-categories. We used a qualitative data analysis computer program (AtlasTi) to facilitate the data analysis process. As such, meaningful data chunks could be identified, isolated, grouped, and regrouped for analysis (Creswell, 2003). To enhance the reliability and validity of our analyses, a second coder recoded approximately 10% of the interview transcripts. By coding the same interview twice, we were able to check the stability (Krippendorff, 1980; Weber, 1990). Measures of interrater agreement were obtained by calculating the per cent agreement for each transcript. Ambiguities and disagreements in codings were resolved by discussing key terms and jointly reviewing the interview transcripts until consensus was reached. The average agreement was good (i.e. 85%), since reliability measures above 85 per cent are considered quite high (Kassarjian, 1977).

We first analyzed the data by building individual case studies for each organization, regarded as 'families' in AtlasTi. The creation of families is a way to form clusters for easier handling of groups of codes (Muhr & Friese, 2004). Relying on methods suggested by Eisenhardt (1989), we looked for within-group similarities coupled with intergroup differences. Furthermore, we selected pairs of cases and then listed the similarities and differences within each pair to identify the organizational culture of our cases (Eisenhardt,

1989). Comparing and contrasting several cases enabled us to reveal common patterns and differences between our cases (Cabello Medina, Carmona Lavado, & Valle Cabrera, 2005).

FINDINGS: A TYPOLOGY OF INNOVATORS

Our analyses indicated considerable differences between the six innovative organizations. On the basis of our cross-case comparison, we identified eight clusters of characteristics, pertaining to three different types of innovators. Successful organizations in fast-changing industries adapt flexibly to environmental changes. Innovation is a priority that is achieved by semi-autonomous teams working on different projects. Succesful companies in slow-changing industries focus on efficiency and stability. Innovation is attained by strong coordination and centralized decision making. Organizations in moderately changing industries constantly search for a balance between flexibility and control mechanisms that lead projects in the right strategic direction. Table 3 shows the main characteristics across each of the three types of innovators. The key distinctions between these three innovators are related to the sector, the innovation type, the strategy, and the established culture and structure of the organization. To illustrate these findings, we describe the three types of innovators in more detail with representative excerpts of our interviews.

Insert Table 3 about here

Type 1: Flexibility-oriented innovators

Size, sector, and innovation type. Two companies belonged to this category: the large company *Pharma* (122,200 employees) and the SME *Multimed* (210 employees). Although differing in size, these two companies work in rapidly changing sectors. Our interviews reveal that flexibility-oriented innovators seek to balance different types of innovations in order to maintain a healthy range of project selections. They pursue a broad spectrum of product, process, and administrative innovation projects ranging from incremental to radical. In *Multimed*, innovation projects are divided into four categories based on an evaluation of the risk and the expected profit. A low-risk project has less gates to pass and thus will be faster implemented than a high-risk project. Every business unit has an idea coach who bundles the ideas of his/her unit. The idea coach enriches the ideas through a positively challenging discussion with the idea owner, leading to a clearer description of the

idea at stake. The coach is authorized to evaluate low-risk projects as these will only pass one decision gate before implementation. High-risk projects have more strict evaluation criteria. The evaluation of ideas leads to a differentiation being made between incremental and breakthrough projects.

Strategy. For *Pharma* and *Multimed*, innovation is critical for their survival and thus the company's major goal. Their priority for innovation is highly related to the sector in which these companies are active. Pharmaceutical and high-tech companies are by nature more oriented towards introducing novelties than, for instance, companies in the building industry. Flexibility-oriented innovators constantly identify and investigate emerging technologies that could have potential for the current businesses or that could present new opportunities. Current and potential customers have always driven innovation in companies in the modern age, but flexibility-oriented organizations are taking the idea of focusing on customers to another level by creating personalized products. Such customization was already a trend in the clothing, music, and telecommunication industries (Jamrog, Vickers, & Bear, 2006), but now seems to have expanded to other fast-changing industries, such as the pharmaceutical industry. For instance, *Pharma* is exploring the idea of 'individualized medicine', by developing tailor-made drugs based on a thorough analysis of sub-populations. For some patients, individualized medicine will be able to triple the chance on success. Citing the head of a research and development division within *Pharma*: *"Innovation is vital. Our senior management quotes: 'there are only three important things for us: innovate, innovate, innovate'. That's a function of the changing landscape, of what we have to formulate; but also a function of the changing nature, of how you approach a disease."*

Culture and leadership. *Pharma* and *Multimed* show many features of the Adhocracy culture of Cameron and Quinn (2005), which emphasizes flexibility and an external orientation. Flexibility-oriented innovators treat everything – from procedures to teams and organizations – as temporary. Although objectives and goals are considered to be important, they can be easily revised. Managers of *Pharma* and *Multimed* have a favorable attitude toward change and aspire to anticipate the future to ensure further growth. While elaborating a project, there is permanent consultation between the management and the team. Employees are given the freedom to take risks and independently work out their ideas. To stimulate the exploration of new opportunities, flexibility-oriented innovators aim at creating a blame-free culture. Hence, failure is part of the learning process inherent in innovations.

Flexibility-oriented innovators create both internal and external networks. Internal cross-departmental networks are meant to foster knowledge sharing and creative thinking.

However, *Pharma* and *Multimed* are predominantly characterized by an external focus. Flexibility-oriented innovators seek innovation through collaboration with universities, private research and development labs, government agencies, and through participation with consortia. In *Pharma* for instance, whole sections of the drug discovery process are now handled by a wide variety of specialist suppliers to the pharmaceutical industry.

Participation, communication, and interaction. In *Pharma* and *Multimed*, the top management decides on the priorities but small semi-autonomous teams work on the project in units. The decision power flows from team to team, depending on the problem and the phase of the innovation process. Input and participation are expected from all employees. *Multimed* has a formal feedback procedure for every idea generated by an employee. The research and development director clarifies: *"When you pass an idea and afterwards you hear nothing about it, you think it's not worthwhile to generate ideas because nothing happens with them. So even though an idea is not captured, it is important to give feedback why it isn't, so that is not a reason not to pass any idea anymore."*

Communication and interaction flows play a crucial role within flexibility-oriented innovators. The success of an innovation project is ascribed to the cooperation of people across several departments of the organization. Teams are composed depending on expertise but also on the basis of mutual fit and interests. Employees are motivated by working on the projects of their preference. It seems that collaboration with other groups in- and outside the company is usually a strong positive contribution to innovation, yet collaboration takes time and effort to develop and manage. Moreover, our interviews revealed that as companies include diverse players in their innovation processes, problems in collaboration are more likely and can even become a barrier to innovation. Interviewees of *Pharma* and *Multimed* claimed that small teams facilitated the innovation process better as a result of greater cohesiveness and reduced interpersonal conflicts among team members. On the other hand, it is said that constructive conflict can sometimes serve as a catalyst for change and innovation. To place emphasis on constructive teamwork, *Pharma* developed a 'code for team conduct'. Informality is said to be extremely important, especially during the phase of idea generation. Cross-fertilization and informal contacts are highly valued and stimulated by letting people work together in the same physical area. A large flexibility-oriented company as *Pharma*, however, emphasized the creation of formal teams to increase the internal acceptance and formalization of the project, which in turn leads to greater impact and better dissemination.

Support for innovation, resources, and training. *Pharma* and *Multimed* adhere to a supportive culture of rewards and recognition, on an individual and team level. As a vice

president at *Pharma* describes: *"We have quite some awards and recognitions that range from small, almost a note with 'thank you' on it or a pat on the back, to a large amount of money that employees can get."* In terms of personnel and finance, flexibility-oriented innovators invest substantially in innovation. The availability of resources allocated to new ideas and innovative projects contributes to an innovative climate. *Pharma* even has a separate innovation unit, where innovative ideas can be captured in a very early phase. Moreover, there is always a member of the top management team who is assigned as a mentor or champion of a project. Flexibility-oriented companies support internal, external, and on-the-job training.

Structure. Flexibility-oriented innovators adhere to organic elements, such as a flat structure, much autonomy, and fluid job descriptions. *Multimed* and *Pharma* are decentralized organizations with little formalization. *Multimed* has a business unit structure, with six units that all have a research and development cell. If necessary, projects can be easily transferred to another cell. *Pharma* is a matrix organization, where the power resides at the top and the lines of responsibility flow from the top to the bottom throughout the individual branches of the structure. *Pharma* facilitates innovation by separating out the innovation efforts from the operating organization and its controls in a separate early research and development unit. Moreover, by creating small entrepreneurial spin-offs the company adheres to flexible structures and enhances its capacity to innovate.

Type 2: Balance-oriented innovators

Size, sector, and innovation type. Although differing in size, *Diverse* (67,000 employees) and *Energy* (210 employees) are both balance-oriented innovators. Both companies act in industries with medium industry velocity. Leaders of balance-oriented innovators allocate resources to a broad range of innovative projects by emphasizing that innovation does not only cover new technologies and products but also organizational aspects. On the whole, they pay more attention to incremental innovations than to breakthrough innovations. The growth strategy of *Energy* is, for instance, highly dependent on entering new markets with a new combination of given technologies such as combustion technology and renewable energy systems.

Strategy. Balance-oriented innovators do not differ much from flexibility-oriented innovators in terms of the value they attach to innovation. Balance-oriented innovators incorporated innovation in their strategic goals. *Diverse* and *Energy* have a well-defined

innovation strategy, which is the reference point for all innovation activities. They mention various reasons to innovate, such as a competitive advantage and further growth. In spite of this, managers of these types of companies look for balance between their current business and their innovation activities. The need for cutting costs drives companies to a growing attention for current business activities, sometimes at the expense of innovation. A project engineer of Energy adds: *"Innovation is the motor that keeps everything going, but the market aligns with our innovations. We always have clearly defined customer groups. We are not innovating for the sake of innovation."*

Culture and leadership. Balance-oriented innovators seek a compromise between flexibility and stability. Managers of *Diverse* and *Energy* tend to be result-oriented and enthusiast coordinators, with the intention of outperforming competitors and being at the forefront of their field. For instance, *Diverse* is characterized by a rational decision-making process supported by control systems with phases, checkpoints, and milestones to frame decisions and track their implementation. The company has launched Six Sigma to improve business processes and to strengthen the ability to create and market new products. Six Sigma is a set of customer centered, data driven methodologies and disciplined processes for continuous improvement. The product development is a classic stage gate process that is applied to all projects. Each phase in the process is regarded as a separate entity with a clear beginning and a clear end. However, at the heart of the innovation process lies the ownership and involvement of the semi-autonomous teams. Before each milestone meeting, a multi-disciplinary project team drawing employees from different departments reviews the project data and makes crucial go/no go decisions. These teams integrate people with diverse perspectives and allow them to swap ideas and expertise flexibly. Due to the phases being circumscribed, the project's leadership might change from research and development to production or marketing.

Balance-oriented innovators share the external market orientation with flexibility-oriented innovators. They outsource some of their activities, while clearly managing the information that is provided from the outsourced agency back to their employees. As new business models arise and new technologies emerge, organizations find creative ways of gaining new customers and involving current customers in the innovative process. While there used to be no contact between customer and scientist, sales representatives of innovative companies now bring customers to the lab. The head of research and development of *Diverse* clarifies: *"For me it is extremely important to make sure that the doctors in chemistry with their white coats on hear what it is the customer wants. The customer requirements will be*

much clearer if there is direct contact between the two. If not, you get a translation of a translation and there will always be misunderstandings. They [researchers] are the ones who know if there is or there is not a fit with the product portfolio and likewise they can immediately ask technologically the right questions."

Participation, communication, and interaction. In *Diverse* and *Energy*, top managers and project leaders define the framework of the projects, but small, semi-autonomous teams decide on all operational aspects of the innovation projects. The goals are clearly specified, but employees are granted freedom to pursue those goals by their own means. The projects allow individuals and groups to behave in a creative way. The decision power flows from team to team, from milestone to milestone, depending on the problem at stake. All employees are involved in processes of development and renewal. In *Energy* for instance, junior engineers immediately get project responsibility, but are at the same time coached and supported by employees with more experience. The CEO clarifies: *"Freshmen are full of energy but don't know what to do, seniors know what to do but their energy level is shrinking. Therefore, we give freshmen the daily project management of our innovations. Of course, they are always supported by a senior mentor."* *Diverse* uses rather formal ways to involve employees. Researchers can work 15% of their time on projects that are not supported by their management. Because the supervisor is always informed of these side projects, it is not a process of total freedom leading to a disconnection from the organization.

Both balance-oriented innovators strive for a climate of open, two-way communication. In *Diverse*, stories about why ideas fail and succeed are seen as a valuable source of learning. The CEO of *Diverse* Belgium adds: *"We affirm the good work that is done and encourage further thinking in order to let the team make the recommendation themselves. To tell stories is also a part of getting past the fear of failure. It is about knowing that when things don't work what happened, to recognize that, and to tell those stories."* Informality is very important for sharing innovation experiences. In *Energy*, cross-fertilization is stimulated by organizing informal drinks for customers and employees in their reception area. During these drinks, people exchange ideas and experiences, which leads to greater cohesiveness and reduced interpersonal conflicts.

Support for innovation, resources, and training. Balance-oriented innovators create a culture where innovative activities are recognized and rewarded. *Diverse* has formal organizational systems to spot the individual talent and recognize it on the organizational level. The CEO of *Energy* believes in supporting innovation with group-focused non-tangible rewards, such as a pleasure trip with the innovative team. *Diverse* and *Energy* allocate

resources (i.e. time, money and people) to a broad range of innovation projects, and have a special fund for product development. All employees have the opportunity to receive internal, external and on-the-job training in all kinds of topics.

Structure. *Diverse* and *Energy* are decentralized organisations that spread responsibility for specific decisions across various outlets and lower level managers, including units located away from the head office. Balance-oriented innovators combine mechanistic with organic structures by focusing on clear responsibilities and priorities on the one hand, and granting employees a high level of autonomy on the other hand. While the management aims at achieving some degree of flexibility, it chooses for instituting formal control mechanisms to lead projects in the right strategic direction.

Type 3: Stability-oriented innovators

Size, sector, and innovation type. Within the cases studied, there were two organizations that are characterized by stability and efficiency: the medium-sized company *Build* (800 employees) and the small company *Furni* (25 employees). Both companies are acting in slow-changing industries. The majority of innovation projects within *Build* and *Furni* are product and process innovations. Administrative innovations that comprise new organizational models or management techniques are almost nonexistant. In contrast with flexibility-oriented innovators, stability-oriented innovators rather choose for incremental innovations and product improvements than for breakthrough innovations.

Strategy. For *Build* and *Furni*, innovation is important but not a priority. Innovation is not enclosed in the strategic goals of these firms. Their main reason to innovate is to get and to maintain a good reputation with customers. For instance, an important challenge for the CEO of *Furni* is to develop creative marketing campaigns from time to time. The campaigns give the company a strong identity and attract new customers. *Build* was the first on the market with a glazing sealant that is compatible with self-cleaning glass. Innovation is the showpiece that attracts existing and new customers. Close cooperation with the customers and branches abroad leads to the permanent improvement of products. Most of the time, in these companies more attention is paid to the current business than to being creative or innovative. In balancing the demands between routine work and innovations, most supervisors tend to give priority to routine work.

Culture and leadership. Stability-oriented innovators focus their attention on efficiency and control. Managers of *Build* and *Furni* define goals, and place emphasis on a

variety of rules and procedures to achieve them. Tight processes, a smooth planning, and organizational discipline are essential. Due to the direct supervision and guidance, all employees know the strategic orientation of the organization. For instance, the general director of *Build* adheres to an informal approach without distinct phases but with a set of imposed, 'ad hoc' meetings: *"When there is a problem, I will call everyone involved to see if we can do something. Then I normally say: stop what you are doing, in order to emphasize the importance of it. Of course, if on that moment you are in a meeting with a customer, we will wait for another half an hour, but meeting each other is obligatory and nearly always immediately."*

While flexibility- and balance-oriented innovators have an external focus, stability-oriented innovators focus mainly on internal maintenance. For instance, attempts to patent were absent in *Build*, although it has no mechanism to prevent competitors from copying their product innovations. Most of the respondents within *Build* felt that the process of patenting required specialized knowledge, which called for external expert inputs. Stability-oriented innovators show resistance towards outsourcing their activities. Protecting their expertise is crucial. *Furni* indicates that the speed of working in logistics is the main reason not to outsource. As short-term, reliable deliveries are crucial for the company, the CEO always wants a pool of co-workers who can stand in immediately if necessary.

Participation, communication, and interaction. Compared with flexibility- and balance-oriented innovators, stability-oriented innovators adhere to top-down decision making. Employees are working in departments or units, but not often in teams. Stability-oriented innovators strive for a clear task setting and enforcement of strict procedures. In *Build*, a core team consisting of the marketing, research and development, and sales manager together with the general director, take charge over all strategic and operational issues in the organization. Although employees mention little possibility for giving input, a project engineer added the advantages of such an approach: *"Here, you don't have to pass six managers to clear a report with the authorities. We have one manager and this manager has one director and that's it. You only have to speak to two people. I think that's one of the major plus-points of the company: the quick decision making and direct lines."*

In stability-oriented innovators, communication flows down the line. Individuals at the bottom end have little scope for decision making. The export manager of *Build* indicated that: *"to have good results, you cannot let communication deprave, so it would turn into a daily coffee break"*. The CEO of *Furni* claimed: *"For us, it is about doing things, not talking"*. He

is, however, asking more and more input of his employees. All employees had the task to give a couple of ideas for improvement and renewal within their domain of work.

Support for innovation, resources, and training. With the rewards of innovation linked to sales rather than to research and development, there is little incentive for developing innovations. A researcher of *Build* indicated that it was sometimes not rewarding enough to engage in innovative activities. The research and development manager of *Build* added that creative subordinates could even be a cause of concern for their supervisors as they often neglected the short term targets that the supervisors were required to achieve. In both stability-oriented innovators, resources mainly go to routine work instead of innovations. Training is merely provided on technical topics.

Structure. *Build* and *Furni* have a traditional organizational structure with a strong departmentalization, a top-down hierarchy and a narrow span of control. They show many mechanistic elements, such as clearly defined job descriptions and control mechanisms. Stability-oriented innovators tend to adopt a rather formal approach to relationships. As there are few management levels between the top and the co-workers, all employees are under direct supervision of someone of the top management. The CEO of *Furni* ascribes this to the sector of logistics. Furnishing fairs asks for a clear, fixed planning. Structured archives and databases help the employees of *Furni* to get the things done in a quick, efficient way. The CEO puts it this way: *"We are extremely structured, maybe for certain companies too structured. Structured, controlled, not in the bad sense of the word but everything is very strictly determined, because you have some processes that need to be strictly and clearly done for the planning. If the fair opens, the furniture needs to be there on time. And if the fair finishes, it has to be removed as quickly as possible. That's the way it goes around here."*

DISCUSSION AND CONCLUSION

Discussion of findings

This study highlighted the interplay between context and process elements in six innovation-supportive organizations. Although all six organizations can be labelled as innovative organizations, we noticed gradual differences between our cases. After analyzing innovative projects within these cases, we were able to deduce the distinct differences in three archetype profiles. The organizations involved in our study had a clear focus on either flexibility, balance, or efficiency. Innovative activities differed depending on the sector, the

type of innovation, the strategy, and the determinants and elements of the organization's structure and culture.

Organizational culture was primarily understood as an intervening variable between the context of an organization and organizational innovation. In line with Cameron and Quinn (1999), we formulated the features of organizational culture as dichotomies or tensions – internal versus external orientation, responsibility versus autonomy, or flexibility versus control. Organizations try to find a balance between these tensions to increase their innovative capacity. What constitutes an optimum balance for each of these tensions varies considerably among the different types of innovators. Some innovative organizations prefer a more stable working environment than others. For instance, flexibility-oriented innovators require a high level of flexibility and autonomy to meet the changing demands of the industry; stability-oriented innovators have more structures and control mechanisms to achieve innovation.

We found that organizational culture is an important predictor for the type of innovation. Our findings show that pursuing a broad range of innovative projects requires flexibility, autonomy, and a strategy oriented towards the external environment. Hence, companies that want to innovate incrementally and radically need to configure their organizational processes in accordance with flexibility-oriented innovators. We can affirm the assertion of Russell (1989) who posited that "(entrepreneurial) organizations can lose their capacity for innovation as they become more formal and centralized" (p. 14).

In line with previous research (e.g. Evangelista & Mastrostefano, 2006; Malerba, 2005), we found that type of innovation is highly contextual to the specific sector and product area in which a firm operates. First, flexibility-oriented organizations act in fast-changing industries such as the high-tech and pharmaceutical industry and are involved in a broader spectrum of innovations than their counterparts in slow-changing industries, such as the manufacturing or logistics industry. Secondly, only flexibility-oriented companies seem to choose on a regularly basis for breakthrough innovation projects. Additionally, many innovation projects described by our informants were incremental product innovations and process improvements. With organizations exposed to more external pressures, the preponderance of the current business over innovation is not to be underestimated.

Our findings indicate that the scale size of a company has no influence on the type of innovative activity. All three types of innovators consisted of a larger organization and an SME. This finding contradicts previous research (e.g., Damanpour, 1991; Munier, 2006; Pavitt et al., 1989) that claimed that firm size played a determinant role in organizational innovation.

Research and managerial implications

In support of Rousseau and Fried (2001), we believe that a set of context factors can yield a more interpretable and theoretically interesting pattern than any of the factors would show in isolation. Therefore, we included contingency factors as well as determinants and elements of an organization's culture to examine how innovative organizations configure themselves to deal with organizational innovation. The contextual view suggested by our findings stands in sharp contrast to the view that cultures are shaped essentially through internal processes (Johns, 2006). Hence, organizational cultures are as much influenced by the intensity and density of the relationships they establish with their surrounding environments as by their internal characteristics, such as strategy or structure.

We believe there are lessons to be learned from 'best practice' companies. As Rickards (1996) describes, these lessons require both 'what' as 'how'. In our study, we investigated the 'how' question, building on qualitative data. The case study methodology gave us a richer and deeper analysis of the subtleties of the innovation process and context than the variable-based analysis of quantitative studies. In natural settings, researchers can observe key variables in action and understand how they interact with one another (Chatman & Flynn, 2005). However, we acknowledge that there are also limitations inherent in this kind of research. This study was conducted with a limited number of companies, needing further cross-validation to assess whether the perceptions we found also apply within other research populations. A broader sample selected among the same criteria is needed to confirm our results (Eisenhardt, 1989). We should test the representativeness of the archetypes in companies working in different sectors. For validity reasons, we should test these qualitative data quantitatively, for instance by conducting a multiple level survey on the context and process factors affecting innovation. Moreover, the data were gathered over a relatively short time period. Longitudinal research should be conducted in order to study these organizational dimensions during different moments in time. Despite these limitations, we believe our explorative research serves as a valuable basis for future research on organizational innovation. Given its exploratory nature, the findings are an indication of valuable trends in the qualitative data.

Understanding the interplay between context factors and organizational innovation is crucial for designing an appropriate organizational culture. Effective management implies matching the work environment with the requirements of organizational innovation projects. Having insight into the strengths and weaknesses of your type of organization is highly

relevant to determine which course to steer. A firm aiming at innovating radically should have a strong innovation strategy and policy, create structures that ensure personal autonomy and role flexibility, cooperation and collaboration between individuals, work teams and the external environment, encourage strong participation and empowerment, and provide incentives and rewards for innovation. However, for the quick succession of incremental innovations, an organization requires little complexity, direct guidance, and clear goals, structures, and communication flows. In conclusion, no archetype is inherently better than another, but increased attention for context-process-innovation fit might lead to better innovation-related performance.

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FIGURE 1:
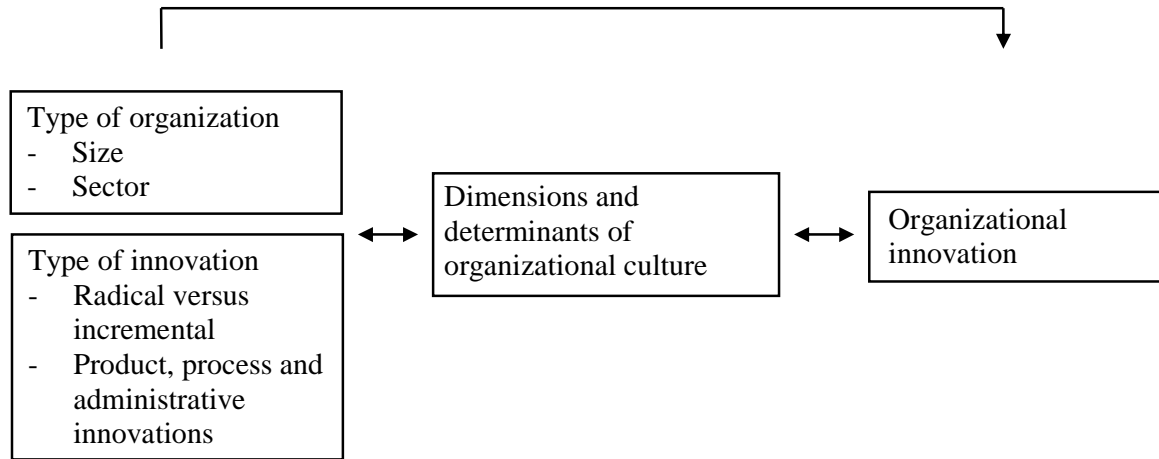
Research question

Type of organization
- Size
- Sector

Type of innovation
- Radical versus
  incremental
- Product, process and
  administrative
  innovations

Dimensions and
determinants of
organizational culture

Organizational
innovation

TABLE 1:

Innovation-supportive determinants of organizational culture

Process variables	Authors
Strategy/goals/objectives	Martins and Terblanche (2003), West and Anderson (1996), West et al. (2004)
Leadership	Amabile, Schatzel, Moneta, and Kramer (2004), Cummings and Oldham (1997), Ekvall (1996), King and Anderson (1990), Mumford, Scott, Gaddis, and Strange (2002), Oldham and Cummings (1996), Scott and Bruce (1994), West et al. (2003)
Participation	Anderson and West (1996), De Dreu and West (2001), Isaksen and Laurer (2002), West (2001, 2002), West et al. (2004), Woodman et al. (1993)
Communication	Martins and Terblanche (2003), Perry (1995), Pillinger and West (1995), Thamhain (2003)
Support for innovation	Shalley, Gilson, and Blum (2000), Scott and Bruce (1994), West and Anderson (1996)
Training	Bhadaradwaj and Menon (2000), Brennan and Dooley (2005), West (1994)
Resources	Amabile et al. (1996), Ekvall and Ryhammar (1999), Payne (1990), Scott and Bruce (1994), West and Anderson (1996), Woodman et al. (1993)
Organization structure	Brown and Eisenhardt (1997), Ekvall (1996), Iwamura and Jog (1991), Pillinger and West (1995), Shalley, Gilson, and Blum (2000)

TABLE 2:

Description of case data

Company[a]	Size (# employees)	Sector	Type innovation
Build	800	Construction	Incremental Mainly product innovations
Diverse	67,000	Diversified technological company	Mainly incremental Product, process, and administrative innovations
Energy	210	Energy	Mainly incremental Product, process and administrative innovations
Furni	25	Logistics	Incremental Mainly process innovations
Multimed	210	High-tech	Incremental and radical Product, process, and administrative innovations
Pharma	122,200	Pharmaceutical	Incremental and radical Product, process, and administrative innovations

[a]The names of the companies are pseudonyms to protect the confidentiality of the case organizations.

TABLE 3:

Summary of three types of innovators

	Flexibility-oriented innovators	Balance-oriented innovators	Stability-oriented innovators
Size	Small and large	Small and large	Small and large
Sector	Fast-changing	Moderately changing	Slow-changing
Innovation type	Incremental and radical	Mainly incremental	Only incremental
	Product, process, and administrative innovations	Product, process, and administrative innovations	Product and process innovations
Strategy	Very high focus on innovation	High focus on innovation	Medium-high focus on innovation
	Incorporated in strategic goals	Incorporated in strategic goals	Not in strategic goals
Culture and leadership	Focus on flexibility and autonomy	Balance between flexibility and stability	Focus on efficiency and stability; little autonomy
	Mutual adjustment	Coordination	Direct supervision and guidance
	Favorable toward change	Result-oriented	Hierarchic
	External cooperation: networks and partnerships	External cooperation: networks and partnerships	Little external cooperation

Participation, communication and interaction	Strong participation and empowerment	Strong participation and empowerment	Little participation
	Top-down and bottom-up communication	Top-down and bottom-up communication	Top-down communication
	Semi-autonomous teams	Semi-autonomous teams	Individuals not integrated into a team
Support for innovation, resources, and training	Support for innovation	Support for innovation	Little support for innovation
	Rewards and incentives for innovation; on individual and team level	Rewards and incentives for innovation; on individual and team level	Limited rewards and incentives (e.g., only individual rewards for sales representatives)
	Special fund for innovation, separate unit for innovation	Resources for product development	Tight resource allocation, but little resources for innovation
	Training opportunities	Training opportunities	Little training opportunities
Organization structure	Decentralized	Decentralized	Centralized
	Organic elements	Organic and mechanistic elements	Mechanistic elements
	Little formalization	Some formalization	Much formalization