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Organizational practices required for innovation: a study in an information technology company

Práticas organizacionais requeridas para inovação: um estudo em empresa de tecnologia da informação

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Abstract: This study aims to identify organizational practices required to generate innovation in an information technology company. The research investigated how the development of capabilities considered critical for activities related to innovation take place from both specific organizational characteristics and joint resources. Two structural practices for innovation were valuable: the development of technology and market targeting. The research had qualitative approach and was carried out through an exploratory and descriptive case study. The case was developed in the Softplan company, one of the largest system management companies in Brazil that develops softwares for building industry, infrastructure activities, transportation and construction works, judiciary system and general public administration. The company has over 1.500 customers in Brazil and abroad and maintains alliances with global technology suppliers and agreements with several universities, laboratories and research institutions, supported by research and development activities. Semi-structured interviews were carried out with managers, along with documentary research and on-site observation. The analysis of the Softplan company showed incentives to creating and maintaining an organizational attitude favoring innovation as a routine process. Practices developed in organizational programs were identified aiming at creation and selection of ideas, acquisition of knowledge, and incentive to integration between professionals for emergence of organizational learning.

Keywords: Innovation; Strategic capacity; Organizational practices; Information technology company.

Resumo: *Este estudo visa identificar práticas organizacionais requeridas para gerar inovação em empresa de tecnologia da informação. A pesquisa investigou como ocorre o desenvolvimento de capacidades que são consideradas críticas para o exercício de atividades voltadas à inovação a partir tanto de características organizacionais específicas como da articulação de recursos. Valorizaram-se duas práticas estruturantes para a inovação: o desenvolvimento de tecnologia e a orientação para o mercado. A abordagem de pesquisa foi qualitativa por meio de um estudo de caso exploratório e descritivo. O caso foi desenvolvido na empresa Softplan, uma das maiores empresas de sistemas de gestão do Brasil, com desenvolvimento de softwares para indústria de construção; atividades de infraestrutura, transporte e obras; sistema judiciário e administração pública em geral. Possui mais de 1500 clientes no Brasil e no exterior e mantém alianças com fornecedores mundiais de tecnologia e convênios com diversas universidades, laboratórios e instituições de pesquisa, suportada por atividades de pesquisa e desenvolvimento. Foram conduzidas entrevistas semiestruturadas com gerentes, pesquisa documental, além de observação in loco. A análise da empresa Softplan evidenciou estímulos à criação e manutenção de um comportamento organizacional voltado para inovação como um processo rotineiro. Foram identificadas práticas desenvolvidas em programas organizacionais que visam à criação e seleção de ideias; à aquisição de conhecimento, e ao estímulo à integração entre os profissionais para o surgimento de aprendizagem organizacional.*

Palavras-chave: *Inovação; Capacidade estratégica; Práticas organizacionais; Empresa de tecnologia de informação.*

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1 Introduction

The objective of this article is to identify organizational practices that are needed for generation of innovation in an information technology company. The study was designed to investigate development of capacities considered critical to implementation of innovation-oriented practices. It seeks answers by attempting to understand specific organizational characteristics and the ways in which differentiation occurs through combination and orchestration of resources.

This case study was conducted at Softplan, which is a software development company that has been doing business in the IT sector in the Brazilian state of Santa Catarina since 1990. It is one of the most vocal advocates for the state's technology companies in their dealings with municipal, state and federal public authorities (ACATE, 2014). Additionally, the Fundação CERTI is an organization that provides research, development and technological services and, because it partners with Softplan in development of innovations, it was also investigated as part of this research.

The intensity of competition and incessant modernization in the information technology industry has made innovation unavoidable as a means for companies to seize opportunities, whether through development of new products or by reinventing their own markets (Hauknes, 1998; Lobianco & Ramos, 2004; Kubota, 2009). Innovation is not exclusively based on research, development and technology; it is also founded on management and marketing skills, on knowledge of organizational management models and awareness of social and economic factors. Innovation tends to be produced by a network of actors and not by autonomous individuals or organizations (Hauknes, 1998; Lobianco & Ramos, 2004; Kubota, 2009).

Different types of innovation can be related to: provision of a new service; modification of the procedures employed for preparation or production of a service; introduction of new techniques for planning; discovery of new markets; or the results of a problem-solving process (Sundbo & Gallouj, 1998; Gallouj, 2002).

Studies of strategy that approach the subject from the perspective of the Resource-based View (RBV) are concerned with the balance between exploitation of existing resources and the development of new organizational resources (Wernerfelt, 1984; Barney, 1991). Resources provide strategic opportunities when they involve management skills, organizational processes, knowledge, brand, information about customers, organizational culture, financial resources, or other attributes controlled by a company when combined in a unique manner (Barney, 2001; Barney et al., 2001).

Knowledge generated in common by the members of an organization achieves its due importance when applied to everyday practices. Shared and stored knowledge makes it possible to create an organizational environment that fosters continuous learning and the development of competencies. Moreover, the capacity to transfer knowledge, learning and adaptation will have an influence on the creative process and on organizational performance (Nonaka & Takeuchi, 2008; Nonaka & Von Krogh, 2009; Felin et al., 2012).

From the same perspective, the innovation process is linked to creation and transfer of knowledge and, as such, highlights the imperative for organizations to generate new ideas, to construct effective people management process that results in differentiated organizational practices, and to conduct its activities competently (Sordi & Azevedo, 2008).

Softplan's experience with systems development and its mastery of the technology involved made it possible for the company to construct its own working methodology and accrue unique experience in product creation. Over the course of its 25 years in business, the firm has gained the respect of the market for its speed, reliability and innovation.

The question driving this research was as follows, "How can an IT firm, a software-development company, orchestrate its resources and develop organizational practices that will result in innovation-oriented capacities?

From the point of view of applied theory, the intention is also that this study should contribute to identification of options for implementation of an organizational context necessary for innovation, by means of organizational practices. Practices which afford unique experience in implementation of changes. Changes that are necessary both for operations and to enable differentiation through innovation in information technology services.

2 Innovation: from concept to process

Since innovations were first classified as radical (those that tend to provoke major changes to the world) or incremental (those that continually drive the process of change), many different definitions have emerged in the literature on innovation (Schumpeter, 1961). Innovation can be seen as the implementation of decisions deliberately taken to improve company performance, exploiting opportunities in the market and responding to challenges in the business environment (Hauknes, 1998; Moreira & Vargas, 2012). Innovations can be limited and described by changes measured in terms of performance characteristics. This case study analyzes innovation through organizational practices and creative processes.

Four types of innovation are considered in this study, defined as innovations in product, process, marketing or organizational aspects (OCDE, 2005). Innovation itself is seen as services based on new functions, entering into a new area of the sphere of activity (Hauknes, 1996). Technological innovation is implementation of a product with improved performance characteristics, resulting in provision of new services to customers (Schumpeter, 1961). Innovation can employ new knowledge or technologies, or be based on new uses or combinations of existing knowledge or technologies. Here, the term "product" covers both goods and services and innovations in product include introduction of new goods and services (Tidd et al., 2008).

Innovation in processes can reduce production costs, improve quality, or lead to production or distribution of new or improved products. It can involve changes to the equipment and software used by firms focused on services or changes to the procedures and techniques employed for distribution services (OCDE, 2005; Tidd et al., 2008).

Innovation in marketing is focused on meeting the needs of customers, opening up new markets, or repositioning a firm's product in the market, with the objective of increasing sales. The element that makes an innovation in marketing different is implementation of a marketing method that has not previously been used by the firm (OCDE, 2005; Tidd et al., 2008).

Organizational innovation can target improved firm performance by reducing administrative or transaction costs, by improving labor productivity, by improving the knowledge acquired internally and externally to the firm, or by reducing the cost of materials. It includes implementation of new organizational practices and working procedures (Hauknes, 1998; OCDE, 2005; Tidd et al., 2008; Hsieh & Chen, 2011).

Gallouj & Weinstein (1997), Gallouj (1998, 2002), Viotti (2003) and Moreira & Vargas (2009) have defined several different models of innovation, which are summarized below in Chart 1.

The characteristics of the innovation process differ from one organization to another, creating specific behaviors and histories, and external or internal forces can be involved in this process. Informal knowledge networks also facilitate the exchange of technological and commercial information. Organizations must be prepared to adapt to rapid changes in the market and to technological progress; employees must be creative and must dedicate themselves to the singularity of the products and services provided and must be able to accept risk and deal with success and with market ambiguity and uncertainty (Hsieh & Chen, 2011). To achieve this, strategic resources and capacities must be constantly managed (Wernerfelt, 1984; Barney, 1991).

2.1 Capacities necessary for innovation

In order for a firm to create an innovative organizational context, it is expected that it has a minimum set of creative capacities to enable it to conduct its business and generate new ideas. In many cases a service innovation may be merely an innovation of type and in such cases firms are able to offer a new service or new service characteristics without changing the method used to supply the service (Miranda & Figueiredo, 2010).

The term innovation can be defined as new combinations of resources and conceptualized as the result of learning processes in which knowledge is combined and structured into new solutions and shared meanings (Isidro & Guimarães, 2010).

In turn, resources can be classified as tangible assets and intangible assets. Tangible assets include people, technology, products, tools, instruments, equipment, market or products. Intangible assets include knowledge, brand image or human resources potential. An organization's skills can also be considered intangible resources, for example, the way it conducts internal management and the characteristics of its dealings with customers (Carvalho et al., 2010).

The Resource-based View (RBV) analyzes the attributes of resources and competencies and how they can help firms to differentiate themselves from other firms and maintain this difference over the long term. If a firm has resources that create value, are rare and are difficult to imitate, and it is able to organize to exploit them, these resources can provide a source of sustainable competitive advantage (Barney, 1991).

The RBV theory can be appropriated to identify new capacities, working from the premise that distribution of resources is heterogeneous across competing firms (Barney et al., 2001).

The aim of this study is to identify the organizational practices necessary to interact with the process of innovation, through the lens of strategic capacities, finding evidence of development of new skills, creation of new products and improvement of organizational processes, involving the physical, organizational, personal and market relationship systems.

Routines and capacities have emerged as central constructs in a series of areas of management research and have proven to be important elements of analyses of organizations and competition (Felin et al., 2012).

Figure 1 illustrates the framework proposed in this study, attempting to describe in detail the way that companies learn through two capacities: technological capacity and market orientation capacity.

In this context, innovation is seen as the result of learning processes that generate and apply new knowledge in routines, processes and procedures. Measurement of this result makes it possible to identify its impact on adoption, creation or development of new products or services. In this sense, innovation is

Chart 1. Models of innovation.

Innovation Model	Definition	Author
Radical	Creation of a new set of characteristics.	Gallouj & Weinstein (1997); Gallouj (2002)
Ameliorative	Improvement of the quality of a product or process.	Gallouj & Weinstein (1997); Gallouj (2002)
Incremental	Addition or elimination of characteristics.	Gallouj & Weinstein (1997); Gallouj (2002)
Ad hoc	Production or codification and formalization of new competencies.	Gallouj & Weinstein (1997); Gallouj (2002)
Recombinative	Combination or fragmentation of a group of characteristics.	Gallouj & Weinstein (1997); Gallouj (2002)
Formalization	Formatting and standardization of characteristics.	Gallouj & Weinstein (1997); Gallouj (2002)
Barras'model	Theory focused on technological innovation derived from the service industries. This model is primarily concerned with materials technologies.	Gallouj (1998)
Linear innovation	Linked to the inputs dedicated to research and development: the greater the human, material and financial resources allocated to the process, the greater will be the production of inventions and innovations.	Viotti (2003)
	Innovation starting with basic research, followed by applied research and development, and ending with production and distribution.	Moreira & Vargas (2009)
Chain-Linked	The result of a process of interaction between market opportunities and a firm's knowledge and training base, involving sub-processes within the stages of marketing and invention and design.	Viotti (2003)
	There is not just one single path of activity, but five, which are the possible routes to development of innovations.	Moreira & Vargas (2009)
Systemic model of Innovation	Firms do not innovate in isolation, they are part of a system of direct or indirect relationships with other firms, and efforts are centered on measurement of flows of HR, information and knowledge.	Viotti (2003)
	Firms do not innovate in isolation, but in the context of a system of networks of direct or indirect relationships.	Moreira & Vargas (2009)
Technological Learning	Absorbs the technological capacity of production and acquire mastery over the technology assimilated when the capacity for improvement is developed.	Viotti (2003)

Source: Adapted from Gallouj & Weinstein (1997), Gallouj (1998), Gallouj (2002), Viotti (2003) and Moreira & Vargas (2009).

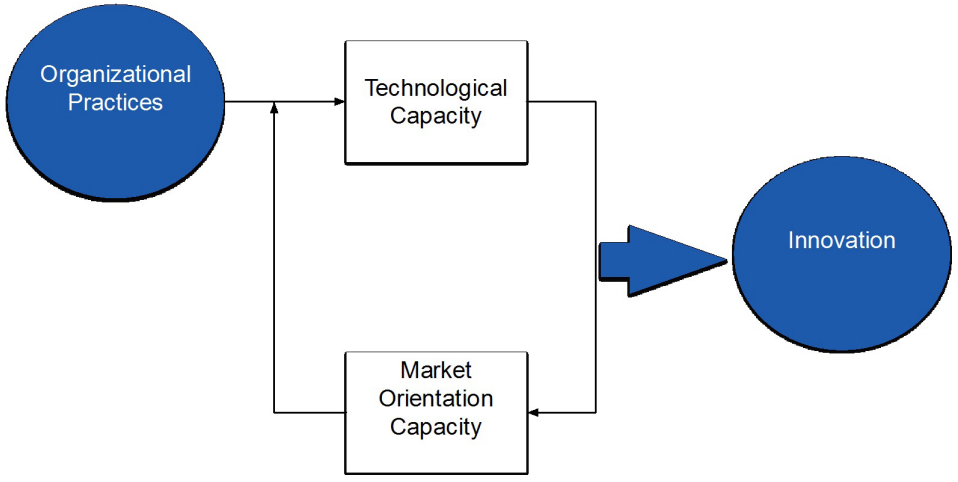

Figure 1. Organizational Practices and Capacities. Source: constructed by the authors.

contextualized, considering the demands, intentions and requirements of the environment internal or external to the organization (Isidro & Guimarães, 2010; Moreira & Vargas, 2012).

The next two subsections present the strategic definitions of technological capacity and market orientation capacity. In this paper, these capacities are considered to be those required for an IT firm to be able to develop practices that promote innovation, creation of ideas or combination and orchestration of creative processes.

Capacities are not only built from the skills of individual people, but also from the collective learning that results from the ways that people have worked together and through using the equipment or facilities to which their firm has access (Teece, 2012). Therefore, in this study two capacities required for generation of innovation IT firms are presented: technological capacity and market orientation capacity.

2.1.1 Technological capacity

A competitive environment should lead to a greater inclination to share information, and to greater awareness of the need to cooperate effectively in companies. Therefore, firms seek technological solutions together with rapid information technology innovations, leading to a connectivity based on competitive response (Fawcett et al., 2011).

Figueiredo (2005) states that a firm's technological capacity is stored in at least four components. These components are physical technical systems; people, generally referred to as the firm's "human capital"; the organizational system; and products and services, which is the most visible part of technological capacity.

Technological capacity is the combination of resources needed to create and manage innovative activities in products, processes and organization of production, organizational systems, equipment and project engineering. These resources do not only reside in individual people (skills, experience and formal qualifications), but also in the firm's organizational system, routines and procedures (Miranda & Figueiredo, 2010).

There are different levels of evolution of technological capacity in organizations and these should be recognized on different levels of innovation, ranging from imitation of existing products and processes to adoption of new products or organizational processes (Gradvohl et al., 2011).

An organization's technological capacity is centered on production processes and organization of production and on projects implemented and equipment developed, considering the need to assess the accumulation of technological capacities, and not only their renewal. As such, there are certain activities that organizations are able to develop autonomously over time, and both construction and accumulation and also loss of capacities are among the paths taken to arrive at the technological capacity that can be observed in an organization (Gradvohl et al., 2011).

Technological capacity is related to several or the factors required for innovation and these can be classified into three domains: intrafirm factors; interfirm factors, as in strategic alliances; and factors exogenous to the firm. In turn, these three domains can support firms in development of their technological capacity in two different directions: in strengthening already existing capacity and in development of technological capacity to higher levels (Balbinot & Marques, 2009).

Drawing on Figueiredo (2005) and Câmara et al. (2013), technological capacity is understood to be a necessary resource creating and managing change, including skills, knowledge, experience and organizational structure. As such, technological capacity can be related to the increase in a firm's productivity and to utilization of more advanced production techniques, and also to creation of new products, processes, technologies and knowledge.

In this study, technological capacity is interpreted as a set of functional skills, involving the firm's physical systems, organizational systems, people, management strategies, products and services. It also encompasses databases, software, machinery and equipment, ensuring a continuous process of technological learning, which will strengthen the capacity to innovate (Balbinot & Marques, 2009; Gradvohl et al., 2011).

2.1.2 Market orientation capacity

Market orientation is related to cultural values and its creation is dependent on a process of cultural transformation. In addition to fostering market orientation as a cultural value, a firm's principal objective is to learn how to implement the drivers of market orientation, emphasizing management, interdepartmental connectedness and centralization (Llonch et al., 2011).

Diaconu (2011) considers that the most important resources necessary for market orientation are human resources, knowledge, skills and attitudes within the organization, relational resources or market assets.

In this manner an organization can maintain the correct equilibrium, maintain its market leadership, attract and retain customers, take advantage of new opportunities and invest in a portfolio of innovations, thereby achieving medium-term and long-term results (Day, 2011). As such, an information processing approach to market orientation, which emphasizes creation, dissemination and response to market intelligence, is the best fit to help organizations to

respond rapidly to changes in the market, and so it is necessary to improve these capacities.

In response to the international scenario, globalization and the rapid growth of the information technology sector, firms are seeking opportunities for expansion. Therefore, market orientation in the context of exportation is becoming ever more necessary for survival of companies and for success in the international market. The function of market orientation is to enable firms to develop and sell the most appropriate products and services that will be valued by the customers in the export market (Murray et al., 2011).

For the purposes of this study, market orientation capacity means being related to the market through the organization's cultural values, emphasizing management and interdepartmental connectedness, enabling generation of new prospects in globalized markets, a better relationship with the international scenario, better organizational performance and better research and development performance.

Knowledge is one of the links in the value chain that is indispensable to innovation and it is dependent on the existence of a process for training professionals fit to perform activities to create and share new ideas within the organizational environment. Knowledge is something that is truly intrinsic to human beings; it is linked to beliefs and commitments related to action, and its meaning is specific to the context in which it is embedded (Nonaka & Takeuchi, 2008; Nonaka & Von Krogh, 2009).

Knowledge, as an intangible organizational is primarily located within the human mind. Knowledge is an act of social and cultural creation, something fluid, dynamic and intangible, both tacit and explicit (Sveiby, 2001; Alvarenga et al., 2007; Alvarenga & Choo, 2011).

The quest for knowledge sharing in organizations can be understood as a process that amplifies knowledge created by the individual participants. When organizations innovate they create new knowledge and information, thereby reinventing their environment and reviewing its problems and solutions (Nonaka & Takeuchi, 2008; Nonaka & Von Krogh, 2009).

For an organization to launch innovative products on the market, challenge the competition or increase its profits, an appropriate context is needed, one that enables adequate integration of knowledge, the creative process, people's skills and the organization itself (Gonçalo & Borges, 2010).

At the same time, the cognitive perspective on organizational culture concentrates on ideas, concepts, beliefs, values and norms. Organizational knowledge is made up of knowledge that exists and is stored in people's minds and of ideas or theories utilized in conjunction to support their interpretations of what the organization represents (Gonçalo & Jacques, 2010).

In this sense, the search for effective knowledge is dependent on a facilitating context, a shared space that fosters emerging relationships. This organizational context could be physical, virtual, mental or comprised of all three forms, occurring with individuals, working groups, project teams, informal circles and the frontline in contact with the customers (Snowden, 2002; Choo & Alvarenga, 2010; Alvarenga & Choo, 2011). Strategies aiming at knowledge creation are focused on a set of activities that make it possible to define how organizations develop their knowledge (Scarso & Bolisani, 2010).

Having presented the most important concepts, relating to the capacities that, for the purposes of this study, are considered to be those that are required for an IT firm to develop practices that promote innovation, Chart 2 lists the key concepts of both of these innovation-oriented capacities, and how each capacity contributes to creation of innovation in IT firms.

As shown in Chart 2, development of organizational practices related to technological capacity and market orientation capacity can contribute to creation of innovation in IT firms.

Chart 2. Capacities and their contributions to an innovative environment in the IT industry.

Capacity	Definition	Contributions to an Innovative Environment
Technological (Balbinot & Marques, 2009; Gradvohl et al., 2011).	Encompasses all practices related to research and development, utilization and acquisition of new technologies.	Enables development of new technologies in products, processes and services; generates innovation and promotes continual improvement of internal processes.
Market orientation (Llonch et al., 2011; Diaconu, 2011).	Encompasses targets, directives and market positioning that are designed to direct the overall behavior of the firm.	Enables the firm to rapidly identify customer needs, prospect innovation and direct its actions to ensure the characteristics of an innovative firm.

Source: Compiled by the authors.

3 Methodology

This study is characterized by a qualitative approach, in the form of a case study, which employs two strategies: exploratory and descriptive. The choice of a case study makes it possible to investigate the empirical field using a set of pre-specified procedures. The study involved direct observation and in-depth interviews, in addition to bibliographic and documentary research (Yin, 2001).

Data collection was conducted in four stages. During the first stage of the research, the interview script was validated with two managers (interviewees A and B), from two information technology firms, to whom it was sent by e-mail. The first interviewee was marketing manager at Softplan (2014), in the state of Santa Catarina, and the second was one of the partners of a firm called Teevo (2014), which is in the state of Rio Grande do Sul.

Both of the interviewees returned the interview script spontaneously and quickly, also by e-mail, with suggestions based on their knowledge of the IT industry. This validation process was an important first stage of the research to verify the clarity of the questions and the information requested in the instrument.

In a second stage, the interview script was validated at a third IT firm, with the help of the owner of JTech Soluções em Informática (interviewee C), once more in the state of Santa Catarina. During this stage, the researchers visited the firm and learnt about the way it functions during the activities carried out and conducted the interview in person, which made it possible to ask questions about the information provided (JTech, 2014).

In the third stage, data were collected at the case study firm - Softplan – in interviews following a semi-structured script that were conducted with two of the firm's managers (a Marketing Manager and member of the Ethics Committee and the Manager of the Human and Organizational Development Department, interviewees D and E).

In the fourth stage, the Project Manager and Researcher at the Fundação CERTI responsible for the "Ideas in Action" program was interviewed to obtain additional information about the project CERTI runs at Softplan and his views on it (interviewee F).

The script used for data collection was subdivided into four sections: 1) interviewee's identification details; 2) characteristics of their organization; 3) organizational innovation process, identifying characteristics related to programs implemented and evidence of innovation models, whether in product creation, improvement, combination or standardization; 4) strategic resources for innovation in services/products, including development of new technologies in products, processes and services and the directives and market positioning adopted by the firm.

In addition to the interviews conducted in person, the researchers also had access to television programs in which directors of the firm investigated had been interviewed and which covered their management methods and information about the firm and its history, and also showed the Research and Development manager explaining details that were important to the study, but could not be extracted from the interviews with the other managers, thereby supplementing the research.

As a result, it was possible to employ triangulation of data acquired by observation, in the interviews and from documentary analysis, thereby providing a larger number of combinations of different sources of information and enabling confirmation of the data. Chart 3 below lists the dimensions and variables investigated with relation to technological capacity, market orientation capacity and innovation.

Chart 3. Dimensions and variables investigated.

Constructs	Dimensions Investigated	Authors
Innovation	- Innovation types and characteristics; - Planning, creation and development; - Exportation of the product; - Criteria for innovation in product or service; - Efficacy of the innovation process.	Gallouj & Weinstein (1997); Gallouj (2002); Viotti (2003); Moreira & Vargas (2009).
Technological Capacity	- Physical System; - Organizational System; - Human Capital; - Products and Services.	Figueiredo (2005); Balbinot & Marques (2009); Gradvohl et al. (2011)
Market Orientation Capacity	- Partnerships; - Business Opportunities; - Relational Networks; - Market orientation.	Llonch et al. (2011); Diaconu (2011).

Source: Compiled by the authors.

Content analysis was employed to categorize the data obtained in the interviews on the basis of concepts related to the subjects of interest. In other words, the dimensions of the Gallouj models (2002) were used for data related to innovation, dimensions related to technological capacity were drawn from Figueiredo (2005), Balbinot & Marques (2009) and Gradvohl et al. (2011), and the dimensions related to market orientation capacity were taken from Llonch et al. (2011) and Diaconu (2011).

Content analysis was applied, taking care with reliability and validity of the data analyzed, interpreting and listing all of the information collected. After the analysis it was necessary to classify the data according to specific criteria, which facilitated analysis of the information. It should be pointed out that the intention was to present the data and characteristics identified in the empirical field in a manner that was objective and faithful to the information collected.

4 Analysis and discussion of results

Softplan is considered one of the largest firms in the Brazilian management systems market, and it declares its mission to be "to make public and private management in Brazil more transparent, efficient and rapid through the application of modern and innovative technologies". Its management focus is strategic and budgetary planning and it has ISO 9001 certification (Softplan, 2014).

The company produces software for several different sectors, including the construction industry (SIENGE), infrastructure, transport and works departments (SIDER), the judiciary, and public prosecutors (SAJ), projects with co-financing by international organizations (SAFF) and public administrations (SOLAR).

Softplan has more than 1500 customers in Brazil and abroad, has alliances with global technology suppliers and has partnerships with several different universities, laboratories and research institutions. These alliances and partnerships have enabled development of unique solutions and technologies, such as virtualization of many different management processes with judicial validity and security and these have been included in the firm's product portfolio.

The research and development department conducts studies, research and prospecting with the objective of identifying the best technologies and tendencies and converting them into resources and functionalities for use in solutions developed by the firm. These ideas may result in new products or be used to improve products that have already been developed, and may also originate in customer complaints or satisfaction.

This study identified strategies adopted by the company that are related to the innovation process, focused on product, process, market and organizational aspects. Elements of innovation were studied and related to practical activities with direct relationships with combination and orchestration of resources and the strategies pursued.

4.1 Practices implemented by softplan to create an innovative environment

It was observed that the firm is committed to seeking new knowledge as a way of facilitating information exchange, since it runs many different programs that have this objective, as was explained by the Human and Organizational Development Analyst (see Chart 4).

Of particular note among these programs is the Ideas in Action Program, which was developed by Softplan in conjunction with the Fundação CERTI, an organization dedicated to research, development and technological services, specialized in innovative solutions.

The objective of this program was to generate innovations and it bears out statements made by Sundbo & Gallouj (1998) on the importance of creating new solutions for the management of tangible and intangible resources and of creating new ideas

Chart 4. Projects focused on creation of an innovative environment.

Projects Run by Softplan	Objectives
Candidate Referral Project	To reward employees who suggest candidates to work at the firm.
Learning Program	To retain talent.
English Course	To offer employees the opportunity to take classes three times a week, given by teachers who are also employees.
Ballroom Dancing Course	To offer employees the opportunity to take classes given by external instructors.
Popcorn Cinema Project	To provide a space that employees can use at lunchtime to take advantage of their free time while at work.
New Talents Project	To recruit young people from universities.
Young Learner Project	To prepare secondary school pupils for a career at IT firms.
Training Program	To train employees.
Ideas in Action Program	To encourage employees to suggest creative and different ideas.

Source: Research data.

and sharing them with the other people in the firm. Through this program, employees were able to understand the significance of IT industry-oriented innovation and carry out their activities in a manner that contributes to the organization.

According to interviewee F, a Fundação CERTI Project Manager and Researcher, the Ideas in Action Program is a project that has had a significant impact for the firm and one that was designed to get results. They began design proposal with the objective that everyone in the company would concentrate their efforts to enabling innovation and the idea was focused on integration and cooperation and it was clear that to achieve this it would be necessary to arrive at a conceptual solution for innovation.

The company therefore moved on to specify the details of the solution and by attempting to fit the solution to employees' working routines it was able to create a systematic breakdown founded on a process with a beginning, a middle and an end and which would become a routine. The result was a tool called *Colabore* (to cooperate, or to work together), a community based on the system and focused on innovation, in which people could interact with and talk to professionals from other departments.

When the company's employees began to participate, 100 ideas were submitted via the *Colabore* platform within the first nine hours of it going live and in all a total of 206 ideas were submitted. According to the Project Manager from the Fundação CERTI, the ideas submitted were high quality and well thought-out and the results were satisfactory both for the people involved and for the firm.

After the first stage, in which 206 ideas were submitted via the *Colabore* platform, 15 ideas were selected, four of which have already been put into practice, with the objectives of reducing reworking, simplifying processes, optimizing use of time, and making activities faster and more assertive. The remaining 11 projects required the people involved to take them further.

According to the Project Manager from the Fundação CERTI, what was needed was "to provide a stimulus for the employees and this stimulus helped them to break out of their routines". He said that the extent to which the project had infected everyone in the company, the human interaction involved, with people getting to know each other and exchanging ideas, were obvious and that the process had been run as a fun experience, rather than as an obligation. The CERTI Project Manager also explained that:

> The objective of the Ideas in Action Program was to encourage the organization's employees to suggest creative and different ideas that could be implemented and would help to innovate in products, processes and services. The program also aims to value the creative potential of all employees, offering a path for good ideas to be collected together, systematized and exploited in ways that add value and generate innovation.

In order to stimulate employees at all of the firm's sites to take part, a compensation system was created in which the people who proposed suggestions that were chosen were awarded points, which could increase as ideas evolved from proposals to implementation or ongoing projects.

Other companies, such as Siemens do Brasil, CTC and PwC, have also implemented activities related to generating new ideas and these activities illustrate the move from organizational knowledge to collective knowledge and are similar to the activities implemented at Softplan (Alvarenga et al., 2007).

Other programs run by the firm that merit special mention are the Training Program and the Learning Program, which are also ways of creating knowledge. They enable employees to acquire ever more knowledge outside of the firm, which is always focused on their area of work and is brought back to the firm and shared. It is therefore possible to develop a culture of knowledge sharing, stimulating teamwork and implementing improvements to processes at the organization, as claimed by Gonzalez et al. (2009).

Other projects run by the firm, such as the English Course, Ballroom Dancing and Popcorn Cinema Project are also integrative activities, that encourage interaction between employees from different departments, contributing to socialization, sharing and using information as a way to learn and innovate, which confirms perspective advocated by Alvarenga et al. (2009) and Alvarenga & Choo (2011).

In addition to the initiatives listed in Chart 3, focused on people management, the firm's Human and Organizational Development Analyst listed other benefits offered to employees, such as, "transport for lunch, parking spaces outside the Technology Park, partnerships with the Santa Catarina technology firms association (ACATE), medical and dental insurance, and partnerships with businesses to offer discounted language courses and trips to Beto Carreiro World" (a themed amusement park).

Another factor that was observed at Softplan with relation to types of organizational innovation is the forms of communication employed. Tools have been developed that enable information exchange between employees and the firm, gauging employee satisfaction, identifying their opinions on certain actions and allowing the firm to improve productivity, as shown in Chart 5.

Of the tools listed, Count Me In! merits special attention since it was developed with the primary objective of discovering the employees' opinions about specific actions taken by the firm to aid in decision-making. Additionally, the tools Between You

and Me, *Colabore* and Intranet are all also methods for sharing knowledge between employees.

Chart 6 below summarizes evidence in the data collected at Softplan that is related to the Gallouj models (2002) describing innovation models.

As can be seen, evidence of all of the innovation models described by Gallouj (2002) was found at the firm investigated, whether for creation, improvement, combination or standardization of products. However, it is also possible to find evidence of characteristics that differ from the models cited, i.e., while a given product could be defined as the result of radical innovation, in later phases the same product could also be defined as ameliorative, incremental, formalization, ad hoc or recombinative innovation; all of which depend on its stage of development or functioning.

4.2 Practices related to the use of differentiating technologies

Technological practices involve a firm's physical system, organizational system, human resources, and products and services, as has been pointed out by Figueiredo (2005). They are founded on a set of functional skills related both to production, process and equipment, and also to management and implementation of change. In a technology firm's management strategy, technological practice is the priority.

At Softplan, the research and development department is responsible for identifying the best technologies and market tendencies in order to utilize them as resources for new solutions. A critical factor in maintaining and developing technological practice is maintaining a well-qualified team, which indicates the firm's concern with adding value to the business. There are training targets that must be met by all of the firm's employees and the agenda for these is derived from the quality system, thereby ensuring access to the most modern technologies.

The firm's implementation of information and communication technologies for use by its employees is defined as process innovation. Communication systems described earlier, such as Between You and Me, the Delightometer, Count Me In!, *Colabore*, the Intranet and the Customer Services tool, are all

Chart 5. Communication channels for creating an organizational environment focused on innovation.

Communications Channels at Softplan	Description
Between You and Me	Software through which employees can receive messages from the firm.
Delightometer	Software to measure internal employees' degree of satisfaction with a given benefit.
Count Me In!	Software designed to poll employees' opinions about actions taken by the company, acquiring information for decision-making.
Colabore	Tool providing information that encourages employees to collaborate with each other.
Intranet	Software used to provide information about subjects related to the firm.
Customer Services	Software that provides information about the number of hours of courses taken and training sessions attended by each employee, with individual, password-protected accounts.

Source: Research data.

Chart 6. Evidence found illustrating Gallouj (2002) Models.

Gallouj (2002) Models	Definition	Evidence found at Softplan
Radical	Creation of a new set of characteristics.	- Ideas in Action Program.
Ameliorative	Improvement of the quality of a product or process.	- Ideas in Action Program; - SIENGE, SIDER, SAJ, SAFF and SOLAR systems.
Incremental	Addition or elimination of characteristics.	- Ideas in Action Program; - SIENGE, SIDER, SAJ, SAFF and SOLAR systems.
Ad hoc	Production or codification and formalization of new competencies.	- SAJ.
Recombinative	Combination or fragmentation of a group of characteristics.	- Ideas in Action Program; - SIENGE, SIDER, SAJ, SAFF and SOLAR systems.
Formalization	Formatting and standardization of characteristics.	- Ideas in Action Program; - SIENGE, SIDER, SAJ, SAFF and SOLAR systems.

Source: Research data.

methods for facilitating the communication process, designed to improve the efficiency and quality of activities. Process innovation can also reduce costs for the firm, as has been the case of the Ideas in Action Program.

Analyzing types of innovation, it was observed that Softplan began by developing the SIENGE system for the civil engineering industry; followed by the SIDER system for the infrastructure, transport and works sector; then SAJ, targeting the judiciary and public prosecutors; the SAFF system, aimed at projects co-financed by international organizations; and then the SOLAR system, for public administration. These systems are also examples of product innovation or significant improvements to already existing products, which takes place whenever necessary at Softplan.

4.3 Market orientation practices

The study also analyzed market orientation practices, i.e. those practices that demonstrate the relationship between the firm investigated and the market. The firm works to achieve compatibility with the most important systems on the market and its applications are designed in accordance with predefined criteria, which results in better learning and productivity for users.

There is also evidence of marketing-oriented innovation at Softplan when it implements a new method or when a new market for the firm is discovered, as has been discussed by Sundbo & Gallouj (1998) and Gallouj (2002). A case in point is the SAFF system, which was designed to meet a specific demand in the market. The firm developed a management system that has earned a good reputation. The firm also has relationships with global technology suppliers and partnerships with universities, laboratories and research institutions, to enable it to develop solutions and technologies that are unique in the market.

The firm is posting strong growth in the market and increasing its revenues because of development of the technology industry in the state of Santa Catarina and the need for management software in many different sectors, which has led it to become one of the most important advocates for the technology firms of Santa Catarina, creating a place for itself and winning contracts to provide services to municipal, state and federal public authorities.

As such, market orientation is related to an organization's cultural values, with emphasis primarily on its management, interdepartmental connectedness and centralization, and evidence of this was found at the firm investigated (Llonch et al., 2011).

In summary, the analysis identified a range of evidence showing that Softplan engages in activities that foster innovation, encouraging employee creativity and supporting new ideas. The directors consider that their involvement in the projects implemented is of fundamental importance.

It should be pointed out that Softplan exhibits an industry-leading level of incentivization of practices that generate innovation and encourages employee creativity, supporting new ideas by director-level involvement in the activities and projects implemented. Since this is a firm that does business in the IT sector, the managers of its three core business units need to be aware of the market conditions and the profile of their customers and must be ready to take decisions when faced with complex situations and, most importantly, they need to know how to work in conjunction with people.

4.4 Organizational practices that generate innovation

According to Chen & Yuan (2007), innovation strategies generally refer to the choices of innovation paths represented by the firm's efforts directed at innovation, i.e., the organizational planning focused on development of new products and/or services and on opening new markets.

Figure 2 illustrates the most important organizational practices for generation of innovation at Softplan.

In this study of the case of Softplan, analysis of the organizational practices adopted allows for the conclusion that the firm's innovation environment is focused on three different dimensions, as illustrated in Chart 7.

It was observed that the employees at this firm work towards a common objective. They know their targets, their projects, their processes and, primarily, the organizational culture. It was possible to identify each program or project implemented and the relationship between employees and the firm. Of particular note was the directors' vision of the importance of people and the extent to which they believed in the direct relationship between this organizational behavior and the results in terms of innovation for the firm.

When the intention is to analyze organizational behavior in a technology firm, it should be related to the resources employed and, in this study specifically, the forms of creating, organizing and processing information were identified, considering the cultural values of the organization and interdepartmental connectedness to be functional skills.

In this study, it was observed that Softplan exhibits organizational behavior oriented to promotion of innovation, and, primarily with its Ideas in Action Program, the extent to which the firm's innovation process is geared towards efforts related to the employees' understanding of the concept of innovation itself.

Moreover, the study identified the extent to which the process is also related to efforts to create knowledge at the firm, which are linked to the

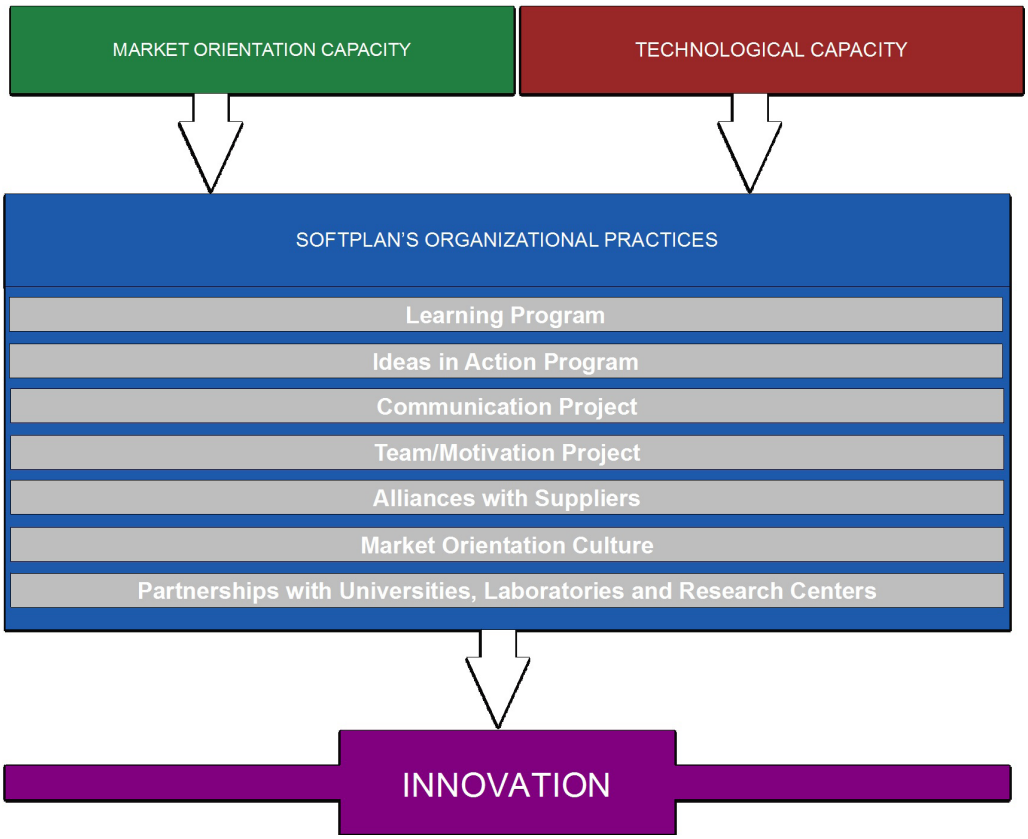

Figure 2. Organizational Practices that Generate Innovation. Source: Research data.

Chart 7. Softplan's Strategies for Innovation.

SOFTPLAN'S STRATEGIES FOR INNOVATION	
Dimensions	**Organizational practices**
Creation and Selection of Ideas	Ideas in Action Program Count Me In! Program
Knowledge Acquisition	Training Programs Partnerships with Universities and Research Centers Alliances with Suppliers
Organizational Learning	Young Learner Project New Talents Project Candidate Referral Project Delightometer Project

Source: Research data.

characteristics related to technological capacity and market orientation that were analyzed, and which justify defining the firm as one that is continuously learning and is engaged in a learning process that is designed to generate and apply new knowledge in routines, processes and procedures.

5 Conclusions

The objective of this study was to identify organizational practices that are necessary to the generation of innovation in an information technology company by analyzing the ways in which mobilization of the resources and development of the capacities that contribute to innovation-oriented activities take place. Evidence with which to achieve this objective was sought in a case study conducted at the IT firm Softplan, which has been doing business in the industry in the Brazilian state of Santa Catarina since 1990.

The case study identified evidence of combination and orchestration of resources and organizational practices that illustrate how mobilization of resources for the innovation strategy is achieved, encompassing communication channels and knowledge-creation strategies. The firm's projects act as incentives to employees to engage in training and are a means of creating a better working environment, working to encourage employees to suggest create and different ideas.

This study focused on organizational practices required for promotion of innovation and geared towards use of technologies and market orientation. In the case studied, Softplan, these practices were identified by analyzing the characteristics of the organizational environment and the firm's projects and programs.

The most important innovation program in place at the firm is its "Ideas in Action Program", which emphasizes the firm's strategy as the essence of

innovation. This program offers the firm's employees the chance to discuss and create ideas as a means of implementing improvements for the firm, following its strategic planning, but seeking improved ideas, and this is what does indeed happen.

It was observed that there were high-quality ideas and an atmosphere of satisfaction among the employees, manifest in events that are held both at the firm and away from it and which affect people's behavior to the extent that they have to adapt to the new organizational format. The internal events are related to the way in which people are encouraged to innovate. The external events are attributed to changes that have taken place in the environment to which the organization must align itself.

With regard to creation and selection of ideas for generation of innovation, the results of observations at Softplan indicate that the phases of searching for and selection of innovations do not tend to be restricted to set times. Although the program is structured, selection and implementation of new ideas are generally coupled to actions taken by the firm's top management.

Analysis of this case identified promotion of knowledge in different contexts and found that orchestration of knowledge-based resources can produce higher performance and increased innovation in IT firms. From the perspective of combination and orchestration of resources and organizational practices, evidence was observed at the firm of how mobilization of resources for the innovation strategy is achieved, revealing communication channels and knowledge-creation strategies.

These observations include programs and projects focused on the employees, innovation-friendly facilities and equipment, and tools used for organizational communication. Evidence was also found of skills focused on production, of the processes and equipment utilized; cultural values cultivated to foster market orientation, and alliances with suppliers and partnerships with institutions focused on the IT industry.

The case studied is an example of excellence in entrepreneurship and organizational strategy demonstrated by a firm that has been in the market for 25 years and has achieved differentiation in IT services. The theoretical-empirical analysis is presented with the intention of sharing this experience of strategic administration for promotion of innovation. While it is acknowledged that the results of this research cannot be generalized, this paper has presented an analysis of the firm's experience which describes the strategic actions taken to promote capacities required for development of innovation.

Further studies will be needed to identify the organizational practices employed in different internal and external contexts, in global settings, or in domestic and international entrepreneurship at other firms in the IT sector.

It is also suggested that the results of this study could also contribute to research related to investigation of "Strategy as Practice", through the lens of innovation in IT organizations, since research with this objective attempts to understand how actions and structures interact in the process of constituting strategy, in addition to collecting evidence on where and how these activities take place, who carries them out, what competencies are needed to implement them and how these were acquired.

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