The use of organisational resources for product innovation and organisational performance: A survey of the Brazilian furniture industry

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ABSTRACT

Innovation represents an efficient way to improve competitiveness and organisation performance. In this sense, innovation is attributed to optimize the use of resources in organisations and better market positioning. In such context, the Brazilian furniture industry constantly promotes product innovation, which looks for customer's satisfaction and comfort needs. Product innovation is an important source of competitive advantage, being responsible for increasing the financial performance of Brazilian organisations. Thus, identifying the resources that precede innovation is critical to maximize their results. The objective of this research is to measure the relation between Product Innovation, Resources and Organizational Performance, considering the premises of the literature for the furniture industry in Brazil, with the Structural Equation Modeling methodology. Therefore, a survey of 618 companies was carried out in a Furniture cluster from South Brazil. This research evaluated the intensity of the relationship between Knowledge Management Structure resources with Knowledge Management Culture, and Human Resource Alliance and these resources with new product and organisational performance. The main contributions of this study are the identification of the product innovation and organisational performance, but also the enhancement of research tools of statistical analysis.

1. Introduction

Since innovation comes in response of the improvement of competitive positioning and the profitability of organisations. Innovation must be studied to understand the economical ability of the organisations as a factor that enhances competitiveness (Schumpeter, 1934; Damanpour, 1991; Porter, 1991; Drucker, 2002; OECD, 2005). In support of such assumption, the study of Lii and Kuo (2016) shows that an organisation that enhances an orientation toward innovation can positively affect its performance.

In this context, the furniture industry in Brazil constantly promotes product innovation, to satisfy customer's needs, creates consumer desires, either by design or by the use of new materials. The PINTEC-IBGE (2013) survey indicates, for the period between 2009 and 2011, that the companies of the manufacturing industry have an innovation rate of 42.2%, where the companies of the furniture sector show a rate of 44.6% of innovation. It reaffirms the importance of the Brazilian furniture industry with innovations, considering the rate of 19% in product innovations compared to 17% of the manufacturing industry.

The relative importance of the furniture industry for Brazil's economy comes from its participation in the trade balance composition, where data on export furniture show results of 0.25% in 2014, and 12.27% of the total exports of Brazilian products. In 2015, the furniture industry of Rio Grande do Sul (RS) exported US $ 184 millions of products, which represents 30.5% of all Brazilian furniture exports, which makes the State of Rio Grande do Sul the most important furniture exporter of Brazil. With regard to industry concentration, the RS has 2750 furniture companies, equivalent to 13.3% of the companies in Brazil, which account for 18.4% of all furniture manufactured in the country (MDICE, 2016).

The rational and optimal use of strategic resources and the development of innovations constitute means of advantage results in organisations, which is also perceived in the Brazilian furniture sector, through the development of new products and gains from

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the use of their resources. Resources are product innovation antecedents that provide environmental and technical conditions for the process of product development.

The objective of this research is to measure the relation between Product Innovation, Resources and Organisational Performance in the context of the furniture industry in South Brazil, through the use of the Structural Equation Modeling methodology.

2. Research hypothesis

2.1. Knowledge management, human resource and alliance

The concepts of Knowledge Management (KM) are important tools for organisational effectiveness and performance, especially in the New Product Development process (NPD). Constituting a strategic resource, it directly influences the organisation's future (Decarolis and Deeds, 1999; Mehta, 2008; Prieto et al., 2009; Zack et al., 2009; Donate and Guadamillas, 2011). KM requires a framework to operationalize its use, so this feature can be classified as "Knowledge Management Structure" or "Knowledge Management Culture".

The Knowledge Management Structure (KMS) concept constitutes an infrastructure and a set of Information Systems (IS) that store and make available such knowledge as well as its hierarchical structure (leadership) endowed with decision-making power, to ease access to the accumulated knowledge. This KMS definition follows the precepts of established by Narver and Slater (1995), Gold et al. (2001), Leidner et al. (2006), Kim and Lee (2006), Zack et al. (2009), Zhang (2011) and Guimarães (2013).

The IT organisation, who manage the IS, has a key role in KMS since it is responsible for the conservation and the management of the information. The NDP team use such data to enable New Product solutions to meet new customer demands (Nambisan, 2003; Pavlou and El Sawy, 2006). The IT organisation also has the function of providing engineering software and design that allow the technical development of the product as well as to facilitate the simulation of the use of materials and structural design calculations, streamlining the process and integrating the team of NPD (Sanchez, 1995; Lee and Choi 2003; Pavlou and El Sawy, 2006; Liu et al., 2010). In this sense the KMS tools support the development of Knowledge Management Culture (KMC).

It is important to note that KMS supports the actions of the product development teams, which work in concurrent engineering projects, by using specialized software for the NPD, showing relationship between KMS and Human Resource (HR) to obtain product innovation (Sanchez, 1995; Pavlou and El Sawy, 2006).

Another aspect related to the innovation process is the use of strategic Alliance (AL), which enables the sharing of resources that are available to partners, which enables the development of product innovations (Morgan et al., 1994; Hunt and Morgan, 1995; Ritter and Gemünden, 2003; Inkpen and Pien, 2006). In this sense, the KMS process represents an important means of communication between the alliance partners in supporting, recording and disseminating the continuous flow of data as a new source of knowledge for the teams of NPD, which aims to accelerate the pace and to reduce the risks associated with innovation (Leidner et al., 2006; Kim and Lee, 2006; Sivadas and Dwyer 2000; Ganotakis and Love, 2012).

Based on the published literature, we can thus make the following assumption (H1): Knowledge Management Structure (KMS) positively influences the constructs of Knowledge Management Culture (KMC), Human Resource (HR) and Alliance (AL). To analyze the influence of KMS on KMC, AL and HR, the H1 was distributed in H1a, H1b and H1c.

H1a. Knowledge Management Structure is positively related with Knowledge Management Culture.

Knowledge is the result of continuous interactions between people from inside and outside the organisation. Knowledge management can be feasible with an infrastructure with a set of information technology and especially the existence of facilitators like formal and cultural structures of the organisation (Prieto et al., 2009).

The organisational culture and the leadership practices, as a formal procedure, are among the factors that influence knowledge management, which in fact represent the Knowledge Management Culture (KMC) (Schein, 1985; Narver and Slater, 1995; Sveiby and Simons, 2002; Leidner et al., 2006; Roth, 2003; Yang, 2007; Prieto et al., 2009). The organisational culture establishes behavior patterns for individuals and teams, which can generate advantages or disadvantages for an organisation. Therefore, companies should promote a number of values that influence the behavior and the desire to share knowledge through the different levels of the organisation (Schein, 1985; Sveiby and Simons, 2002; Leidner et al., 2006).

KMC requires a Knowledge Management Structure (KMS) for organisational communication and Knowledge Management (KM). The KM formal structures are essential to identify the licensing opportunities for new technologies and to generate new knowledge from the existing skills already established. The processes and practices that companies use are crucial to achieving the organisational strategic objectives through the best use of resources and existing capacities (March, 1991; Zack, 1999; Zollo and Winter, 2002; Frishammar et al., 2012).

In organisational culture environments that allow the integration of knowledge and openness toward the ideas of their employees, the generation of innovative knowledge helps in responding quickly to the environment changes and new market opportunities (Donate and Guadamillas, 2011).

The relationship between KMC and KMS is evidenced by the fact that a knowledge management structure can enhance the action of leadership and teamwork in a knowledge culture context (Schein, 1985; Narver and Slater, 1995). KMS uses hierarchical leadership as a means to manage organisational processes and to generate new knowledge, as well as for its dissemination in a context of organisational performance (Narver and Slater, 1995; Gupta and Thomas, 2001; Yang, 2007; Zack et al., 2009). Consequently, KMS contributes to a culture of Knowledge Management, enhancing the organisational processes of communication and interaction between the NPD team, as well as communication efficiency between the business partners.

H1b. Knowledge Management Structure is positively related with Human Resource.

Human Resource (HR) comprises a team dedicated to new development project Products/Services, which creates a shared interpretation of the realities, both through the interaction and integration of combined individuals, resulting in a multi-disciplinary team (Kandemir et al., 2006). A formal KM structure. helps the companies to use and expand their HR skills.

HR is critical to differentiate an organisation from its competitors, but it is intangible. HR presents the characteristics of sustainable resources (rare, inimitable, valuable and strategically irreplaceable), with the potential to create perceived value for the customer and create competitive advantage. From its competence and human skills, it triggers the emergence of unique capabilities, however this strategic resource depends on the KMS procedures established by the company to enhance any HR results (Guest, 1987; Barney, 1991; Ulrich et al., 1991; Wright et al., 1998; Ellinger et al., 2002; Khandekar and Sharma, 2005; Armstrong, 2009;