



Non-technical innovation: Organizational memory and learning capabilities as antecedent factors with effects on sustained competitive advantage[☆]

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ABSTRACT

The aim of the present study is to analyze the role of organizational memory and learning capabilities as antecedents to non-technical innovation, comprising organizational and marketing innovation, and to examine their effect on sustained competitive advantage within a capabilities-based view (CBV) theoretical framework. For analysis of the proposed theoretical model, 159 industrial companies in Spain were sampled and a system of structural equations was modeled using partial least squares methodology. The results confirm that both organizational memory and learning capabilities favor the development of organizational innovation and marketing innovation. Furthermore, the paper shows that both types of non-technical innovation promote the achievement of sustained competitive advantage.

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1. Introduction

Historically, research on innovation types has followed a technical focus (Damanpour & Aravind, *in press* 4). Consideration of non-technical innovation, which includes organizational (or management) and marketing innovation, is an emerging approach, as this was not recognized until the third edition of the Oslo Manual (OECD, 2005). Non-technical innovation is playing an increasingly important role in a better understanding of innovation and its impact on the competitiveness of firms (Armbruster et al., 2006: 5). However, the literature on non-technical innovation is diverse and scattered (Armbruster, Bikfalvi, Kinkel, & Lay, 2008: 645) and recent studies have encouraged research on the development of models and theories of non-technical innovation in organizations to extend and expand existing models and theories, which are mainly drawn from research on technical innovation (Damanpour & Aravind, *in press*: 5).

The objective of this study is to analyze both the antecedent role of two knowledge-based capabilities (organizational memory and organizational learning) in the development of non-technical innovation and its effect on achieving sustained competitive advantage (SCA)

using a theoretical capabilities-based view (CBV) as a theoretical framework.

Thus, this study extends previous knowledge on three fronts. First, both theoretical and empirical research on organizational capabilities that lead to non-technical innovation is limited. The literature has focused on studying the effects of organizational capabilities such as learning (Chen, Lin, & Chang, 2009; Mavondo, Chimhanzi, & Stewart, 2005; Nasution & Mavondo, 2008; Weerawardena, 2003; Weerawardena, O'Casey, & Julian, 2006) and knowledge absorption (Chen, Lin, & Chang, 2009) on technical innovation or has considered different types of technical and non-technical innovation within the same latent variable (Weerawardena, 2003; Weerawardena & Sullivan-Mort, 2001; Weerawardena et al., 2006). Although this research is valuable, extension of this line of reasoning requires an examination of the effects that different organizational capabilities have on individual types of non-technical innovation. In our case, we analyze the effects of organizational memory and learning capabilities on organizational and marketing innovation. In the CBV literature, these two knowledge-based capabilities have been considered central to the generation of innovation, but their theoretical and empirical links with non-technical innovation need to be studied in greater detail (Armbruster et al., 2008; Fiedler & Welpel, 2010; Mol & Birkinshaw, 2009).

The second contribution is to provide further empirical evidence of the relationship between non-technical innovation and SCA; such evidence has been limited to date. On one hand, debate regarding the impact of organizational and marketing innovation on SCA is ongoing given the ambiguous empirical evidence (e.g., Mol & Birkinshaw, 2009 vs. Walker, Damanpour, & Devece, 2010). On the other hand, the relationship between marketing innovation and SCA has not been studied in detail. Although the effects of many individual innovations in

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marketing (e.g., customer management relationship) on SCA have been examined, there has been little consideration of the global effect of marketing innovation on SCA.

The third contribution of this study is to simultaneously consider antecedents and consequences of non-technical innovation. Previous studies focused on only one of these aspects. Although this is logical in preliminary analyses, it needs to be extended to a more complete model that captures the complexity of the relationship between variables involved in the non-technical innovation process.

The remainder of the paper is structured as follows. Section 2 contains a literature review and presents theoretical foundations for the hypotheses proposed. The data and statistical methods used to test the hypotheses are described in Section 3. The results of the structural equation modeling are presented and discussed in Sections 4 and 5, respectively. The final section summarizes and concludes the article.

2. Theoretical framework and hypotheses

2.1. Capabilities-based view

CBV facilitates a clear analysis of the relationships between capabilities, innovation and SCA (Mol & Birkinshaw, 2009). CBV is based on the theory that SCA is only possible when a company possesses heterogeneous resources and capabilities (Amit & Schoemaker, 1993; Barney, 1986, 1991; Wernerfelt, 1984). Capabilities are associated with the individuals who possess them (dispersed knowledge) or with the firm as an organization (the *savoir faire* of the organization and its members) (Amit & Schoemaker, 1993; Grant, 1991).

In this paper, we focus on two knowledge-based capabilities as antecedent factors to non-technical innovation: organizational memory and learning capabilities. According to CBV, these are core knowledge-based capabilities (Nelson & Winter, 1982). Both organizational memory and organizational learning capabilities are a consequence of organization-specific or tacit knowledge (Polanyi, 1962) of a collective nature (Walsh & Ungson, 1991) that can favor innovation (Kamasak & Bulutlar, 2010; Storey & Kelly, 2002). At the same time, innovation is frequently acknowledged as the primary source of SCA (Day & Wensley, 1988; Hurley & Hult, 1998).

In its most basic sense, organizational memory refers to stored information from an organization's history that can be brought to bear on present decisions (Walsh & Ungson, 1991: 62). Organizational memory resides in the minds of employees and can be embedded in work processes or in lessons learned from past experiences (Walsh & Ungson, 1991). Organizational memory facilitates access to an organization's prior knowledge, such as information about the competitive environment, the present markets and clients and/or market factors (Camisón, Boronat, & Villar, 2010). This type of knowledge is especially difficult to transfer or imitate and is therefore a valuable asset for a firm (Ebbbers & Wijnberg, 2009).

Organizational learning is defined as the capability of an organization to process knowledge—in other words, to create, acquire, transfer and integrate knowledge—and to modify its behavior to reflect new cognitive situations with a view to improving its performance (Jerez-Gómez, Céspedes-Lorente, & Valle-Cabrera, 2005: 716). This definition permits an understanding of learning capacity as a multidimensional construct that encompasses different subprocesses (Céspedes Lorente, Jerez Gómez, & Valle Cabrera, 2005; Goh & Richards, 1997; Jerez-Gómez et al., 2005; Slater & Naver, 1995). Jerez-Gómez et al. (2005) define the following dimensions:

- *Managerial commitment*: Management recognizes the importance of learning and ensures that employees understand its importance.
- *Systems perspective*: Members of the firm have a common identity; they have a clear view of the objectives and how they can contribute to achieving these.

- *Openness and experimentation*: The climate in the firm welcomes new ideas and points of view, both internal and external. The culture promotes creativity, agility and innovativeness as ways of improving the work process.
- *Knowledge transfer*¹: Communication within the firm is fluid, and dialog and debate among the members of the organization are promoted.

2.2. Definition of non-technical innovation

Innovation is defined as the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations (OECD, 2005).² This broad definition of innovation encompasses four categories: product, process, organizational and marketing innovation. In this paper, we focus on the latter two, which are considered non-technical innovation (Damanpour, Szabat, & Evan, 1989).³

An organizational innovation⁴ can be defined as implementation of a new organizational method in a firm's business practices, workplace organization or external relations (OECD, 2005). In particular, *organizational innovations in business practices* involve the implementation of new methods for organizing work routines and procedures. *Innovations in workplace organization* involve the implementation of new methods for distributing responsibilities and decision-making among employees for the division of work, as well as new concepts for the structuring of activities. Finally, *new organization methods in a firm's external relations* are defined as the implementation of new ways of organizing relations with other firms or public institutions.

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD, 2005). Specifically, marketing innovation includes significant changes in *product design*, which include changes in product form and appearance that do not alter the product's functional characteristics. It also includes changes in the packaging of products. New marketing methods in *product placement* primarily involve the introduction of new sales channels. Innovations in *product promotion* involve the use of new concepts to promote a firm's goods and services. Finally, innovations in *pricing* involve the use of new pricing strategies to market the firm's goods or services.

2.3. Organizational memory and non-technical innovation

Previous studies provide empirical confirmation that what has already been learned and stored in organizational memory drives innovation (Hanvanich, Sivakumar, & Hult, 2006; Tsai, 2008). However, it

¹ The original conceptualization by Jerez-Gómez et al. (2005) defines this dimension as *Knowledge transfer and integration*, considering that integration is equal to organizational memory. In this paper, we follow the view of previous studies that consider organizational memory as a concept different from organizational learning (Ebbbers & Wijnberg, 2009; Fiedler & Welpel, 2010; Hanvanich et al., 2006; Walsh & Ungson, 1991) and therefore we do not include it here.

² Innovation can be defined in two different but complementary ways: (1) innovation as the *implementation* of a product, technology or practice new to the adopting organization (Daft, 1978; Damanpour & Schneider, 2006; Damanpour & Wischnevsky, 2006; Kimberly & Evanisko, 1981); or (2) innovation as a *process* applied to how innovation is developed, commercialized, diffused or adopted (Klein & Sorra, 1996; Rogers, 1995). The OECD definition used in this study falls within the first case.

³ We do not consider the case of technical innovation because its relationship with knowledge-based capabilities and SCA is well documented in the literature (Aragón-Correa et al., 2007; Calantone et al., 2002; Nasution et al., 2011).

⁴ Some papers refer to this as *management innovation* (Hamel, 2006, 2009; Mol & Birkinshaw, 2009). However, in the present study, the terminology and definition proposed by ODCE are applied because these have a unifying character that encompasses the essence of both the traditional and more recent definitions. This definition and terminology have also been adopted in recent papers (Armbruster et al., 2008, 2006; Camisón & Villar-López, 2010).

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