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Technological variables and absorptive capacity's influence on performance through corporate entrepreneurship ☆

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ABSTRACT

Technology and corporate entrepreneurship constitute an important source of competitive advantage for organizations, as they enable the development and exploitation of new opportunities. This study proposes a model to analyze the effects of top management support for technology on the promotion of technological skills, absorptive capacity, and technological distinctive competencies. The research also considers the impact of technological skills and absorptive capacity on the development of technological distinctive competencies, analyzing the influence of these variables on organizational performance through corporate entrepreneurship. The study tests these relationships empirically using 160 European technology firms. The paper ends with discussion of the findings and provides several theoretical and practical implications for future research.

1. Introduction

Nowadays, technology constitutes one of the most valuable assets organizations possess, as technology facilitates growth and profitability (Zahra & Kirchhoff, 2005). Thus, understanding how organizations deploy their technological resources to achieve competitive advantage has become an important subject in current research (Huang, 2011).

Prior literature highlights the role that certain skills, capabilities, and competencies related to technology, as well as the acquisition and exploitation of knowledge (i.e., absorptive capacity), play in enabling business performance (Lee, Lee, & Pennings, 2001; Martín Rojas, García Morales, & García Sánchez, 2011). Yet, few studies analyze (1) how the role of top management support (TMS) of technology affects the promotion of these technological skills, competencies, and capabilities; and (2) the impact of developing such technological expertise and absorptive capacity on critical organizational variables such as corporate entrepreneurship, which is crucial for exploiting new business opportunities and may affect organizational performance (Antoncic & Hisrich, 2001; Hayton, 2005). The research also analyzes whether organizations can achieve higher levels of corporate entrepreneurship and organizational performance by fostering an advanced technological position and intense absorptive capacity, led by TMS of technology.

All technological variables need committed TMS to guide initiatives aimed at improving the development of technology within organizations (Ghosh, Tan, Tan, & Chan, 2001). Top management refers to the CEO (Chief Executive Officer) and his or her immediate subordinates, who are responsible for corporate policy (Bolívar Ramos, García Morales, & García Sánchez, 2012). In the resource-based view, top management represents one specific human capital resource that may differentiate pioneering firms. In fact, top management defines the technological strategy, which should aim to lead the organization to recognize, acquire, develop, and use technology to gain a competitive advantage (Lanctot & Swan, 2000).

As Liang, Saraf, Hu, and Xue (2007) show top managers' positive perceptions concerning the usefulness of technology result in specific managerial actions intended to assimilate technology. Thus, in a technological context, TMS represents the degree to which top management understands the importance of the technology function and the extent to which TMS is involved in technology activities that relate to technological success.

How TMS influences the development of technological skills, technological distinctive competencies (TDCs) and absorptive capacity is a critical issue for organizations, since companies are constantly under pressure to develop new skills and competencies and need to benefit from acquiring and exploiting knowledge flows as a means to remaining competitive (García Morales, Lloréns Montes, & Verdú Jover, 2007;

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Huang, 2011). This study defines technological skills as firm-specific techniques and scientific understanding (Leonard-Barton, 1992) embedded in individual employees, whereas TDCs represent the ability or expertise of the organization to apply scientific and technical knowledge through a series of routines and procedures to develop and improve products and processes (Real, Leal, & Roldán, 2006). The study in turn conceptualizes absorptive capacity as the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990).

TMS may be a determinant in increasing the level of technological skills, as TMS is responsible for providing enough funds and commitment for technology training programs oriented toward improving employees' expertise in a given technological field (Bolívar Ramos et al., 2012). In addition, TMS influences the development of TDCs, since top management performs a leadership role in supporting innovation and technological development in dynamic and competitive environments (Huang, 2011).

TMS may be necessary to make companies more capable of accessing, assimilating, and applying knowledge to commercial ends. For example, TMS can influence information technology implementation and, in turn, promoting knowledge databases and other telecommunications, which may facilitate knowledge sharing and exploitation (Alavi & Leidner, 2001). This increase in the company's absorptive capacity may in turn affect the creation of TDCs, since these competencies have their roots in the knowledge base of the firm (Real et al., 2006).

The impact of technological skills, TDCs, and absorptive capacity on corporate entrepreneurship are additional issues the present investigation analyzes. Corporate entrepreneurship is defined as a process by which individuals inside organizations undertake new activities and are willing to depart from routines to pursue new opportunities (Zampetakis & Moustakis, 2010). Corporate entrepreneurship includes new business venturing, product/service/process innovation, self-renewal and proactiveness (Antoncic & Hisrich, 2001). Technological skills and TDCs positively influence corporate entrepreneurship because, as a platform of knowledge, they enable the development of new systems and processes and revision of the scope of the firm's operations to improve its responsiveness to its markets (Zahra, Nielsen, & Bogner, 1999). Moreover, absorptive capacity impacts corporate entrepreneurship, since it can considerably improve the ability to identify new opportunities (Zahra, Filatotchev, & Wright, 2009).

The research also responds to the need for fuller empirical exploration of corporate entrepreneurship's effects on organizational performance in the field of technology organizations (Bojica & Fuentes Fuentes, 2011; Martín Rojas et al., 2011). By adopting a risk-taking, innovative and proactive attitude, firms can take advantage of entrepreneurial opportunities and increase their financial and market performance (Antoncic & Hisrich, 2001; Hayton, 2005).

To achieve these objectives, this paper follows the following organization: Section 2 proposes and develops a number of empirically testable hypotheses. Section 3 presents the data and methodology used in this research. Section 4 explains the results. Finally, Section 5 discusses the implications of this study, presents some limitations, and establishes various lines for future research.

2. Theoretical framework and hypotheses

2.1. The influence of TMS on technological skills, absorptive capacity, and TDCs

TMS plays a critical role in enhancing employees' unique technological skills, which is crucial for organizational success (Martín Rojas et al., 2011).

One example of this importance occurs when a firm chooses to implement information technologies (IT). Lack of management support, measurable by the level of financing offered for IT, as well as the ease of technology transfer within the firm (Byrd & Davidson, 2003), dooms many IT processes to failure. Under these conditions, IT managerial abilities that cover the effective management of information systems—identification of and support for the appropriate IT projects, organization of adequate resources, leadership and motivation of teams, restructuring of work processes to take advantage offered, and collaboration with business units—can enable the development of IT technological skills. This capability stems from understanding, experience, and strategic planning, which render the firm capable of "adapt [ing] its hardware, software, networks and IT skills to ensure that IT can continue to support the firm's business strategy" (Tallon, 2008, p. 24).

Top management is the agent responsible for establishing changes in the values, norms, and organizational culture that eventually enable other organizational members to adapt to new technologies (Liang et al., 2007). The capabilities of promoting a technological proactive posture, developing a strategy that supports technology, and funding technology training programs demonstrate how TMS encourages the creation of stimulating work environments for technical employees to develop their skills (Byrd & Davidson, 2003; García-Morales, Ruiz-Moreno, & Lloréns-Montes, 2007). Thus:

H1. Higher levels of TMS lead to higher levels of technological skills in technology organizations.

TMS drives the company to improve its absorptive capacity and to be more innovative and proactive. TMS for technology facilitates access to external sources of knowledge and the creation of new communication channels with partner organizations, promoting the existence of strong absorptive capacity that stimulates the organization's innovative ability, flexibility, and responsiveness (Corso, Martini, Pellegrini, & Paoluci, 2003). In addition, TMS encourages an organizational culture based on knowledge that permits organizations to recognize the value of new information, assimilates what is relevant, and applies this information to commercial ends (Harrington & Guimaraes, 2005). Managers must support technology to search beyond current competencies and routines, nurturing absorptive capacity to detect trends, competitors, and relevant developments to obtain competitive advantage for the firm (Daft & Weick, 1984).

Internal processes of technological learning from past experience and current actions often enhance absorptive capacity. TMS develops organizational learning processes to obtain strategic knowledge which, through flexibility and adaptability, encourages absorptive capacity, and the increasing importance of strategic resources, what becomes one of the most significant concepts for strategic advantage (Camisón & Forés, 2010). Thus:

H2. Higher levels of TMS leads to higher levels of absorptive capacity in technology organizations.

Scholars have long recognized TMS as one of the most decisive factors ensuring successful implementation of distinctive competencies and technology (Ghosh et al., 2001; Leonard-Barton & Deschamps, 1988). Among these competencies, and linked to the field of technology, there are critical and core competencies called TDCs, which strengthen the firm's competitiveness on the global market (Lee et al., 2001).

The technological innovation literature views management support as an important power-tool to promote TDCs (Martín Rojas et al., 2011). This view stems from the fact that technological innovation opportunities derive from scientific discoveries, and top managers are the main granters of such scientific opportunities (Fontes, 2001). Support from top managers helps the firm to obtain more TDCs and competitive advantage by providing access to potential entrepreneurs (Byrd & Davidson, 2003; Fontes, 2001). In addition, TMS opens an opportunity for developing and exploiting nascent technology to generate new TDCs in a company (Giarratana & Torrisi, 2010).

Greater involvement of top management as suppliers of technology permits the identification of new complex technological projects by incorporating new knowledge and capabilities in the firm. These projects