



Knowledge-based human resource management practices, intellectual capital and innovation[☆]



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ABSTRACT

This paper proposes a conceptual model in which a human resource management (HRM) system of explicitly knowledge-based HRM practices impacts a firm's intellectual capital, producing higher innovation performance. We have empirically tested this idea in a survey dataset of 180 Spanish companies using structural equation modelling (SEM) based on partial least squares (PLS). The results show that intellectual capital positively mediates the relationship between knowledge-based HRM practices and innovation performance and illustrate the pivotal role of human capital in this relationship: knowledge-based HRM practices impact structural and relational capital partially through human capital, and human capital affects innovation performance by enhancing structural and relational capital.

1. Introduction

Innovation in organizations is, first and foremost, a human issue. Since it is people who develop and implement ideas, innovation will depend on effective human resource management (HRM). It will also depend on knowledge, since any innovation implies the development of new knowledge as both an input (e.g. new ideas, concepts, prototypes, etc.) and an outcome (i.e. the novelty produced). Thus, both HRM and knowledge are key enablers of innovation in firms. In this paper, we address the production of innovation from the perspective of HRM and the pools of knowledge it produces for the company.

While authors in the past (e.g. Kang, Snell, & Swart, 2012; Minbaeva, 2013; Minbaeva, Foss, & Snell, 2009; Swart & Kinnie, 2013) have identified the integration of HRM and the knowledge-perspective as a crucial issue with significant potential, it still remains underdeveloped. In particular, there is a paucity of work addressing both HRM and knowledge as antecedents of corporate innovation. While many previous studies have examined the impact on innovation of HRM (e.g., Gil-Marqués & Moreno-Luzón, 2013; Jiménez-Jiménez & Sanz-Valle, 2005; Lau & Ngo, 2004; Laursen & Foss, 2003; Saá-Pérez & Díaz-Díaz, 2010; Shipton, West, Dawson, Birdi, & Patterson, 2006) and intellectual capital (IC) (e.g. Leitner, 2011; Menor, Kristal, & Rosenzweig, 2007; Pizarro-Moreno, Real, & De la Rosa, 2011;

Subramaniam & Youndt, 2005; Wu, Lin, & Hsu, 2007), few studies have empirically analyzed the interplay between IC and HRM vis-à-vis innovation (Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011; De Winne & Sels, 2010; Donate, Peña, & Sánchez de Pablo, 2016; Jiang, Wang, & Zhao, 2012; López-Cabrales, Pérez-Luño, & Valle-Cabrera, 2009; Wang & Chen, 2013). Moreover, the HRM practices considered in these studies tend to be insufficiently adapted for the purpose of enhancing companies' knowledge processes.

This scarcity of research highlights the need for further studies on the relationships between HRM, IC and innovation performance. The present paper aims to fill this gap. Specifically, we have built a conceptual model that 1) identifies key IC elements for innovation, 2) suggests key knowledge-based HRM practices and 3) examines the impact of knowledge-based HRM on IC and innovation. We argue that innovation in firms is largely enabled by knowledge-based HRM practices (cf. Inkinen, Kianto, & Vanhala, 2015; López-Cabrales et al., 2009; Minbaeva, 2013), including the handling of recruitment, the extent to which training and development systems focus on knowledge-related development aspects and how appraisal and compensation systems support employees' knowledge-based behaviors. We suggest that all these HRM practices impact a firm's IC level, which reflects the firm's intangible value-generating properties, including its employees' skills and motivation, external relationships, and knowledge contained in

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information systems, documents and databases. These IC elements, in turn, affect the firm's innovation performance. Overall, HRM contributes to innovation by enhancing the organizational knowledge base and stimulating knowledge creation (e.g., De Winne & Sels, 2010; López-Cabrales et al., 2009; Shipton et al., 2006).

We have empirically tested the proposed conceptual model in a survey dataset of 180 Spanish companies using structural equation modelling (SEM) based on partial least squares (PLS). Our results contribute to a better understanding of the role of HRM in advancing innovation from a knowledge-based perspective, thereby adding to the fields of strategic HRM, IC and innovation management.

2. Theoretical background

2.1. Intellectual capital and innovation

In recent decades, management literature has used the concept of IC to understand how knowledge functions as a key value-creating asset for organizations. IC refers to 'the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills that provide a company with a competitive edge in the market' (Edvinsson & Malone, 1997). In other words, IC is the sum of all of the intangible and knowledge-related resources an organization uses to create value. Attempts to understand and conceptualize IC have yielded many frameworks (e.g. Edvinsson & Malone, 1997; Nahapiet & Ghoshal, 1998; Roos, Edvinsson, & Roos, 1998; Stewart, 1997; Subramaniam & Youndt, 2005; Sveiby, 1997), which tend to divide IC into three main categories: human capital, structural capital and relational capital, which are related with knowledge embedded in individuals; organizational structures, processes and systems; and relationships and networks.

Human capital includes an organization's employees and their attributes, such as their knowledge, experience, commitment and motivation (Bontis, 1998; Edvinsson & Malone, 1997; Stewart, 1997). The firm does not own or even control human capital in the strict sense, since it 'walks out' the company's door each night or when employees change jobs (e.g. Grant, 1996; Roos et al., 1998; Spender, 1996). However, authors in the field consider that human capital is the most significant element of IC, because a firm can accomplish nothing—including innovation—without it. As Subramaniam and Youndt (2005, p. 451) argue, '[a] critical portion of the knowledge and skills required for innovation resides with and is used by individuals.' Since developing new knowledge requires some level of existing knowledge (De Winne & Sels, 2010), employees' skills and expertise are important predictors of organizational innovation. Creative and knowledgeable employees are more likely to develop new and innovative ideas (Anand, Gardner, & Morris, 2007) or to question existing ways of conduct and act as organizational change agents (Amabile, 1997).

Structural capital, sometimes called organizational capital, comprises 'all the non-human storehouses' of knowledge within organizations (Bontis, Keow, & Richardson, 2000, p. 88), accumulated and distributed through organizational structures, processes, systems and manuals (Subramaniam & Youndt, 2005; Youndt & Snell, 2004). It is the knowledge that stays with a firm when staff leaves (Roos et al., 1998; Youndt & Snell, 2004). This stock of institutionalized knowledge and codified experience can increase innovation because the production of new products, processes or methods usually involves combining and applying different pieces of existing knowledge (Fleming & Sorenson, 2004). Hence, having developed an "organizational memory" (Walsh & Ungson, 1991) will help companies to find out and combine all the relevant bits of knowledge that they have generated or acquired in the past, and that they need to produce the expected innovation. Established structures, norms and routines support the systematic documentation and retention of knowledge that organizations can use to continuously produce and test new ideas (Hargadon & Sutton, 1999; Nonaka & Takeuchi, 1995). Information and communication

technologies also facilitate innovation by enabling there to be information search, retrieval, storage, transfer, analysis and dissemination (Alavi & Leidner, 2001). In sum, structural capital supports innovation by providing a (collective) infrastructure for knowledge development activities within an organization.

Relational capital, also sometimes called (external) social capital, refers to the value and knowledge embedded in and available through relationships with customers, suppliers, institutions and other external agents (Bontis, 1998; Edvinsson & Malone, 1997; Nahapiet & Ghoshal, 1998; Sveiby, 1997). Relational capital contributes to innovation because not all of the knowledge necessary to innovate is located within a firm's boundaries. External relationships can help firms innovate by introducing solutions that exist elsewhere or combining knowledge from different external sources (Hargadon & Sutton, 1999). In fact, according to Hargadon (2003), the majority of breakthrough innovations involve transplanting ideas from one industry to another. Relational capital also offers influence, control and power and produces mutual solidarity, which can increase the chance of co-creation (Adler & Kwon, 2002). Involving 'outsiders', such as clients, in development activities, also encourages continuous experimentation (Sutton & Kelley, 1997). Overall, inter-organizational collaboration is likely to facilitate knowledge sharing and interactive learning and, thus, increase innovation (Pérez-Luño, Medina, Lavado, & Rodríguez, 2011).

2.2. Enhancing IC and innovation through knowledge-based HRM practices

Given the human nature of knowledge and innovation, HRM practices could substantially enhance a company's IC and capability to innovate. Indeed, recruiting and selection, training and development, and performance evaluation and compensation are all major determinants of organizational behavior and effectiveness (e.g. Bowen & Ostroff, 2004; Delaney & Huselid, 1996). In line with Minbaeva (2013) and Minbaeva et al. (2009), we argue that in order to enhance innovation as a knowledge-based process, managers must customize traditional HRM practices in order to advance knowledge sharing and creation in the firm. Knowledge-based HRM includes those HRM practices purposefully designed to enhance knowledge processes within an organization. The following sections outline the nature of traditional HRM practices from a knowledge-based perspective.

2.2.1. Knowledge-based recruitment

Recruitment 'includes those practices and activities carried out by the organization with the primary purpose of identifying and attracting potential employees' (i.e. human capital; Breaugh & Starke, 2000, p. 45), while selection refers to 'the task of predicting which applicant will be the most successful in meeting the demands of the job, and/or be the best fit with the work group and culture of the organization' (Torrington, Hall, Taylor, & Atkinson, 2014, p. 133). These activities affect knowledge creation because they determine the knowledge brought into an organization (De Winne & Sels, 2010). Subramaniam and Youndt (2005) showed that organizational innovation depends on an organization's knowledge base, which is rooted in the recruitment of talented people (Jiang et al., 2012). According to Lepak and Snell (1999, 2002), recruiters should select employees based on their potential rather than their current knowledge, skills or experience, since individuals with high potential are more likely to be capable of learning the knowledge necessary for innovation (Jiang et al., 2012). Furthermore, since learning takes place primarily in a collaborative context (e.g. Nonaka & Takeuchi, 1995), knowledge-based recruitment should consider a candidate's ability to collaborate. In short, knowledge-based recruitment involves a strong and explicit focus on choosing candidates with relevant knowledge, learning and networking capabilities.

2.2.2. Knowledge-based training

As Robbins, Judge, and Campbell (2010) point out, competent employees do not remain competent forever. Skills deteriorate and can

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