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From knowledge sharing to firm performance: A predictive model comparison☆

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ABSTRACT

This study investigates how knowledge sharing (KS) contributes to firm performance (FP) through the enhancement of innovation and/or intellectual capital (IC) using data collected from Chinese high-technology firms. The paper proposes three alternative models that suggest different mediating roles of innovation and IC components in the KS → FP nomological network based on existing theory. The paper then compares these models in terms of in-sample explanatory and out-of-sample predictive powers using consistent partial least squares path modeling (PLSc). Results indicate that in the best performing model, innovation and IC simultaneously mediate the relationship between KS and FP in this specific context. The findings offer insights regarding the parallel mediation roles of innovation and IC in the KS → FP process, showcase the predictive utility of PLSc, and can help managers set priorities when leveraging KS to achieve specific performance goals.

1. Introduction

Knowledge sharing (KS) is an integral component of knowledge management that helps transform individual knowledge into organizational knowledge and improve firm performance (FP) (Foss, Husted, & Michailova, 2010). However, the mere implementation of KS may not guarantee improvements in performance (Haas & Hansen, 2007). Two parallel streams of work that investigate how KS benefits organizations suggest that innovation and intellectual capital (IC) are critical drivers of FP, and may mediate the effect of KS on performance (Liao, Fei, & Chen, 2007; Wang & Wang, 2012; Wang, Wang, & Liang, 2014).

Although existing research helps researchers to better understand the value of KS in organizations, several broad concerns still remain. First, the roles of innovation and IC in the nomological network between KS and FP remain unclear. Companies may intuitively assume that KS will help them build IC that will subsequently enable them to innovate and achieve better performance. Conversely, as a McKinsey study about innovation in China shows, companies can also innovate quickly due to successful KS before or while building a knowledge and experience base (IC) (McKinsey Global Institute, 2015). This finding begs the question whether a logical order (mediation chain) exists or IC and innovation simultaneously mediate the relationship between KS and FP. Second, although KS influences various aspects of innovation (e.g. Liao et al., 2007), extant research seldom examines how innovation speed and quality, the two central components of innovation, transmit the effects of KS to FP. Finally, few studies focus on the components of IC (i.e. human, structural and relational capital) simultaneously to explore their roles in the KS → FP relationship.

This paper intends to fill these gaps and compares three alternative model specifications to examine how KS may contribute to FP through innovation and IC, by utilizing the knowledge-based view (KBV) and innovation and IC literature. The primary purpose of this research is to determine which one of the three possible KS-based alternative models provides a more complete explanation and best prediction of FP in a real-world context, and to clarify the mediating roles of innovation and IC components in the KS → FP nomological network. The study tests the models on a survey of top executives in Chinese high-technology firms (CHTF). Findings indicate that the model in which innovation and IC play parallel mediation roles between KS and FP not only explains the highest proportion of variance, but also provides the best prediction of FP. In addition, a specific component of IC, relational capital (RC) has the most significant effect on FP, indicating the importance of RC in the CHTF context.

The present work makes the following contributions. First, by providing empirical support for the links among KS, innovation, IC, and FP in one integrated framework, the study bridges the gap between two parallel streams of work, thereby clarifying the KS → FP nomological

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network and enriching the theoretical understanding of the role and implications of KS in firms. Second, by confirming the influence of explicit and tacit KS on innovation and IC constructs, which in turn lead to FP, this study offers specific insights concerning the role of innovation and IC and adds to the KBV literature. Third, the best performing model has the highest explanatory and predictive power for FP, and can therefore help managers set priorities when leveraging KS for achieving specific performance goals. Finally, by comparing the three theoretically motivated models for their explanatory and predictive powers this paper exemplifies the predictive model comparison approach using PLSc. While often regarded as a predictive technique, researchers use PLS-based methods extensively for causal-explanatory modeling while ignoring the predictive aspect. This study presents an example of how researchers can motivate their prediction studies using PLSc. The following sections discuss existing research, the three alternative models, predictive model comparison approach, results, and implications in detail.

2. Literature review

2.1. Knowledge sharing (KS): explicit and tacit KS

KS refers to the process of transmission, communication, interaction, and coordination of knowledge or expertise that helps improve organizational productivity, absorptive and innovation capacity, and sustain competitive advantage (Liao et al., 2007; Wang et al., 2014). Recent research focuses on the distinction between explicit and tacit KS and the impact on firm performance (Wang & Wang, 2012; Wang et al., 2014) by utilizing Polanyi's (1967) typology of knowledge and knowledge creation theory (Nonaka, 1994). Explicit KS is the process of sharing codified knowledge that can be captured and transmitted within an organization. Such knowledge may appear in documents and reports, procedures and policies, or handbooks (Hislop, 2013). On the other hand, tacit KS refers to the sharing of knowledge that individuals possess but is hard to express in symbolic or written form. Thus, tacit knowledge relates to the experiences and expertise, uncommon understandings, insights and intuitions, and knowledge of "more than we can tell" (Polanyi, 1967, p. 4; Peet, 2012).

KS can enhance organizational knowledge-based resources/capabilities and lead to the improvement of work outcomes through the exchange and utilization of scattered information, experiences, practices, insights, and uncommon understandings. However, due to a variety of potential barriers, such as people's inherent hostility, search and transfer costs, and misaligned incentive systems, it is challenging for organizations to successfully implement KS (Haas & Hansen, 2007). Furthermore, mere implementation of KS may not guarantee improved performance. Therefore the question of whether and how KS contributes to firm performance (FP) attracts significant research attention. Recent literature examines the link between KS and FP from various angles (Hsu, 2008; Wang & Wang, 2012; Wang et al., 2014), resulting in two main streams of studies. One stream of research involves the area of intellectual capital (IC), which basically concerns the knowledge of staff, infrastructure, and relationships within a firm (Wang et al., 2014). Another stream of research relates to innovation, such as the creation of new products, services, and processes (Drucker, 2014). Both streams of research indicate that KS can lead to FP through intermediate variables such as innovation and IC (Wang & Wang, 2012; Wang et al., 2014).

2.2. Intellectual capital (IC): human, structural and relational capital

IC refers to the total amount of knowledge that an organization can leverage for conducting business and gaining competitive advantage (Subramaniam & Youndt, 2005). Wang et al. (2014) study the individual IC components, such as human, structural, and relational capital in detail. This paper defines human capital as the summation of employees' competences, knowledge, skills, innovativeness, attitudes, commitment, wisdom, and experiences, which represents an organization's entire available knowledge stock (Campbell, Coff, & Kryscynski, 2012). On the other hand, structural capital is the valuable knowledge asset embedded in organizational culture, routines, procedures, information systems, hardware, software, databases, company images, patents, copyrights, trademarks, and so on (Aramburu & Saenz, 2011). Finally, relational capital refers to the knowledge and learning capabilities that exist in relationships between an organization and the stakeholders (Bontis, 1998; Yang & Lai, 2012).

Researchers find that KS contributes to IC components by enhancing individual knowledge and performance (Hsu, 2008; Quigley, Tesluk, Locke, & Bartol, 2007), improving organizational capabilities (Zahra, Neubaum, & Larraneta, 2007), and strengthening professional relationships (Hu, 2009). Knowledgeable individuals with excellent problem-solving experiences and skills are in turn essential for producing new products, improving managerial and operational efficiency, and boosting quality and productivity (Campbell et al., 2012). Similarly, improvements in organizational capabilities lead to higher quality work with lower costs (Aramburu & Saenz, 2011). Finally, enhanced professional relationships help to optimize the business model by learning from experiences and lessons from the outside (Cousins, Handfield, Lawson, & Petersen, 2006; Wang et al., 2014). Therefore, all the IC components are expected to have a positive influence on FP.

2.3. Innovation speed and quality

Innovation involves adopting or creating new products, services, work processes, or management procedures to gain organizational competitive advantage (Drucker, 2014). Scholars recognize speed and quality as two critical characteristics of successful innovation in complex and rapidly changing business environments (Wang & Wang, 2012). Innovation speed is the pace of progress of an innovation, from the conception and initial development to the ultimate commercialization. A firm's ability to accelerate the generation of new products or processes relative to the competitors reflects innovation speed (Allocca & Kessler, 2006; Kessler & Chakrabarti, 1996). On the other hand, innovation quality refers to the process and end result of innovation (Haner, 2002). A variety of indices may capture innovation quality such as effectiveness, features, reliability, cost, value to the customer, innovation degree, and complexity (Wang & Wang, 2012).

Existing research indicates that KS results in improved innovation capability (Liao et al., 2007) and innovation performance (Taminiau, Smit, & de Lange, 2009). KS leads to innovation speed and quality because it makes the decision-making process more efficient and effective by providing the basis for knowledge coordination and cooperation (Wang & Wang, 2012). Increased innovation speed helps organizations respond quickly to changing market requirements and gain customers due to the first-mover advantage (Allocca & Kessler, 2006; Kessler & Chakrabarti, 1996). Improved innovation quality improves the resource utilization within an organization and enhances quality management, organization responsiveness, and customer satisfaction, which form the basis of profit on new products or services (Haner, 2002; Wang & Wang, 2012). Therefore, improvements in innovation speed and quality directly impact FP.

2.4. Firm performance (FP): operational and financial performance

Researchers consider operational and financial performance as the critical components of FP due to the impact of these elements on firm competitiveness and survival (Wang & Wang, 2012; Wang et al., 2014). Operational performance reflects the underlying success factors ranging from quality control to cost management within a firm that lead to competitive advantage in the long-term (Samson & Terziovski, 1999). This paper defines operational performance as the combination of customer satisfaction, quality development, cost management,

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