

Chapter 14

Investigating the Impact of Knowledge Management Factors on New Product Development Performance

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ABSTRACT

Knowledge is recognized as an important weapon for new product development (NPD) performance, and many firms are beginning to manage the knowledge detained by their new product development processes. Researchers have investigated knowledge management factors such as enablers, creation processes, and performance. However, very few studies have explored the relationship between these factors in the context of new product development (NPD). To fill this gap, this article develops a research model which applies the knowledge management factors to the NPD context. The model includes five enablers: collaboration, trust, learning, team leadership characteristics, and t-shaped skills with an emphasis on the knowledge creation processes such as socialization, externalization, combination, and internalization. The results confirm the strong support of the research model and the impact of the independent variables (knowledge management enablers) on the dependent variables (knowledge creation and NPD performance). In light of these findings, the implications for both theory and practice are discussed.

It seems that firms that could manage effectively the knowledge embedded in their NPD processes would perform better. Firms that misuse their knowledge are losing out on the benefits of ef-

ficient NPD processes. It is no surprise that each stage of the NPD process requires the combination of knowledge and skills to perform useful actions, to solve ill-structured problems which involve continuous information acquisition, sharing and utilization (Griffin & Hauser, 1992; Hutt, Reingen,

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& Ronchetto, 1988). This places a premium on the ability to effectively capture the knowledge created during the NPD process so that it can be reused in the next generation of products to reduce development time (Belbaly & Benbya, 2006). Companies attempting to manage the knowledge detained by their NPD performance have followed the knowledge management initiatives that have already been used (Davenport, Long, & Beers, 1998; Wiig, 1997). These initiatives have taken on subjects of very different natures including information technology (Davenport & Prusak, 1998; Liebowitz & Wilcox, 1997; O'Leary, 1998; Ruggles, 1998), organizational structure (Wenger, McDermott, & Snyder, 2002) or even new human-resources policies, to change the organizational culture. However, despite the acknowledged importance of knowledge, few studies have investigated how companies can leverage knowledge for the improved NPD performance. In fact, most studies have explored the underlying organizational variables influencing NPD performance: development time, productivity, commercial success of new products, and quality (Clark & Fujimoto, 1991; Henderson & Cockburn, 1996; Pisano, 1996; Ulrich & Eppinger, 2004). To fill this gap, studies have tried to explore which factors are essential for managing NPD knowledge effectively. One challenge is to understand the relationships among these factors. Many studies have examined the relationship between knowledge management enablers, processes, or performance. For example, while some research has focused on the relationship between knowledge management enablers and processes (Lee & Choi, 2003; Zander & Kogut, 1995); the emphasis of

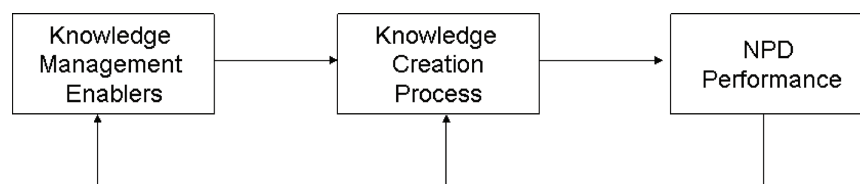
other studies is on the relationship between knowledge management enablers and organizational performance (Becerra-Fernandez & Sabherwal, 2001; Bierly & Chakrabarti, 1996; Gold, Malhotra, & Segars, 2001). Researchers and practitioners have not tried to examine these relationships in a NPD context, thus a NPD perspective of the knowledge enablers, processes and performance based on relevant theories is a necessity.

The objective of this article is to propose a research model in the NPD context that interconnects two knowledge management enablers: organizational culture and people (Chase, 1997; Davenport et al., 1998; Graham & Pizzo, 1996; Long, 1997; O'Dell & Grayson, 1999) with the knowledge creation process (Nonaka & Takeuchi, 1995) and NPD performance (Rosenau, 1988). For this purpose, this article analyses the previous empirical studies and attempts to support the relationship among knowledge management enablers, the knowledge creation process and NPD performance by testing it empirically.

CONCEPTUAL FRAMEWORK

Studies have emphasized three factors for managing knowledge: enablers, processes, and NPD performance (see Figure 1) (Beckman, 1999; Belbaly & Benbya, 2006; Demarest, 1997; O'Dell & Grayson, 1999). Knowledge management enablers are organizational mechanisms for fostering knowledge consistently (Ichijo, Krogh, & Nonaka, 1998) and provide the infrastructure necessary for the organization to increase its efficiency of knowledge processes (Sarvary, 1999). Knowledge

Figure 1. Research framework for studying knowledge management factors



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