

# Knowledge Transfer, Knowledge-Based Resources, and Capabilities in E-Commerce Software Projects

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## ABSTRACT

Together with the recognition of successful knowledge transfer as an important growth strategy for small and medium-sized software firms, questions related to the knowledge-based resources have emerged, including what and where knowledge is and how capabilities may influence knowledge transfer in e-commerce software projects. This study provides a deeper understanding of the relevance of knowledge transfer in such projects. The research findings identify the challenges of transferring this tacit knowledge across such projects and even within the user organizations as well. In addition to the technology knowledge and the absorptive capabilities perspectives, this study considers the market knowledge and the associated marketing capabilities as the alternative input to such projects. Most importantly, it offers a clear guide to project managers in their team building and recruiting. By using rigorous theoretical deductions and empirical support from the case studies, the study provides significant research contributions to the academicians and the implications for the practitioners of software projects.

## KEYWORDS

Capabilities, Case Studies, E-Commerce Software Projects, Knowledge Transfer, Tacit Knowledge

## INTRODUCTION

Small and medium-sized enterprises (SMEs) in the software industry often must cooperate with other technically advanced firms to obtain knowledge, but a successful knowledge transfer depends on the receiver's own knowledge-based resources and capabilities (Ratnasingam, 2005). At least three key participants engage in most cooperative knowledge transfer projects: the sender (e.g., technically advanced firm), the receiver (e.g., focal project team), and the user organization that ultimately employs the developed e-commerce software (Haines & Goodhue, 2003). In this scenario, transfer performance refers to the receiver's ability to gain knowledge-based resources provided by the sender (Grant, 1996) by internalizing those resources into its own knowledge system.

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Most theoretical literature related to such transfers focuses on traditional approaches that measure institutional, motivational, or pragmatic efficiency (Szulanski, Cappetta, & Jensen, 2004), as well as the receiver's resources and capabilities (Ethiraj, Kale, Krishnan, & Singh, 2005). However, these approaches suffer from limited applicability in e-commerce software contexts, where user organizations simultaneously undertake interlinked business activities (Malhotra, Gosain, & Sawy, 2005). Therefore, this study of the e-commerce software industry focuses on the knowledge and capabilities that receivers need and the investments, in terms of money, time, managerial insights, and effort, they must devote to obtain them.

We investigate two main research questions: What kinds of knowledge are located in which places, and how do capabilities influence knowledge transfer? To answer these questions, we rely on in-depth interviews, process analysis, and documentation analysis in the context of knowledge related to e-commerce software. The detailed interviews were conducted in our case studies of cooperative e-commerce software firms in Taiwan. These Taiwanese cases are appropriate for the study of knowledge transfer for several reasons. First, software firms in Taiwan are almost all SMEs. Second, the growth of Taiwan's e-commerce software industry continues to depend mainly on knowledge transfers from foreign, technically advanced partners.

This study provides a deeper understanding of the relevance of knowledge transfer in the context of e-commerce software. In the next section, we therefore outline the literature pertaining to knowledge transfer, capabilities, and e-commerce software projects. Next, we explain our case studies of three Taiwanese firms, which produce findings with notable implications and contributions for both research and practice. We also note limitations and directions for research.

## **LITERATURE REVIEW**

### **Knowledge Transfer**

In the extension of the resource-based view that is referred to as the knowledge-based view, knowledge is a critical competitive competence that the firm strategically sets as its long-term goal (Grant, 2016). This competitiveness required knowledge extends beyond traditional concerns about strategic management, strategic choice, or competitive advantage (Grant, 1996). Knowledge is often transferred from firm to firm. For a receiver, a knowledge transfer, rather than diffusion, enables it to exploit diverse exchanges and thereby gain superior knowledge. However, several factors can hinder such transfers, including the nature of the knowledge, which can be either codified or tacit (Bennett, 1998; Grimaldi & Torrissi, 2001; Nonaka & Takeuchi, 1995; Osterloh & Frey, 2000). Each knowledge type relates to unique casual, ambiguous (Simonin, 1999), and transferable (Grant, 1996) elements across participants, space, and time. In general, tacit knowledge refers to "knowing how," whereas codified knowledge indicates "knowing that" (Lubit, 2001). Thus, the knowledge types are not substitutes but rather complements (Cohendet & Meyer-Krahmer, 2001) and often coexist during the process of knowledge transfer.

The literature demonstrates that knowledge transfer depends on the interfirm networks and personnel mobility that exist between a sender and a receiver, mergers or vertical integration by a receiver, search and information seeking, as well as training in the transfer process, and the features of the user organization and receivers in terms of their competition, customer segments, and environmental turbulence (Argote, McEvily & Reagans, 2003). Moreover, previous research addresses participants' cultural differences, organizational similarity, trust, interaction frequency (Javidan, Stahl, Brodbeck & Wilderom, 2005), technological distance (Phene & Madhok, 2005), project management capabilities, absorptive capacity (Cohen & Levinthal, 1990), and training (Lin, Geng, & Whinston, 2005) as factors that might describe challenges to knowledge transfer.

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