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Does Kaizen create backward knowledge transfer to Southeast Asian firms? ☆

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ABSTRACT

Globalization and economic integration initiatives in Southeast Asia encourage local supplier firms in Southeast Asia to enter foreign and local leading firms' supply chains and obtain new knowledge. However, most Southeast Asian suppliers cannot fulfill potential buyers' requirements for quality, cost, and delivery control. This study investigates whether *Kaizen* (Japanese style of continuous improvement) practices facilitate backward knowledge transfer to local suppliers from their buyers (i.e., knowledge transfer from a buyer to its supplier). This study also examines if a firm's buyer-transfer knowledge also promotes knowledge transfer to its supplier. Empirical analyses provide evidence of the association of Kaizen activities with backward knowledge transfer for process improvement but do not show the association with backward knowledge transfer for buyer-supplier product co-design. Backward knowledge transfer to a supplier stimulates backward knowledge transfer from the supplier to its supplier for process improvement and product co-design.

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1. Introduction

Firms in developing countries exploit their low-cost production to enter international markets. However, modern firms compete also in terms of quality and timeliness. Buyer-supplier information sharing, or vertical collaboration, is a strategic choice firms make to meet complex customer demands more efficiently than by doing so individually. Vertical collaboration necessitates information sharing between buyers and suppliers. Buyer-supplier information sharing has a significant effect on flexible and responsive planning, production, delivery (Zhou & Benton, 2007), and product development (Huang & Chu, 2010).

Vertical collaborations are beneficial, especially to local suppliers from developing countries because their internal resources are scarce. However, local suppliers lack the capacity to establish collaboration with their buyers. Before entering collaborations with their buyers, local suppliers need technology transfer or learning from their knowledgeable buyers (Molina, Lloréns-Montes, & Ruiz-Moreno, 2007). Then, local suppliers can achieve complicated processes and product improvements depending on the external resources accessible through their competent buyers. Buyers can also benefit from their supplier development programs because improving buyer-supplier relationships can contribute to the buyers' competitiveness (Wagner, 2006).

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Developing countries promote foreign trades and investments with the expectation of knowledge transfer from multinational corporations (MNCs) and local leading firms, which helps build capacity for local suppliers. However, local firms cannot necessarily use the upgrading mechanism. Most of the local suppliers have difficulty meeting the minimum requirements for quality, cost, and delivery (QCD) control, especially quality control (QC), which leading firms specify.

Considering the situation that local firms in developing countries face, this study investigates (1) which local firms from Southeast Asia receive knowledge transfer from their buyers and (2) which local firms transfer knowledge to their suppliers. This study focuses on Kaizen, or Japanese continuous improvement practices in total quality management (TQM), as a determinant of cooperation with local and MNC buyers and suppliers. Lead firms in buyer-driven chains manage quality standards to shape the functional division of labor and entry barriers along the value chains (Ponte & Gibbon, 2005). Kaizen is one of the crucial processes for local suppliers to overcome the entry barriers in local and foreign lead firms' production networks.

This study has the following structure: Section 2 presents hypotheses and the model; Section 3 explains the data and summary statistics; Section 4 discusses the results; and Section 5 presents the summary and conclusions.

2. Hypotheses and model

The issue of backward knowledge transfer attracts academic interest. Southeast Asian local firms lack sufficient resources for research and development (R&D), making the introduction of advanced knowledge from the outside a main concern.

Management studies highlight the association between firm performance, absorptive capacity, and knowledge transfer across units within a firm, which is fundamental for sustainable competitiveness as a resource-based view of the firm (Wernerfelt, 1984) and a knowledge-based theory of organizational capability (Grant, 1996a, 1996b) suggest. Absorptive capacity is an ability to recognize the value of new information, and to assimilate and apply such information for commercial ends (Cohen & Levinthal, 1990: 128). Zahra and George (2002) define absorptive capacity as a set of organizational routines and processes, by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability.

Absorptive capacity facilitates knowledge transfer within MNCs (Gupta & Govindarajan, 2000; Minbaeva, Pedersen, Björkman, Fey, & Park, 2003). The role of absorptive capacity in knowledge transfer within firms is critical in knowledge transfer in joint ventures that have elements of intra- and inter-firm knowledge transfer (Lane, Salk, & Lyles, 2001). Certain absorptive capacities are also conditions for initiating inter-firm knowledge transfer from buyers to suppliers (Wu & Hsu, 2001). Nevertheless, developing countries' firms have a hard time acquiring a certain level of absorptive capacity to satisfy knowledge-providing firms. Knowledge recipients' lack of absorptive capacity is one of the major barriers to intra-firm knowledge transfer (Szulanski, 1996).

How to enhance absorptive capacity is a serious business challenge. Minbaeva (2005) assumes, in her study on MNC knowledge transfer, that the employment of human resource management (HRM) practices affects the absorptive capacity of knowledge receivers and, therefore, positively correlates with the degree of knowledge transfer to the subsidiaries. She also expects that subsidiaries need to adopt HRM practices that support a learning environment for achieving a higher degree of knowledge transfer. Among a wide range of HRM practices, human resource development (HRD) practices for enhancing employees' capacity for quality management are fundamental for the success of technology transfer to manufacturing firms in developing countries (Sparkes & Miyake, 2000; Wu & Hsu, 2001).

In Southeast Asia, Japanese MNCs play a leading role in knowledge transfer and local manufacturer development. Japanese MNCs are very strict about QCD controls to improve productivity and customer satisfaction. Japanese firms develop unique Japanese styles of management and tools, such as lean production and just-in-time delivery, which emphasize endless efforts for Kaizen in all activities on a company-wide basis. Both Japanese private companies and public agencies promote Kaizen to develop local industries in Southeast Asian and other developing countries.

Among various Kaizen activities, 5S and the quality control circle (QCC) are prevalent tools among Japanese MNCs. 5S comes from the following five initials of Japanese terms: *seiri* (sort), *seiton* (set), *seiso* (shine), *seiketsu* (standardize), and *shitsuke* (sustain). 5S is the initial step toward establishing TQM and a foundation of all other quality control approaches (Ministry of Health and Social Welfare (MoHSW), 2013). 5S is a method for instilling workplace discipline into employees. The QCC is a small group of employees from the same workplace who meet on a regular and voluntary basis to improve the quality of their products, services, and works. The QCC is a tool for not only shop-floor management but also employee training on problem solving (Sparkes & Miyake, 2000). By giving employees autonomies in QCC operations, firms can stimulate employees' creativity and foster employees who can think and educate themselves.

5S and QCC activities can streamline workflows, decrease claims from customers, and enhance employees' awareness of and adherence to QCD, environmental protection, and safety and health rules. Because of these positive influences, firms can achieve customer satisfaction and build trust in buyer–supplier relationships through 5S and QCCs. Mutual trust between buyers and suppliers is the foundation for information sharing and supply-chain integration (Wu & Hsu, 2001).

H1. Suppliers active in Kaizen are more likely to receive knowledge transfer from their buyers.

Through knowledge transfer, both the buyer and supplier improve their competitiveness (Chen, Hsiao, & Chu, 2014). This interaction between the two firms implies partial improvements along a supply chain. To make the entire supply chain more competitive, a chain of knowledge transfer along the supply chain is necessary. The knowledge recipient buyers should be capable of transferring knowledge to their suppliers.

Knowledge transfer literature focuses mostly on the knowledge recipient's capacity and pays little attention to the capacity of knowledge transferors. In their study on knowledge transfer to Japanese foreign affiliates, Sparkes and Miyake (2000) consider knowledge assimilation and creation at the shop-floor level as successful knowledge transfer and try to link HRD practices with knowledge assimilation. The authors suppose that employees in subsidiaries learn to assimilate the existing knowledge through learning experiences or by absorbing knowledge from their parent firm. Japanese firms use small group activities like a QCC to enhance knowledge assimilating activities and achieve Kaizen.

From a more practical viewpoint, a QCC's activity within a firm will assimilate knowledge only into the small group. To realize firm-wide knowledge assimilation, the firm needs to document, standardize, and share the QCC's successful practice across QCCs within the firm. Japanese firms call such horizontal deployment of better practices, including those from Kaizen activities, *Yokotenkai* or *Yokoten*.

In sum, among Kaizen activities, 5S can instill an awareness of continuous improvement into individual employees. A QCC's activity will enhance not only the capacity for knowledge acquisition but also the capacity for knowledge assimilation of the QCC. Yokoten facilitates sharing lessons from QCC activities and by copying successful practices from place to place. As Marksberry, Badurdeen, Gregory, and Kreaflie (2010) mention, the documentation and standardization of the successful experiences are crucial to successful and smooth Yokoten. In addition to these Kaizen methods of transferring knowledge, group activities improve communication among employees and remove obstacles to information sharing within a firm (Park, 2011).

The above discussion suggests that Kaizen activities will enhance not only firms' absorptive capacity but also knowledge-transfer capacity. Firms do not necessarily block their internal QCCs from their buyers and suppliers. On the contrary, firms share their experiences of Kaizen activities with their buyers and suppliers. Interactive experiences with buyers, which Kaizen activities stimulate, also foster communication with buyers and suppliers.

Assuming that the capacity of knowledge sharing across small groups within a firm can foster the capacity of knowledge transfer beyond firm boundaries, this study proposes the following hypotheses:

H2. Buyers active in Kaizen are more likely to transfer knowledge to their suppliers.

H3. Firms receiving knowledge from their buyers are more likely to provide knowledge to their suppliers.

Kaizen practices are common on the shop floor. However, Kaizen methods, including 5S and small group activities, are applicable to non-production activities like R&D activities. TQM practices may have a positive effect on product development even in developing countries like Vietnam (Thai Hoang, Igel, & Laosirihongthong, 2006). TQM culture can have a positive influence on product design capability and, consequently, an indirect effect on product innovation (Silva, Gomes, Lages, & Pereira, 2014).

Importantly, the quality and quantity of knowledge that firms transfer depend on absorptive capacity and trust between firms. Taiwanese OEM suppliers diversify their capabilities from production to product design, testing and quality control, and to marketing and management

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