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# INTERORGANIZATIONAL LEARNING AND INFORMATION TECHNOLOGY IN GLOBAL MANUFACTURING

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## Abstract

Transaction cost economic theory (Williamson 1975; Grossman and Hart 1986; Klein, Crawford and Alchain 1978) supports expectations that market forces will increase with the proliferation of information technology since coordination costs between firms will decrease (Malone, Yates and Benjamin 1987). Despite the ability of IT to reduce coordination costs, there has been a trend to fewer but closer relationships between firms and their suppliers (Helper 1991; Bakos and Brynjolfsson 1993; Helper and Sako 1995) and a rise of value-added partnerships (VAPs) (Johnston and Lawrence 1988), forming "virtual" integrated entities that have many of the advantages without the disadvantages of vertical integration. These VAPs do not usually involve contracts but are based on trust, from reciprocity (Imai, Nonaka and Takeuchi 1985), and a common implicit perspective that arises from shared knowledge creation and experiences (Nonaka 1991, 1994). Tacit knowledge is difficult to articulate, communicate, formalize and encode and encompasses perspectives, know-how, expertise and context specific skills (Winter 1987; Hamel 1991; Nonaka 1994; von Hippel 1994; Stein and Zwass 1995), and thus is not easily contractible. However, bargaining power and risk are ameliorated and controlled from the supplier's perspective by the knowledge that the buyer has few alternative suppliers (Bakos and Brynjolfsson 1993) and from the buyer's perspective by investments in IT which can monitor suppliers (Gurbaxani and Whang 1991) yet is not specific to the relationship (Clemons, Row and Reddi 1993).

This study attempts to deepen our understanding of interorganizational learning in the disk drive industry. To do this, the relationship between organizations and their customers and suppliers is investigated and the role of IT in the new product development learning process is evaluated. The study investigates whether there is support for "virtual" interorganizational relationships based on (1) trust, (2) incomplete contracts, and (3) the use of IT for monitoring, coordination and communication; and whether interorganizational learning characterized by improvements in new product time to market is facilitated by electronic virtual integration. The study focuses on the interorganizational aspects of the new product development process and assesses the strengths and limitations of IT facilitation of interorganizational learning.

Preliminary findings from both questionnaires and interviews support the proposition that interorganizational learning is facilitated by information technology. Specifically, the sophistication of electronic links between external entities and the functions of the organization are associated with improvements in (1) new product time to market, (2) supplier lead time, and (3) JIT deliveries. On the other hand, the interviews illustrate limitations from facilitation of interorganizational learning by such information technologies as simulations, e-mail, videoconferencing, and EDI. Knowledge that is tacit needs the richness of face-to-face collaboration to build trust and to exchange non-explicit information. Implications for management are to build close relationships first and then facilitate non-tacit interorganizational learning with IT.

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