



The impact of technological, organizational and environmental characteristics on electronic collaboration and relationship performance in international customer–supplier relationships



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ABSTRACT

The literature suggests that advances in information and communication technologies have been a major driver of the restructuring of multinational enterprises and their cross-border supply chain management. However, the role of information technology usage for collaboration and its antecedents and performance implications in cross-border exchange relationships have not been clearly specified. In response to this claim, this study examines the determinants of electronic collaboration (E-collaboration) and its outcomes for suppliers with regard to their international customers. Drawing on an empirical foundation of 240 Taiwanese-based electronics equipment manufacturers, we test the effects of technological, organizational and environmental dimensions on E-collaboration and its impact on relationship performance in international exchange. The findings on the pertinence of E-collaboration in international customer–supplier relationships are presented and discussed.

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1. Introduction and motivation

Globalization has driven firms to outsource their key activities to external suppliers and extend the boundaries of firms across borders. This trend toward outsourcing and offshoring has made the management of interfirm relationships and the enhancement of relationship performance increasingly important. While firms can achieve competitive advantage by delivering better relationship performance and creating greater customer value in global supply chains, they have increasingly relied on information technology (IT) for collaborative interfirm activities such as collaborative planning, forecasting and replenishment (CPFR).

Although the importance of IT usage for electronic collaboration (E-collaboration) is uncontested, its role in cross-border

relationships is not well documented in the literature. In fact, empirical work on the role of IT in interfirm collaboration in cross-border relationships is limited and incomplete. While there are studies on E-collaboration conducted in domestic market settings [33,46], very limited empirical attention has been given to such collaborations in cross-border exchange relationships [31]. That is, the literature has remained mute on the potential benefits that electronic interfirm collaborations can offer despite the fact that globalization has resulted in a profusion of interfirm relationships across national borders [28] and E-collaboration has shown to be an effective tool for enhancing interfirm relationships. Filling this gap in the literature, this study explores the impacts of electronic interfirm collaborations on firm performance in the context of cross-border exchange relationships.

To comprehensively address these issues in the literature, this study empirically tests a model of the interrelations between the drivers and performance outcomes of E-collaboration in the context of cross-border buyer–seller relationships. Drawing on Kim and Lee [33] and Subramani [52], E-collaboration in this study refers to the extent to which interorganizational systems (IOS) between exchange partners are configured to carry out collaborative channel activities including interfirm forecasting, planning

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and product development. This study focuses particularly on supply chain communication systems (SCCS) [62], which are defined as the type of interorganizational information system shared by suppliers and their international customers to carry out supply chain activities ranging from operational-level activities such as tracking orders and sending invoices to strategic-level ones such as collaborative demand forecasting, planning and general forecasting [60]. This study tests the proposed model of E-collaboration empirically in the context of international customer–supplier relationships between Taiwanese original equipment manufacturer (OEM) suppliers and their multinational enterprise (MNE) customers in the electronics industry.

2. Theoretical background

As defined above, we use the term “E-collaboration” to mean the configuration of IOS to support collaborative channel activities between exchange partners. Similar to Subramani and Venkatraman’s [53] conceptualization of supply chain management systems, E-collaboration in this study captures the intentionality and pattern of IOS use. In addition, we view E-collaboration as a technology innovation that shifts away from traditional and routine electronic transactions and information exchange toward more strategic collaborative activities through SCCS.

To develop an overarching framework that delineates the contextual factors that drive E-collaboration and its value creation outcomes, we rely on the technological, organizational and environmental context (TOE) framework [56], contingency theory [58] and the resource-based view (RBV) [4] to develop the theoretical model. The TOE framework identifies three aspects of a firm’s context that influence its technology adoption/innovation: (1) *Technological context* describes both the existing technologies in use and new technologies that are relevant to the firm. (2) *Organizational context* refers to measures describing the organization, such as scope, size, organizational culture and the amount of slack resources available internally. (3) *Environmental context* is the arena in which a firm conducts its business: its industry, competitors and its dealings with governments. Like the TOE framework, contingency theory, from the information systems (IS) literature, stresses the importance of technology, organization and environment as key variables that explain the technology adoption of firms [27,44,57]. While contingency theory seeks to understand

interrelationships and the “fit” between strategy, structure, organizational resources and the environment, it has also been applied to information systems research to explain firm performance [58], where IT adoption is viewed as a function of strategy, resources, structure, context and environment [27,44,57]. Drawing on these two major streams of literature, in this study, we adopt technological, organizational and environmental variables to explain interfirm E-collaboration in international customer–supplier relationships.

In terms of the relationship between E-collaboration and firm performance, we rely on the RBV, which argues that E-collaboration can be seen as a valuable and rare IT capability for suppliers in dealing with their international customers. In the information systems literature, the RBV has been used to analyze IT capabilities and to explain how the business value of IT resides more in the organization’s skill in leveraging IT than in the technologies [6]. For example, in a systematic review, Wade and Hulland [59] discuss different sets of IT resources such as outside-in and inside-out IT resources and their association with firm performance. The most accepted notion of RBV in the analysis of the business value of IT is that IT per se cannot generate sustained advantage because it can be relatively easily commoditized through competitive imitation and acquisition [32]. However, the advantage of IT can be protected by embedding it in an organization through complementarity and co-specialization. Complementarity exists when the value of IT resources is enhanced by the presence of another resource [11,55]; co-specialization exists if one resource has little or no value without another [11,55]. According to the RBV, E-collaboration, which integrates various strategic activities between exchange parties in the supply chain, is a key outside-in IT resource that cannot easily be imitated and has the potential to create business value. Adopting this view from the literature, in the current study, we expect that active E-collaboration between an international buyer–seller pair enhances the performance of each.

3. Conceptual framework and hypotheses

Combining the TOE framework, contingency theory and the RBV, we develop a conceptual framework that links E-collaboration in international customer–supplier relationships with contingent antecedents and relationship performance. As shown in Fig. 1,

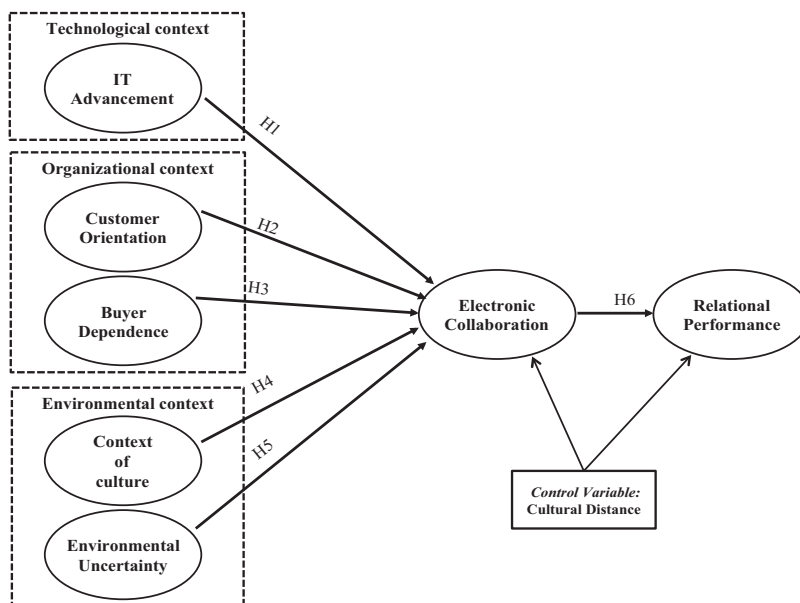


Fig. 1. Proposed conceptualization of electronic integration in international supplier–customer relationships.

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