



Information transfer in B2B procurement: an empirical analysis and measurement

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Abstract

Inter-organizational relationships employing IT may be the most important technological breakthrough in B2B partnerships, since it is likely to alter the competitive landscape of industries radically. Electronic integration (EI) may be defined as the integration of business processes of two or more independent organizations through the exploitation of the capabilities of computer and communication technologies. Prior research has primarily used the adoption of electronic data interchange (EDI) as a surrogate measure for EI. While researchers have called for the assessment of the degree of EI instead of presence/absence of EDI between two firms, a measure was still to be developed. Conceptualizing EI as a multi-dimensional construct, our research focused on developing a measure for a crucial component: electronic information transfer (EIT). Four dimensions of it (decision and operation integration (DOI), mutual investment in relationship-specific assets (MIRSA), information sharing (IS), and monitoring and control (MAC)) were analyzed and an instrument for EIT measurement was developed. Data collected from two major corporations in the U.S. were used to verify the instrument's ability to measure EIT effectively.

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1. Motivation

The use of the Internet to facilitate B2B commerce has attracted much attention from both academics and

practitioners due to its potential impact on industry structure and the way business is conducted today [14]. Internet markets have the potential to widen the choices available to buyers, provide sellers access to a larger customer base, and slash transaction costs [17]. The B2B markets take different forms (e.g., spot markets, electronic hierarchies, cooperative arrangements) depending on the characteristics of the products being exchanged, market variability repre-

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sented by market fragmentation and market volatility, and continuity of the business relationship between the channel partners.

Existence of production economies favors the emergence of specialized firms interacting in spot markets. However, in some situations, market contracting can become difficult, increasing the transaction costs of managing the interaction. At some point, it becomes more efficient to administer the interactions within a long-term cooperative relationship. Often environmental and technological factors will make it possible to increase the overall efficiency of production or exchange through closer integration of decisions and operations between the trading partners. However, this increase in coordination necessarily involves investment to tailor operations to specific interactions. When the expected benefits from investments in coordination minus the cost of this investment are sufficiently large to counterbalance the loss of an outside supplier's production economies, firms can make investments to gain the benefits of such coordination [9]. Lack of benefits from explicit coordination often lead to a transaction-oriented spot market.

One of the key differences in various forms of the B2B market is the level of integration between the trading partners. In a spot market transaction, since the buyer's goal is to fulfill an immediate need at the lowest possible cost, minimum integration between the trading partners is sufficient. Meanwhile, in a system where transactions occur for a long-term period in negotiated contracts with qualified suppliers, a high level of integration between the trading partners should exist to achieve efficiency. Thus, the level of integration between the channel partners will vary. On the basis of organizational information processing theory [12], one can argue that 'more' is not always 'better,' especially in electronic integration (EI) between supply channel partners [18]. Electronic media may overload decision makers in a supply channel with too much information [27]. Inability to cope with such an "information overload" leads to organizational dysfunction. Therefore, the 'fit' between contextual factors and electronic integration should be examined to seek 'optimal' channel performance. An investigation of when tight electronic integration is appropriate and when it is not can generate strategy prescriptions of significant value to B2B firms in determining their best level of

deployment of electronic integration appropriate for their specific inter-organizational relationships.

The first step in our research endeavor was to develop a means of accurately measuring the degree of electronic integration between the trading partners in a B2B relationship. In the past, several researchers have called for an assessment of the *degree* of electronic integration between two firms [15]. EI may be defined as "the integration of business processes of two or more independent organizations through the exploitation of the capabilities of computers and communication technologies" [32]. So, we conceptualized EI as a multi-dimensional construct mainly constituting business integration and process integration, and focused our work on developing a measure for a crucial component of EI: electronic information transfer (EIT) which serves as the infrastructure for the inter-organizational business and process integration. We define electronic information transfer as *a regulated flow of information between trading partners via electronic linkages*.

2. Existing measures related to electronic integration

Prior research in EI has used the adoption of electronic data interchange (EDI) as a surrogate measure for EI. Table 1 summarizes the various definitions of EI and its operationalization in prior research.

The work asserts that there is a strong- and mistaken-tendency to equate EI with EDI in existing research. EI is a broader construct that essentially subsumes EDI. It caters to two types of integration: technological interconnectivity issues and business process interdependence issues [31]. Efforts to enhance technological interconnectivity have made significant strides during the past decade. As EDI emphasizes technological interconnectivity between the trading partners, existing measures of it encompass mainly technological aspects, such as volume, diversity, breadth, and depth of EDI usage [22]. While such measures serve a definite purpose, attention to creating interdependent business processes is also necessary to allow an organization to develop a seamless and interoperable technical platform.

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