

The role of quality in e-procurement performance: An empirical analysis

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Abstract

While the adoption and use of e-procurement has been prevalent in supply chain management, there is very little research examining the critical role of quality in this context. e-Procurement promises to cut operational costs all across the supply chain, but it also raises the expectations of buyers posing a challenge for buyer satisfaction and supply chain performance. Using the theoretical lens of Dynamic Capabilities Theory and Resource-Based View, we postulate that online information and process act as *resources* that result in logistics fulfillment *capabilities*. These capabilities in turn lead to *satisfaction* with e-procurement. We estimate our research model using structural equation modeling with survey data collected from 131 purchasing and procurement managers. We empirically examine these linkages by analyzing data collected from procurement managers. Our results indicate strong support for the relationships between information flow process quality, logistics fulfillment quality processes, and e-procurement satisfaction performance. One of the surprising findings of our study is that fulfilled order timeliness has a significantly greater impact on satisfaction than fulfilled order accuracy. This finding points to the increasingly important role that the dimension of time plays in today's competitive environment.

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1. Introduction

The automation of a firm's procurement process, e-procurement, is becoming increasingly recognized for its ability to improve managing business operations. e-Procurement in supply chain allows companies to use the Internet for procuring direct or indirect materials, as well as handling value-added services including quality

validation (Johnson and Whang, 2002). The pre-eminent role of quality in procurement was first highlighted by Garvin (1983) who stated that at the best companies, purchasing departments rank quality as their primary objective. Further testimony to this comes from a survey (Kerney, 2005) where 62% of the respondents felt that one of their key objectives in e-procurement strategy is to achieve higher quality. While the importance of quality to procurement, in general, seems to be of significant concern to management, there is very little rigorous empirical research that has examined the role of quality in the various stages of e-procurement.

Our objective, in this paper, is to open the black box of e-procurement, and focus on the role of quality in the

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e-procurement process. The notion that improving quality requires a *process-based* view has been embraced by several researchers. Streamlining inter-organizational processes is the next frontier for reducing costs and enhancing quality (Croxtton et al., 2001). Lambert et al. (1998) propose that, to successfully implement supply chain management, all firms within a supply chain must overcome their own functional silos and adopt a process approach. Therefore, all the functions within a supply chain including fulfillment and e-procurement are reorganized as key processes (Cooper et al., 1997). Moreover, improving the quality of processes is the key to performance in firms as they result in reduced costs, improved resource utilization, and improved process efficiency (Beamon and Ware, 1998). A process-based approach on quality has been researched both in the context of supply chain management (SCM) and total quality management (TQM). In SCM, researchers have established buyer and supplier relationships and processes (Handfield et al., 1999; Monczka et al., 1998; Petersen et al., 2003; Petersen et al., 2005). In TQM, buyer and supplier relationships have been identified as crucial to quality (Flynn et al., 1995; Forza and Flippini, 1998; Trent and Monczka, 1999; Kaynak, 2003; Rungtusanatham, 2005). Furthermore, there are several TQM related researches that relate to supply chain performance (Zeller and Gillis, 1995; Zsdisin et al., 2005; Curkovic et al., 2000a,b). Statistical and cognitive problem-solving techniques such as statistical process control have been used effectively to deliver processes that effect improvements in quality (Rungtusanatham, 2001) as well. Thus, building on the collective wisdom of these scholars, we employ a process-based approach to examine how quality drives performance in the context of e-procurement.

e-Procurement processes have been transformed by the integration of Internet and supply chain. Web-based information flow between companies has decidedly increased the importance of such integration to create effective supply chains (Johnson and Whang, 2002). Information flow is a common thread that runs through all the events in a supply chain. World-class companies are accelerating their efforts to align processes and information flows throughout their entire value-added network to meet the rising expectations of a demanding marketplace (Quinn, 1993). Today's suppliers and buyers work no longer in isolation and as independent entities. Buyers and suppliers need to become more integrated and information systems will become the platform for integrated supply chain management (Monczka et al., 2002). The result of purchasing managers confirms that

the most cited benefit of buyer–supplier networks is that of enhanced informational exchange (Fitzgerald, 1998). Consistent with this line of reasoning, we consider the quality of information exchange between buyers and suppliers and its performance impacts.

Garvin (1988) suggests that incorporating buyer needs and wants is fundamental to the strategic management of quality. In the literature, quality management frameworks emphasize the involvement of both buyers and suppliers to insure quality processes (Cua et al., 2001). It is also well accepted by supply chain executives that information sharing and physical flow coordination can lead to enhanced supply chain performance (La Londe and Pohlen, 2000). Such information flow processes should have quality information in them because developing a quality information system is essential to the improvement of overall quality (Garvin, 1983). Toyota with quality as its cynosure is well known for co-operating and sharing information with its suppliers to improve suppliers' quality processes (Baiman and Rajan, 2002). Our review of the literature on e-procurement points to a gap in the extant literature in establishing a link from inter-organizational processes involving information flow between buyers and suppliers to fulfillment processes of the supplier. Further, there is a need to demonstrate how those fulfillment processes of the supplier using such information flow process quality impact e-procurement quality performance as viewed by buyer. Finally, in the operations management literature, Ghosh (2001) states that current operations management literature lacks research to establish a link to the resource based view (RBV) literature that provides a means to achieve true sustainable competitive advantage. Our study is a response to these issues.

The objective of this study is to understand the role of quality in e-procurement by addressing the following research questions:

- (1) How do the order procedures of buyers affect the quality of supplier logistics fulfillment perceived by buyers?
- (2) How does information flow processes between the suppliers and buyers play a role in the capabilities of supplier logistics fulfillment process quality perceived by buyers?
- (3) How does this fulfillment process influenced by the information flow and order procedures lead to buyers' satisfaction?

The contributions of this study are as follows. First, we propose a theoretical framework to examine e-

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