



Capability hierarchy in electronic procurement and procurement process performance: An empirical analysis

Abhay Nath Mishra^{a,*}, Sarv Devaraj^b, Ganesh Vaidyanathan^c

^a Robinson College of Business, Georgia State University, Atlanta, GA 30303, United States

^b Mendoza College of Business, University of Notre Dame, Notre Dame, IN 46556, United States

^c School of Business & Economics, Indiana University, South Bend, IN 46634, United States

ARTICLE INFO

Article history:

Available online 7 August 2013

Keywords:

Capability hierarchy
Digital procurement competence
Electronic procurement
Procurement capabilities
Procurement integration competence
Second-order construct

ABSTRACT

This paper examines the interrelationship between two hierarchically structured functional capabilities pertinent in the organizational procurement process, and the impact of these capabilities on procurement process performance. These functional capabilities operate at different levels in an organization's procurement process. We draw upon resource- and knowledge-based views of the firm to theorize that in this hierarchy of information technology-enabled procurement capabilities, the higher-level capability – procurement integration competence – enables firms to develop and deploy a lower-level capability – digital procurement competence. Further, we theorize that the lower-level capability impacts procurement process performance directly and completely mediates the relationship between higher-level capability and performance. Thus, although performance is impacted directly only by the lower-level capability, the higher-level capability facilitates the development and use of the lower-level capability. Our research model is tested using survey data from a large sample of 412 manufacturing firms. The results provide strong support for the proposed research model. In particular, we find that as hypothesized, the impact of procurement integration competence on performance is completely mediated by digital procurement competence. Our results suggest that when examined at the procurement process level, the impact of higher-level capabilities may be manifested completely through the lower-level capabilities. Theoretical and practical implications of the research are discussed.

© 2013 Elsevier B.V. All rights reserved.

1. Introduction

“Purchasing is by far the largest single function at AT&T. Nothing we do is more important.” (An executive vice president of AT&T quoted in Monczka et al., 2002)

The procurement function has been identified as a key focus area for contemporary firms to remain cost-effective and competitive in an environment characterized by increasing global competition and declining profit margins (Barratt and Barratt, 2011; Frohlich, 2002; Hill and Scudder, 2002; Monczka et al., 2002; Tazelaar and Snijders, 2013). This is particularly true for manufacturing firms which spend up to 80% of their revenues on the procurement of products and services (Zenz and Thompson, 1994). Realizing the importance of procurement, and in an attempt to improve their operations proactively to respond to cost and revenue pressures, manufacturing firms have taken several steps to streamline the procurement function and the entire value chain

(Hill et al., 2002; Johnson and Whang, 2002; Peleg et al., 2002). One such measure comprises the implementation of technological innovations, such as electronic procurement. Several firms, such as Dell, GE, Cisco systems, IBM and Walmart have implemented electronic procurement and obtained significant economic payoffs. The use of e-procurement applications has allowed these firms to attain a wide range of benefits including reduced cycle time and cost, improved accuracy, better coordination with partners, and enhanced financial performance (Barua et al., 2001; Frohlich, 2002; Mishra et al., 2007; Rai and Tang, 2010).

Although the procurement process and the use of innovative information technologies have been examined in significant detail in extant research (Hill et al., 2002; Mithas et al., 2008; Rabinovich et al., 2003; Rai et al., 2006; Rosenzweig, 2009), relatively little research attention has been paid in operations literature to capabilities that facilitate performance enhancements in processes (Hayes et al., 2005; Menor et al., 2007; Schroeder et al., 2002). An emphasis on organizational capability, defined as an organization's ability to perform repeatedly and reliably a task which is related to its capacity for creating value (Grant, 1996; Helfat and Peteraf, 2003), is essential to disentangle value creation mechanisms in business processes. As innovative information systems

* Corresponding author.

E-mail addresses: amishra@gsu.edu (A.N. Mishra), sdevaraj@nd.edu (S. Devaraj), gvaidyan@iusb.edu (G. Vaidyanathan).

are increasingly applied in novel ways in interconnected business processes to create value, organizations craft and draw upon new capabilities that need to be examined in detail. It is important to note that these capabilities are pertinent at different levels. For instance, some capabilities may apply at the level of the entire process, such as, logistics, inventory management and procurement, whereas others may be applicable at the level of a focused task, such as searching, ordering, invoicing and restocking. Additionally, some capabilities may be technology-enabled while others may either be antecedents to or consequences of such capabilities.

These distinctions among capabilities, the bedrock of value creation in various business processes, have not been emphasized in extant literature in operations management. Researchers have suggested that extant literature in operations has focused on linking operations structure and information infrastructure, and needs to move beyond these concerns to examine how capabilities enable firms to gain advantages in business processes (e.g., Barney and Arikon, 2001; Menor et al., 2007). Additionally, the relationship between these capabilities and how they impact performance is lacking in the literature (Clark, 1996; Menor et al., 2007; Rai et al., 2006). As a result of the sparse focus in the literature on capabilities and the relationships between them, scholars and practitioners lack insights on how firms create, deploy and leverage capabilities at various levels; how these capabilities are interrelated and work in conjunction with each other; and how these capabilities are related to process performance (Menor et al., 2007; Salvato and Rerup, 2010). Because developing process capabilities is a long-term endeavor, it is important for managers to analyze and recognize where and how to invest valuable financial resources to develop and leverage these capabilities.

In this paper, we address the gap in the literature by providing a capability-focused examination of electronic procurement. A focus on capabilities relevant in electronic procurement is appropriate for two important reasons. First, although Internet technologies increasingly play a crucial role in supporting the procurement process, and a number of firms have adopted and benefitted from them, Internet use or its impact is still not uniform in firms (Dong et al., 2009). In fact, there is considerable heterogeneity in the capabilities of firms and the extent and manner in which they implement e-procurement applications (Kioa and Zapf, 2002; Mishra et al., 2007). Thus, it is important to understand how firms differ in their procurement requirements, processes and capabilities, and how such differences impact performance (Ramsay, 2001).

Second, it is important to examine the interrelationship between various capabilities in the electronic procurement context because firm capabilities can be built at different, hierarchically structured levels. Unbundling capabilities at various levels, and empirically tracing the links between them and process performance can provide insights on how capabilities impact performance and where the sources of performance advantages lie in the firm (Salvato and Rerup, 2010; Schreyögg and Kliesch-Eberl, 2007). Although several scholars have issued research calls to examine how various capabilities may streamline firm processes and enhance performance (e.g., Boyer et al., 2005; Malhotra et al., 2005; Sambamurthy et al., 2003), and despite theoretical work on capability hierarchy (Collis, 1994; Grant, 1996), empirical research on the hierarchy of functional capabilities and its impact on performance is sparse in the literature.

We posit that there are hierarchies among organizational procurement capabilities wherein higher-level capabilities enable the creation and use of lower-level capabilities in a related, technology-enabled context. We identify a key higher-level capability, procurement integration competence, which enables the creation and use of a lower-level capability, digital procurement competence. The lower-level capability is technology-enabled, closer to the actual procurement activities performed, and impacts

performance directly. We estimate our research model with data obtained from a large-scale survey of 412 manufacturing firms in the context of procurement of production goods.

This paper contributes to the literature in several ways. First, we develop an IT-enabled functional capability hierarchy that conceptualizes higher-level and lower-level procurement capabilities, and examines their impact on procurement process performance. Considering that the functional capability hierarchy has been sparsely studied in the literature, and that current theorizing has not considered the possibility of capability hierarchies within a business process or function, with process-level capabilities conceptualized at one level, this paper helps foster research in a new domain that is at the intersection of operations management (OM), information systems (IS) and strategic management. Second, while extant literature has suggested higher-level capabilities as a source of firm-level performance (Grant, 1996; Rai et al., 2006; Sambamurthy et al., 2003), lower-level capabilities and their deep structures have not been examined in detail (Sirmon et al., 2007). In this paper, we conceptualize hierarchically structured procurement process capabilities and theorize that the impact of the higher-level capability on process-level performance is experienced through the lower-level, technology-enabled capability. This is a novel conceptualization and provides opportunities for significant new research and extensions. Finally, this work provides a multidisciplinary perspective on procurement process capabilities, which has been sparse in the literature, but is essential for grasping how firms can develop and deploy interlinked capabilities to obtain long-term performance advantages at the process level (Barney and Arikon, 2001; Ethiraj et al., 2005; Heim and Peng, 2010; Menor et al., 2007; Rai et al., 2006; Setia et al., 2008).

2. Literature review and theory

The conceptual foundations for our study draw upon prior research in OM, IS, and strategic management. Our literature review indicates that a robust body of research in IS and OM has examined the operational aspects of IT use in the procurement process and its performance implications. Much of this research is focused around two broad themes: (1) IT use enables firms to streamline the procurement process and the value-chain to obtain significant process efficiencies (Cachon and Fisher, 2000; Mithas et al., 2008), and (2) IT use enables firms to locate new products and sources of supply that can lower prices of inputs (Pegel et al., 2002). Prior literature in strategic management explicates the relationship between various capabilities and firm performance. We first discuss extant research that examines the role of IT in procurement and then present resource- and knowledge-based views as theoretical lenses underlying our research model.

2.1. IT use in the procurement process and the value-chain

A significant amount of research has examined the impact of IT and information use in procurement and value-chain. The basic thesis of this stream of research is that by enabling better information sharing, IT can wring inefficiencies out of procurement and value-chain processes. Improvements suggested and demonstrated in the literature include shorter lead-time, improved visibility, on-time delivery, lower costs, improved quality of products, lower inventory, faster order fulfillment and improved order accuracy (Barratt and Barratt, 2011; Mishra et al., 2007). For instance, electronic data interchange (EDI) has been shown to reduce cycle time and cost by improving the quality, speed and business value of transactions (Mukhopadhyay et al., 1995). Srinivasan et al. (1994) find that sharing frequent and accurate information between buyers and suppliers results in improved shipment performance.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات