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Strategic use of enterprise systems among service firms: Antecedents and consequences☆

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ABSTRACT

As competition in the service sector is continuously intensifying, managers are increasingly realizing how effective use of enterprise systems (ESs) might improve competition capabilities. Building on previous work that explores ESs and supply chain integration, this study investigates antecedents and consequences of ES usage among service firms. Following an empirical study using data from 233 Swedish retail and wholesale service providers, findings indicate that internal reasons such as access to new markets and anticipated performance, rather than external pressure, drive ES adoption. The study further reveals that ES usage relates positively to supply chain integration, which subsequently relates to firm performance via the mediating variable of competition capabilities. This study contributes by synthesizing previously separate constructs into a coherent research model that is both empirically viable and integrative. The study concludes by discussing implications for theory building and management practice.

1. Introduction

Competition in service industries is intensifying, and service providers continuously face new challenges to deliver offerings efficiently and effectively (Rust & Huang, 2012; Wilson, Zeithaml, Bitner, & Gremler, 2008). Thus, designing supply chain activities and processes is critical and constitutes a vital strategic decision for service managers (Hult, Closs, & Frayer, 2014; Tan, 2002).

To improve competition capabilities, many firms work closely with suppliers and customers to achieve integrated supply chains (Frohlich & Westbrook, 2001), which are increasingly feasible with the advent of enterprise systems (ESs). ESs organize and integrate the flow of materials, information, and finances throughout the network (Dehning, Richardson, & Zmud, 2007) by means of software, hardware, and communication systems (Davenport, 1998). Examples of ESs include enterprise resource planning (ERP), electronic data interchange (EDI), customer relationship management (CRM), product data interchange, human capital management, and decision support systems (Gadde, Hjelmgren, & Skarp, 2012; Hendricks, Singhal, & Stratman, 2007; Mostaghel, 2009; Vickery, Jayaram, Droge, & Calantone, 2003).

Technological innovations are growing rapidly, yet adopting new technology is often more difficult than firms originally anticipate (Slone, Mentzer, & Dittmann, 2007), especially when the technology is strategically vital. Research consistently shows that even excellent strategies fail if implemented poorly (Morgan, Katsikeas, & Vorhies, 2012), and the strategy of adopting ESs to achieve more integrated supply chains is no exception, as the high failure rates prove (Tan, 2002).

Traditionally, the design, implementation, and study of ESs take place within the context of manufacturing firms (e.g., Droge, Jayaramb, & Vickery, 2004). The lack of a strategic perspective in the service literature is a critical shortcoming, considering the overall growth of the service economy (Wilson et al., 2008) and the recent service transition trend among goods manufacturers (Fang, Palmatier, & Steenkamp, 2008). With the current development toward a service-dominant logic in contemporary business practice (Vargo & Lusch, 2004), supply chain activities and ES integration in services are even more critical.

This study therefore contributes to the literature on strategic use of technology in services. First, the study delineates the antecedents of strategic ESs adoption, the relationship between ESs and integrated supply chains in service business, ESs' impact on competition capabilities, and their influence on service firm performance. Second, the study presents several hypotheses by drawing on well-established theories. This approach is in contrast with the existing literature, which draws mainly on case studies and anecdotal evidence (e.g., Hendricks et al., 2007).

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Third, the empirical findings provide service practitioners with novel insights into successful strategic usage of ES technologies and supply chain integration.

Following this introduction, Section 2 reviews the literature, presents the theory that underlies the conceptual model, describes antecedents and outcomes of service firms' ESs adoption, and states hypotheses. Section 3 explains the method and presents empirical results. Section 4 concludes by discussing key findings.

2. Pertinent literature and hypotheses

ESs refer to "the degree to which a focal firm has established information systems for the consistent and high-velocity transfer of supply chain-related information within and across its boundaries" (Rai, Patnayakuni, & Seth, 2006, p. 229). In their drive to maintain a competitive edge, firms strategically adopt ESs to improve order-processing efficiency (Koh, Simpson, Padmore, Dimitriadis, & Misopoulos, 2006) or integrate business information (Oghazi, 2013), among other goals. Although financial justification facilitates managerial decision making in implementing ESs, other elements exist (Abrahamson & Rosenkopf, 1993).

Theoretical evidence shows that firms adopt ESs for both internal rational efficiency and external bandwagon reasons (Abrahamson & Rosenkopf, 1993). From an internal perspective, ESs are strategic enablers that help firms access new markets (Frohlich & Westbrook, 2002). For example, the communication company AT&T employs ESs to compete in many countries by converting imported data into the respective currency and language (Lollar, Beheshti, & Whitlow, 2010). Thus, the first proposed driver of ES is greater access to new markets. The second internal driver is anticipated performance. Specifically, better coordination with suppliers and customers translates into reduced variability and eliminates non-value-adding activities, thus boosting performance (Frohlich & Westbrook, 2002). External pressure, the third driver of ES adoption, receives support from bandwagon effect theory. Specifically, the bandwagon effect explains how organizations adopt new technologies in response to external pressures from other organizations—both upstream and downstream in the value chain—that have already adopted that same technology (Tolbert & Zucker, 1983). Thus:

H1. An increase in expected access to new markets relates positively to ES adoption.

H2. An increase in anticipated performance relates positively to ES adoption.

H3. An increase in perceived external pressure relates positively to ES adoption.

Transaction cost economics theory holds that transactions involve costs and risks (Williamson, 1975). Research demonstrates that information technology can decrease both coordination costs (Nooteboom, 1992) and transaction risks (Clemons & Row, 1992). In the current service organization context, this theory posits that potential cost reductions generated by the added information gained from increased ES usage spurs managerial interest toward integration with existing and new supply chain partners. Thus:

H4. ES adoption relates positively to supply chain integration.

Frohlich and Westbrook (2001) identify three dimensions of supply chain integration: supplier (upstream), internal, and customer (downstream) integration. Strong relationships between partners are necessary to avoid opportunistic behavior. Such behavior is due to risks inherent in sharing firm-specific and proprietary information necessary for true upstream and downstream integration (Hult et al., 2014). Successful relationship marketing activities are a way for service organizations to avoid opportunism and achieve strong exchange relationships (Berry, 1995). Relationship marketing refers to all marketing activities aiming at establishing, developing, and maintaining successful relational exchanges (Morgan & Hunt, 1994). A highly integrated supply chain implies successful relationship marketing by the focal service provider (Tan, 2002). A highly integrated supply chain also becomes a potential source for additional competition capabilities (Morgan & Hunt, 1994). Thus:

H5. Supply chain integration relates positively to competition capabilities.

Porter (2004) identifies three generic competition capabilities: cost leadership, differentiation, and focus strategy. These competitive capabilities arise from the many activities that firms perform in designing, producing, marketing, delivering, and supporting their offerings. Each activity can contribute to firms' cost and differentiation advantages (Porter, 2004). A firm may further employ a focus strategy by selecting segments in the industry and serving them to the exclusion of all other segments. Firms also compete on the basis of their customer services (Kim, 2006).

Another dimension of competition capabilities is innovative marketing. Traditionally, a service firm's marketing concept focuses on the marketing paradigm of the 7 Ps (product, price, place, promotion, people, process, and physical evidence). In contrast, innovative entrepreneurs stress promotion, word of mouth, and personal contact with customers, focusing on the 4 Is (information, identification, innovation, and interaction) (O'Dwyer, Gilmore, & Carson, 2009).

Firm performance, though challenging to measure, reflects the success or failure of a firm and is thus an essential variable. Hendricks et al. (2007) investigate the impact of ESs on firm performance by using secondary data on stock returns and accounting metrics; their analysis of the benefits from adopting ESs yields mixed results. Dehning et al. (2007) also conduct a longitudinal study of manufacturing

Table 1
Literature most relevant to the studied problem.

		Tsikriktsis, Lanzolla, and Frohlich (2004)	Kim (2006)	Rai et al. (2006)	Hatzithomas, Stamelos, Fotiadis, and Mylonakis (2007)	Vickery et al. (2003)	Frohlich and Westbrook (2002)	Dehning et al. (2007)	Powers and Hahn (2004)
Manufacturing firms			✓	✓	✓	✓	✓	✓	
Service firms		✓		✓	✓		✓		✓
Drivers of ESs	Anticipated benefits	✓					✓		
	Access to new markets	✓					✓		
	External pressure	✓					✓		
Adoption of ESs		✓		✓	✓	✓	✓	✓	
Supply chain integration			✓	✓	✓	✓	✓	✓	
Competition capabilities	Cost leadership		✓						✓
	Customer service		✓			✓			✓
	Innovative marketing		✓						✓
	Differentiation		✓						✓
	Focus strategy								
Firm performance			✓	✓	✓	✓	✓	✓	✓