



# The impact of supply-side electronic integration on customer service performance



Ling Xue<sup>a,1</sup>, Gautam Ray<sup>b,2</sup>, Vallabh Sambamurthy<sup>c,\*</sup>

<sup>a</sup> Bryan School of Business and Economics, University of North Carolina at Greensboro, Greensboro, NC 27402, United States

<sup>b</sup> Department of Information and Decision Sciences, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455, United States

<sup>c</sup> Broad College of Business, Michigan State University, East Lansing, MI 48824, United States

## ARTICLE INFO

### Article history:

Available online 27 July 2013

### Keywords:

Electronic integration  
Customer service  
Supply chain management  
Vertical integration  
Diversification  
Decentralization

## ABSTRACT

Although information technologies have been expected to directly enhance firm performance in specific value chain activities (e.g., supplier performance or customer service performance), their advanced capabilities offer the promise of organizational integration and spill-over benefits. Enterprise systems provide firms with platforms for electronically integrating their supplier and demand chain activities. Spill-over benefits refer to the impacts that occur when IT investments in one organizational domain benefit performance in a different value chain side of the firm. Supply-side electronic integration (SEI) refers to the use of electronic means to integrate the exchange of information and transactions with suppliers through enterprise systems. In our research, we examine whether SEI generates spill-over effects on customer service performance, over and beyond firms' direct investments in customer-side digitization. We also examine whether structural attributes of the firm (e.g., vertical integration, diversification, and centralization) moderate the effects of supply-side electronic integration on customer service performance. Our analysis of a secondary dataset of InformationWeek 500 firms shows that SEI helps firms realize cost-savings in their customer service performance, especially if they are less vertically integrated. In addition, SEI investments help diversified and centralized firms achieve cross-selling with their customers. We also find that SEI is more likely to help decentralized and diversified firms achieve customization in their customer service activities. These results suggest that SEI helps firms achieve twin goals in customer service: cost reduction and revenue expansion. Overall, our research reveals how supply-side electronic integration could generate benefits in customer service performance in firms.

© 2013 Elsevier B.V. All rights reserved.

## 1. Introduction

The effectiveness of information technologies (IT) for customer service has been the subject of considerable attention and academic research (e.g., Goodhue et al., 2002; Boulding et al., 2005; Rust and Chung, 2006; Barua et al., 2004; Setia et al., 2013). Firms are investing in specific IT tools for improving their performance in cross-selling, customization of products and services and customer satisfaction, and in reducing customer service costs. Although these investments in customer-related IT (CIT) are important, the advanced capabilities of enterprise systems offer another promising opportunity for enhancing customer service performance. Enterprise systems provide functionality for integrating

value chain activities across the entire supply and demand chain instead of just digitizing specific activities (Payne and Frow, 2005; Coltman et al., 2011). They facilitate supply-side electronic integration (SEI), whereby firms can use electronic means to exchange information and transact with all of their suppliers (Barua et al., 2004). Mithas et al. (2005) found that electronic integration with suppliers allowed firms to develop a better understanding of their customers' needs and improve customer satisfaction. Similarly, Gosain et al. (2005) and Setia et al. (2009) show that SEI enhances agility and the speed of responses to changes in the end-customer market/environments.

The goal of this research is to examine the impacts of supplier electronic integration on customer service performance in firms. We seek to extend the existing research in three important ways. First, most prior research has examined the effects of IT on specific aspects of customer service performance. Some studies suggest that firms must focus on either cost reduction or revenue expansion when they invest in IT to serve their customers (Rust et al., 2002; Ross and Beath, 2002). In contrast, other studies suggest that a dual and complementary emphasis on these two strategies will

\* Corresponding author. Tel.: +1 517 349 3324; fax: +1 517 432 1110.

E-mail addresses: [Lxue@uncg.edu](mailto:Lxue@uncg.edu) (L. Xue), [rayxx153@umn.edu](mailto:rayxx153@umn.edu) (G. Ray), [sambamurthy@bus.msu.edu](mailto:sambamurthy@bus.msu.edu) (V. Sambamurthy).

<sup>1</sup> Tel.: +1 336 334 5666; fax: +1 336 334 5580.

<sup>2</sup> Tel.: +1 612 625 5275; fax: +1 612 626 1316.

allow firms to reap more value from their IT investments (Mittal et al., 2005; Homburg et al., 2008; Coltman et al., 2011). Therefore, we examine whether investment in SEI beneficially affects all the dimensions of customer service performance (i.e., cost reduction, cross-selling opportunities, customization, and customer satisfaction). Second, we examine whether investments in SEI generate impacts on customer service performance over and above the direct effects of investment in customer-information technologies (CITs). Recent research has demonstrated the potential for spillover effects in IT investments (Cheng and Nault, 2007). Thus, our research examines whether supplier-side electronic integration spills over into customer service performance and generates additional positive benefits on the customer side.

Finally, our research also examines how the effects of supplier electronic integration are moderated by the firm's structural attributes. For example, the ability to electronically coordinate with value chain partners may catalyze firms to become less vertically integrated (Brews and Tucci, 2004; Hitt, 1999; Ray et al., 2009). However, research is needed to understand how vertical integration affects the impacts of SEI on customer service performance. Similarly, IT enables firms to diversify their resources and capabilities and pursue business opportunities across different product markets (Hitt, 1999; Dewan et al., 1998). On the supply side, firms must coordinate with more diverse suppliers in order to participate in more product markets. Research is needed to understand how the level of diversification influences the impact of SEI on customer service performance. Furthermore, connecting with a diverse set of suppliers often requires that the firm's managers make adaptive decisions in operations. In this regard, the impact of SEI is likely to be moderated by the decentralization of decision rights, which enables managers to leverage SEI in more flexible and adaptive ways. Therefore, it is important to examine how the firm's decentralization of decision rights influences the impact of SEI on customer service performance.

Our research findings suggest that SEI simultaneously improves all four dimensions of customer service performance, including cost reduction, cross-selling, customization and customer satisfaction. Therefore, SEI supports the dual emphasis in customer service and enables firms to simultaneously pursue both cost reduction and revenue expansion (Mittal et al., 2005; Homburg et al., 2008; Coltman et al., 2011). We also find that supplier electronic integration generates spillover effects on customer service performance above and beyond the effects of investments in customer-side IT. In fact, the effects of SEI appear to be stronger than the direct effects of customer-side IT investments. Finally, the effects of SEI are moderated by firms' structural properties, such as vertical integration, diversification, and the decentralization of decision rights. Specifically, we find that for less vertically integrated firms, SEI makes them more likely to achieve cost reduction in customer-facing activities. For more diversified firms, SEI makes them more likely to achieve cross-selling and customization in their customer-side activities. For decentralized firms, SEI makes them more likely to realize customization in their customer-facing activities. These results also indicate that SEI helps centralized firms achieve cross-selling with their customers.

Thus, SEI could contribute to the simultaneous pursuit of cost reduction and revenue expansion in customer-facing activities. However, by adapting different structural attributes, firms with strategic focus (on either cost reduction or revenue expansion) can gear their SEI practices toward a more effective realization of their preferred customer service performance goals.

The rest of this paper is organized as follows. We first develop the conceptual model and hypotheses for our research. Next, we present the details of our data and analysis methodologies. The subsequent sections describe the research findings and discuss their implications for future research and practice.

## 2. Conceptual model and hypotheses

### 2.1. The dimensions of customer service performance

Two sets of performance indicators reflect the effectiveness of a firm's customer-facing activities. On one hand, the cost of customer service reflects the ability of information technologies to lower the cost of customer service through labor substitution (Magretta, 1998) and self-service by customers (Dabholkar, 1996). On the other hand, the revenue-related indicators reflect the ability of IT to achieve a better understanding of customer needs and present opportunities for revenue expansion. For example, an improved understanding of customer needs leads to opportunities for cross-selling of complementary products (Iyengar et al., 2003). IT-based customization also helps increase customer loyalty and repeat purchases (Ansari and Mela, 2003). Similarly, CRM applications that enhance customer satisfaction can improve long-term profitability from sustainable customer relationships (Mithas et al., 2005).

We examine four dimensions of the impact of IT on customer service performance: *cost reduction*, *cross-selling*, *customization*, and *customer satisfaction*. They capture both cost-related and revenue-related impacts on customer-facing processes and activities. *Cost reduction* refers to the use of IT for improving efficiency in serving customers. *Cross-selling*, *customization*, and *customer satisfaction* mainly reflect the use of IT to expand revenues through superior customer knowledge and customer relationships (e.g., Griffin et al., 1995).

### 2.2. The effects of supplier electronic integration on customer service

Porter (2001) proposes that firms should be viewed as activity systems, or collections of interdependent business processes. Specific activity systems include marketing and selling processes, procurement and supply chain management processes, human resource management processes, and financial management processes. Kalakota and Robinson (2001) propose that firms seek to digitize their activity systems by investing in enterprise systems. Although enterprise systems have functionalities for digitizing specific processes, they also provide the opportunity to integrate activities across different processes within an activity system. Therefore, the performance effects of IT should be evaluated not just within specific business processes but also in the context of an entire activity system. In their seminal analysis of the shift from mass manufacturing to flexible manufacturing systems, Milgrom and Roberts (1990) argue that complementarities are generated in firms due to numerous interactions between multiple factors. They state,

We use the term "complements" not only in the traditional sense of a relation between pairs of inputs, but also in a broader sense as a relation among groups of activities. The defining characteristic of these groups of complements is that if the levels of any subset of the activities are increased, then the marginal return to increases in any or all of the remaining activities rises. (p. 514)

Various frameworks have been defined to recognize the interdependent nature of business processes within activity systems in contemporary organizations (Lambert et al., 2005; Bowersox et al., 2007; Srivastava et al., 1999). These frameworks include the Global Supply Chain Forum (GSCF), Supply Chain Council (SCOR), and Bowersox et al. (2007). A common aspect of these frameworks is that they emphasize the interconnections between the customer-facing activities (e.g., selling, customer service, and marketing) and supply-side activities (e.g., procurement, demand forecasting). Utilizing these frameworks, Setia et al. (2009) examine how the use

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

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