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High tech, high touch: The effect of employee skills and customer heterogeneity on customer satisfaction with enterprise system support services

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Abstract

Although firms have invested significant resources in implementing enterprise software systems (ESS) to modernize and integrate their business process infrastructure, customer satisfaction with ESS has remained an understudied phenomenon. In this exploratory research study, we investigate customer satisfaction for support services of ESS and focus on employee skills and customer heterogeneity. We analyze archival customer satisfaction data from 170 real-world customer service encounters of a leading ESS vendor. Our analysis indicates that the technical and behavioral skills of customer support representatives play a major role in influencing overall customer satisfaction with ESS support services. We find that the effect of technical skills on customer satisfaction is moderated by behavioral skills. We also find that the technical skills of the support personnel are valued more by repeat customers than by new customers. We discuss the implications of these findings for managing customer heterogeneity in ESS support services and for the allocation and training of ESS support personnel.
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1. Introduction

Enterprise software systems (ESS) are a complex suit of large software applications that lie at the foundation of information technology (IT) infrastructure in contemporary firms. ESS are vital to most business processes, including enterprise resource-planning (ERP), supply chain management, financials, payroll processing, human capital management, customer relationship management (CRM), and decision support systems [8,40,57]. *Fortune* 500 firms invest billions of dollars in purchasing and maintaining such enterprise systems, and market analysts predict that firms' enterprise software spending will reach as high as $70 billion in 2006–2007 [47].

Despite greater scrutiny and downward pressure on aggregate IT budgets in the wake of the dotcom bust, firm spending on ESS is on the rise. Installing and maintaining

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ESS require the commitment of significant financial and human resources. Moreover, investments in large-scale packaged enterprise systems that require business process reengineering are inherently risky in nature. Implementation failures are common because of technological uncertainty, the inability to satisfy firms' unique customization needs, and the difficulty in achieving seamless integration with the existing legacy systems. Previous studies have reported several cases of unhappy customers pulling the plug on ESS projects before completion [11,30].

From an ESS vendor perspective, understanding the antecedents of customer satisfaction for enterprise systems is important for effectively responding to the evolving needs of customers who rely on ESS to operate key business processes. First, satisfied customers are more likely to spread positive word of mouth about the efficacy of ESS, which is likely to increase future adoption of such systems and thus generate additional sales for the ESS vendor. Second, satisfied customers are more likely to renew and upgrade their licenses, thus providing a continuous stream of revenue for the software vendor [79]. Third, after-sales customer interactions provide the software vendor with the opportunity to understand its customers' unique business processes. Such interactions are particularly important for product management and product evolution in the ESS domain to design new, improved product functionality that is specific to customers [61]. Finally, because customer satisfaction is an important factor that affects a firm's market capitalization and performance [34], it is important for ESS vendors to understand the factors that affect customers' satisfaction with their offerings.

Despite the importance of customer satisfaction for enterprise software products, few studies have examined the drivers of customer satisfaction for such products. Prior software studies have examined the influence of generic software design attributes on customer satisfaction [44], but there is limited work that specifically examines the role of after-sales software support services and support personnel-related factors. This paper extends previous research on the determinants of software product customer satisfaction by considering the effect of after-sales customer service interactions on overall customer satisfaction with ESS support services. In particular, we study the relative importance of the technical and behavioral skills of customer support personnel in influencing overall customer satisfaction with ESS vendor's support services. We also explore the interaction effect between technical and behavioral skills of support personnel and model the effect of personnel technical skills across different types of customers (i.e., repeat or new customers).

This study makes two main contributions. First, from a research viewpoint, this is one of the first studies to examine the role of customer support personnel in influencing overall customer satisfaction with ESS support services. Unlike previous studies that focus on the effect of product and customer attributes on satisfaction with software [44], this research focuses on the effect of after-sales interactions. By studying the role of employee skills and customer attributes in a services setting, we contribute to both the information systems research related to customer satisfaction and the emerging discipline of services science, which lies at the intersection of information systems, services, and marketing [21,72]. We use a rich data set of real-world after-sales customer interactions to draw conclusions about the impact of customer support personnel characteristics on satisfaction across different types of customers. Second, from a managerial viewpoint, the results of this study have important implications for staffing and work allocation decisions to serve different types of customers effectively.

We organize the rest of the paper as follows: In Section 2, we review previous literature and develop our theory and hypotheses. In Sections 3 and 4, we discuss our research methodology and present the results of our analysis, respectively. In Section 5, we discuss the limitations of the study, provide suggestions for further research, and offer concluding remarks.

2. Prior literature and theory

Customer satisfaction is an important measure of a firm's success because it is a leading indicator of a firm's financial performance and shareholder value. Previous research reports that customer satisfaction has a positive influence on customer loyalty, service and product usage behavior [17,33], usage levels [18], revenues [71,73], and cash flows [38]. In addition, customer satisfaction has a negative influence on customer complaints; the cost of future transactions [69]; price elasticity [3]; the likelihood of customer defection [6]; and costs related to warranties, complaints, defective goods, field service, and retaining and attracting customers [4,33,35]. Anderson, Fornell, and Mazvancheryl [5] find that a 1% improvement in customer satisfaction for a firm with assets of $10 billion is associated with an increase in the firm's value of approximately $275 million. Finally, Fornell, Mithas, Morgeson, and Krishnan [34] find that firms with higher customer satisfaction have high stock returns with lower risk.

The implication from this rich stream of literature is that customer satisfaction can be used as an important and reliable performance indicator for ESS support

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