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The impact of outsourcing on information technology spending

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ABSTRACT

Information technology outsourcing (ITOS) is a strategy used by many firms to either reduce their total cost of IT or gain access to IT capabilities not available in-house. A proprietary data set of large US firms is used to examine the effect of ITOS on firm-level IT spending over the seven-year period 1999–2005. Prior research suggested that (1) engaging in ITOS would be associated with a lower level of IT spending and (2) the extent of ITOS would be negatively associated with the level of IT spending. The results did not support either hypothesis. IT outsourcing is associated with higher IT spending, presumably reflecting the costs of enhancing IT capabilities. This increase in IT spending is driven by firms that initially outsource a large percentage of their IT activity. This paper makes three contributions to the literature. First, it is the first study to investigate whether the act of engaging in ITOS is associated with an objective, quantitative measure of IT spending in a large sample of firms over time. Second, it investigates whether the *extent* of ITOS affects IT spending, i.e., whether a higher level of ITOS has a greater impact on IT spending. Third, it examines IT spending at the aggregate firm level rather than the individual IT project level, providing a broader measure of the impact of ITOS on the IT function.

1. Introduction

Information technology outsourcing (ITOS) is a widely used strategy for managing information technology spending and capabilities (Carmel and Agarwal, 2002; Farber, 2005). Gartner estimated in 2005 that the global market for ITOS (not including business process outsourcing) would grow steadily to

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$130 billion by 2008 (PricewaterhouseCoopers, 2005), and expects the number of firms engaging in ITOS to continue to grow in 2009 (Gartner, 2009). US-based customers comprise nearly 60% of the global market, making the US the primary region in the industry.

The motives for engaging in ITOS have been the subject of extensive discussion in the academic and practitioner literatures. The most common objectives cited are reducing the cost of IT and gaining access to IT capabilities not available in-house (Dibbern et al., 2004; Mahnke et al., 2005). Empirical research examining the subsequent firm-level effects of ITOS is much more limited. Several studies examine the effect of outsourcing announcements on short-term investor returns (Hayes et al., 2000; Florin et al., 2005; Oh et al., 2006b; Lim et al., 2007; Beasley et al., 2009) and two studies examine their relation to subsequent firm accounting performance (Wang et al., 2008; Bhalla et al., 2008). Another group of studies has examined the factors affecting whether individual ITOS projects meet managers' qualitative expectations for success or satisfaction (Dibbern et al., 2004). Remarkably, empirical research has not yet examined the effect of ITOS on the variable it is expected to most directly affect — the firm's IT expenditure level — to determine whether ITOS is in fact associated with lower firm-level IT spending. This may be due to the difficulty of obtaining both ITOS and IT spending data for a large number of firms.

The purpose of this paper is to investigate the relationship between ITOS and IT spending. This study investigates the effect of changes in ITOS status, separately analyzing firms that initiate or stop outsourcing relative to firms who do not engage in ITOS. It also investigates the effect of the level of ITOS, i.e., whether outsourcing's effect is similar across outsourcing firms, or only a result of those engaging in extensive outsourcing. Further analysis allows assessment of whether outsourcing is being used to reduce costs or extend IT capabilities. A proprietary data set of ITOS activity and IT spending by firms having the largest installed IT base in the US (the *InformationWeek 500* database) over the period from 1999 to 2005 is used in the analysis.

This paper makes three contributions to practice and the literature. First, it is the first study to investigate whether the act of engaging in ITOS is associated with an objective quantitative measure of IT spending in a large sample of firms over time. The finding of a positive impact on firm IT spending appears to be contrary to prior literature's emphasis on cost reduction, but is consistent with ITOS's role in creating capability. This impact is immediate and symmetric. New outsourcers see immediate IT spending increases, while firms stopping ITOS see immediate decreases. Second, it investigates whether the *extent* of ITOS affects IT spending and finds that aggressive new outsourcing (top quartile of percentage of IT outsourced in first year of outsourcing) drives IT spending increases, though for continuing outsourcers, ITOS level is not related to IT spending. Third, it examines IT spending at the aggregate firm level rather than the individual IT project level, providing a broader measure of the impact of ITOS on the IT function and allowing analysis of the aggregate effect of cost reduction and capability enhancement. The analysis indicates that IT spending increases by more than the proportion outsourced, suggesting that firms use ITOS as a component of a larger capability-enhancing initiative. These results begin to answer the question of whether and how ITOS affects IT spending and are relevant to executives and researchers evaluating the effects of ITOS on IT operations and IT business value.

The next section develops hypotheses based on previous ITOS research. The third section describes the sample and methods used for analysis. This is followed by a discussion of the results, limitations, and then a final section drawing conclusions and suggesting avenues for further research.

2. Literature review and hypotheses development

Since 1978, firms in the U.S. have increased spending on IT hardware and software from 5% of non-residential fixed investment to 21% in 2007, totaling $315 billion—approaching investments in land and structures (Bureau of Economic Analysis, 2008). The link between IT and firm performance has been the focus of a significant stream of research in accounting information systems (AIS). While many studies beginning in the 1990s found IT to be associated with significant improvements in productivity (Brynjolfsson and Hitt, 1996; Banker et al., 2002; Dedrick et al., 2003), early studies found no relation between IT investment and firm profitability (Hitt and Brynjolfsson, 1996), suggesting that IT's productivity benefits had been competed away to create consumer surplus. In response, AIS researchers have reviewed this research to identify areas of comparative advantage (Dehning and Richardson, 2002) and conducted several studies linking general IT capability per industry rankings (Dehning and Stratopolous, 2002; Wang and Alam, 2007), IT project