



Can information technology enable profitable diversification? An empirical examination

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Abstract

Investments in information technology (IT) are now a major part of corporate investment, and the management of IT is essential to performance. In general, IT is expected to have performance effects when it is judiciously used to complement existing corporate capabilities. In this research, we examine how IT can complement diversification strategy. Using hypotheses and measures suggested by information processing theory and the theory of corporate strategy, testable hypotheses are derived to examine how IT can complement diversification. Results suggest that spending on computer technology significantly complements a strategy of unrelated diversification. Implications for theory and practice are discussed.

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1. Introduction

The role of information technology (IT) in the modern corporation can hardly be overstated. Based on the US Department of Commerce's "Survey of Current Business," IT investment has increased at the average rate of 7.4% per year in constant dollars from 1960 to 2003, and spending on IT now consumes over 40% of the capital investment of firms. More importantly, "information technology changes the way you compete" (McFarlan, 1984). For example, banks that adopted ATM's earlier enjoyed significant first mover advantage and associated profitability (Dos Santos and Peffer, 1995). And the effects even extend to entire industries, as IT enables the

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reshaping of industry boundaries (Sampler, 1998). For example, the introduction of IT to the London stock exchange in 1986 eliminated trading functions and dramatically reduced the profitability of most financial institutions (Hayter, 1993).

The management of information technology is of increased importance to scholars and managers. Prior research in technology management has been sparse, however, while research in the MIS literature has suggested that the significant effects of IT occur when IT is effectively adapted to organizational needs and matched with suitable organizational changes. In short, the effect of IT is contingent upon management. One contingency that has not been examined, to the authors' knowledge, is corporate strategy. The purpose of this paper is to examine whether and how information technology can be matched to diversification strategy to contribute to corporate performance. Information processing theory is used to suggest contingencies for the effect of IT on diversification strategy to suggest hypotheses for testing. Examining a dataset of Fortune 500 firms, the results show that matching IT to diversification strategy does affect firm performance.

2. Background and prior literature

Early papers hypothesized significant opportunity for competitive advantage through information technology (e.g., Porter and Millar, 1985). IT was expected to significantly *lower costs* both through lowering the costs of individual firm activities and lowering the costs of coordination across activities of the firm's value chain. IT was expected to *raise product differentiation* by making it possible to use information to customize physical products, and even to create new information-based products. IT was expected to *increase competitive scope* by increasing the effective market of the firm through telecommunications. And IT was expected to *improve firms' bargaining position* vis-à-vis buyers and suppliers by increasing information with which to effectively negotiate. Through these pathways to profits, firms that aggressively embraced IT were predicted to gain competitive advantage.

Research on the effect of IT on corporate performance has been a growth industry, reviewed in several places (Brynjolfsson and Hitt, 2000; Dehning and Richardson, 2002; Devaraj and Kohli, 2003; Dewett and Jones, 2001; Indjikain and Siegel, 2004; Link and Siegel, 2007; Melville et al., 2004). A short summary of prior literature seems appropriate. One stream of research has sought to identify direct effects of IT on productivity (measured by, for example, sales or total factor productivity), and has demonstrated a positive and significant effect of IT on productivity (e.g., Brynjolfsson and Hitt, 1996; Brynjolfsson and Hitt, 2003; Dewan and Min, 1997; Lichtenberg, 1995; Siegel, 1997). Although the effect on productivity has been shown, the search for effects on profitability has been less successful. A recent meta-analysis showed that shifting the dependent variable of a study from productivity to profitability made it far less likely that the study would find a significant effect (Kohli and Devaraj, 2003). Case studies of specific decisions by firms have suggested market share gains for IT adopters (Dos Santos and Peffer, 1995; Duliba et al., 2001; Ross et al., 1996). But large-scale empirical research, typically regressing firm profits on IT budget plus controls, has yielded mixed evidence of a direct effect (e.g., Barua et al., 1995; Dewett and Jones, 2001; Hitt and Brynjolfsson, 1996; Kettinger et al., 1994; Tam, 1998; Wilson, 1993). A direct effect is identified in Bharadwaj et al. (1999), who found IT spending to have a positive and significant effect on profits (measured by Tobin's q), although statistical significance and economic significance declined over time.

Given that there exists an effect of IT on performance, research has turned to investigate how and in what context the effect occurs. Theoretically, IT is an organizational technology (Campbell-Kelly and Aspray, 1996). Unlike other changes in science and technology, the close

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