

## Chapter 8.4

# Information Technology and Diversification: How Their Relationship Affects Firm Performance

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### ABSTRACT

While the importance of IT coupled with organizational changes for business performance has been widely discussed in the information systems (IS) literature, there has been little empirical research on the issue. This research examines empirically the relationship between IT and diversification by employing multiple diversification measures. It also examines empirically the relative impact on performance of IT and diversification. Results show that diversification coupled with increased IT spending improves firm performance when its strategic emphasis is on related diversification. The results also show that firms place strategic focus on related diversification when they increase IT spending, and that they require more IT when their strategic emphasis is tilted toward related diversification. The findings imply that by providing a better means of coordination, IT enables scope economies, efficient utilization

of business resources and collaboration across individual business units, eventually leveraging the benefits of diversification.

### INTRODUCTION

Emerging technologies can often allow firms to reexamine how they do business, stimulate creative thinking, and ultimately create new opportunities. In the e-business environment, where process automation and digitization are critical for business success, efforts to redesign processes and effectively coordinate value chain-activities with customers and suppliers are ever more important. Information technology (IT), including the Internet and related technologies, can make its fullest impact on organizations when it is deployed in conjunction with changes in business processes, structures, and strategies.

While the importance of coupling IT with organizational changes for business performance has been widely discussed in the information systems (IS) literature (Brynjolfsson & Hitt, 1996; Brynjolfsson & Yang, 1998; Clemons & Row, 1991; Dewan, Michael, & Min, 1998; Rai, Patnayakuni, & Patnayakuni, 1997; Shin, 2001, 2006), there has been little empirical research on the issue. Brynjolfsson and Yang (1998) found that an increase of one dollar in IT capital was valued by the stock market at about ten dollars, and this extra nine dollars represented the value obtained from organizational changes to complement IT investments. Brynjolfsson and Hitt (1996) also found that IT had its greatest contribution to output in firms that adopted a more decentralized and human capital-intensive work system.

This research examines empirically the relationship between IT and diversification by employing multiple diversification measures. It also examines empirically the relative impact on performance of IT and diversification. Several empirical analyses in two stages attempt to answer the following questions:

1. Do firms increase their strategic emphasis on related diversification when they increase IT spending?
2. Is business performance improved by increased IT spending when firms place their strategic emphasis on related diversification?

By answering these questions, this study attempts to shed light on why the impact of IT on firm performance may not be constant across firms. It concludes that IT spending complements the strategic choices of firms, such as a strategic decision to focus on related diversification. The empirical aspects of this complementarity have received little attention from previous IS and economics research.

## **THEORETICAL BACKGROUND: PRIOR RESEARCH ON DIVERSIFICATION AND IT**

Economics research posits that a firm is a collection of physical, human and intangible resources capable of undertaking a number of separate economic activities. Some resources may be relatively product specific, and thus utilized to produce a particular good or service through one business line. Other resources, however, may have the potential to increase production of goods or services in multiple business lines. When a firm has excess capacities that are insufficiently utilized in its current operations and cannot be sold in external markets, it will expand their use by diversifying its operations into multiple markets (Caves, Porter, Spence, & Scott, 1980; Clarke, 1985; Penrose, 1959; Rumelt, 1974).

A firm can diversify its operations into either related or unrelated markets. Related diversification means that a firm diversifies into business areas close to the one in which it originated (for example, computer and communications product manufacturing), while unrelated diversification refers to a firm diversifying into more distant areas unrelated to its current business (for example, computer product manufacturing and banking). When a firm pursues related diversification, its ability to achieve tangible economic benefits depends on increased coordination, communication, and collaboration among its different business lines (Hill, 1994; Hill & Hoskisson, 1987). Individual divisions share market information, managerial expertise, technical knowledge, and physical resources such as supply chains and distribution channels. Thus, when a firm pursues related diversification, it should consider the costs of coordinating resources, including the costs of information sharing, across related markets (Williamson, 1975). On the other hand, unrelated diversification is pursued with the goal of realizing economic benefits from the exploita-

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