Chapter 13
Effects of Information Technology on Business Performance and the Use of Accounting Measures

Jorge A. Romero
Towson University, USA

ABSTRACT

The understanding of the link between Information Technology (IT) investments and firm performance is still not completely understood in spite of numerous studies. However, these studies are not united in how they examine the effects of IT on business performance. They differ in their criteria, methodologies, and samples. Therefore, while there are positive effects associated with IT on firm performance, it is still difficult to reach overarching conclusions and highlight that there is still a need for further research. Specifically, this chapter contributes to this area of study by discussing the different types of benefits that firms can get from IT investments, examining the use of accounting variables to quantify the effect of IT, and providing future research directions.

1. INTRODUCTION

Over the last two decades, firms have poured vast sums of money into information technology (IT) applications, but the full implications of this spending have yet to be concluded (Devaraj & Kohli, 2003; Lim, Dehning, Richardson, & Smith, 2011). Firms have been investing in IT with the expectation of increasing productivity, profitability, customer satisfaction, and other intangible assets (Wang & Alam, 2007). However, there are a number of unanswered research questions on the link between IT and business value.

Understanding the effects of IT is key for organizations because of the benefits in productivity and profitability from IT (Devaraj & Kohli, 2003). IT investments are intrinsically risky because technology changes so rapidly and implementations may cause disruptions in the business activities of a firm (Wang & Alam, 2007). IT creates massive amounts of information that need to be processed in order to add value, and the value creation pro-

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cess from IT may require some time after the IT implementation in order to see improvements in business value (Kohli & Grover, 2008).

IT is more than the hardware, software, and IT personnel, but also includes the intangible assets that it creates. IT does not create or add value in isolation. IT creates value when it is a component of a business process (Kohli & Grover, 2008). For instance, Ho, Wu, and Xu (2011) found that IT by itself does not contribute to improvements in performance, but when IT is used in combination with complementary corporate structures then firms can see improvements in performance.

In many cases, the impact of IT on business performance cannot be easily quantified, and the transformation of IT expenses into IT assets requires an active involvement of the top management (Banker, Chang, & Kao, 2002). It has also been proposed that the driver of IT is not the actual investment in IT but the actual usage of IT (Devaraj & Kohli, 2003). Carr (2003) proposed that IT is a commodity and because any firm can have access to the same type of IT, then that type of IT will not help firms differentiate themselves from competitors that installed the same type of IT. Other research has shown that IT can create differential value from the same type of IT when firms combine IT with other complementary resources therefore creating intangible assets for the firms and a sustainable competitive advantage (Bhatt & Grover, 2005; Hitt & Brynjolfsson, 1996; Wang & Alam, 2007).

Early studies on the business value of IT failed to find a positive effect from the implementation of a new IT (Berndt & Morrison, 1995; Koski, 1999), and this created the productivity paradox (Brynjolfsson & Hitt, 2000). There are still mixed results on the impact of IT on firm performance (Devaraj & Kohli, 2003; Ho, Wu, & Xu, 2011; Lim et al., 2011), and there are still unanswered questions about the business value of IT (Kohli & Grover, 2008). There are multiple research articles that have reported positive effects from the implementation of IT (Banker, Kauffman, & Morey, 1990; Devaraj & Kohli, 2003; Romero, Menon, Banker, & Anderson, 2010; Hitt & Brynjolfsson, 1996; Menon, Lee, & Eldenburg, 2000), but managers and analysts need to have a good understanding of the potential benefits of IT investments, and how information technology can transform the way that firms do business and redesign business processes (Banker, Chang, & Kao, 2002).

2. IT INVESTMENTS AND FIRM PERFORMANCE

Several researchers have looked at the link between information technology and business at different levels such as the industry level, firm level, and business unit level (Lim et al., 2011). Other studies have used different financial variables or process related variables to try to measure the impact of IT on business value, but the intangible value that IT creates was not directly quantifiable and not easy to quantify. The unavailability of data has also been a problem that many researchers face. For instance, publicly traded firms are not required to disclose expenses on IT (Lim et al., 2011). Therefore, many studies have used indirect measures of IT spending.

Several studies have used different methodologies. Some studies focus on one particular firm, and other studies use a small sample size, or samples across industries. Studies across industries may have the problem of not taking into account the unique characteristics of each industry and the unique way that IT will affect each of them (Porter, 1985). Studies aggregating different types of IT applications may have confounding results because different types of IT have different levels of complexity, different periods of installation, and different performance effects on firms. For

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