ELSEVIER

Technology in Society 29 (2007) 93–106

Technology In Society

www.elsevier.com/locate/techsoc

Information technology capability and value creation: Evidence from the US banking industry

Bou-Wen Lin*

Institute of Technology Management, National Tsing Hua University, 101, Sec. 2, Kuan-Fu Rd., Hsinchu 300 Taiwan, ROC

Abstract

This paper investigates whether the firm Information technology (IT) capability of a firm can create economic value and competitive advantage. In contrast to past research, which generally assumed that IT investment leads to IT capability that in turn leads to competitive advantage, this study examines IT capability directly. Based on a cross-sectional sample of 155 banking firms, I investigated the main and interactive effects of IT capability and human capital investment on five firm-performance measures. The results of this study indicate that both IT capability and human capital investment contribute directly to the overall value-creation performance of banking firms. Further, the study suggests that IT capability and human capital investment can have a negative interactive effect on the firm's value creation. A firm's IT capability should be seen as an integral tool for creating economic value instead of a business infrastructure that makes business operations efficient. The results of this study support the resource-based view of the firm.

Keywords: Information technology; Value creation; Banking; Human resources

1. Introduction

Information technology (IT) has become an essential element of firm capability and a source of sustainable competitive advantage. Although it is widely accepted that IT resources contribute to performance and future growth potential of the firm, the empirical results of the relationship between IT capability and firm performance is still ambiguous

*Corresponding author. Tel.: +886 3574 2442; fax: +886 3574 5310.
E-mail address: bwlin@mx.nthu.edu.tw.

0160-791X/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.techsoc.2006.10.003

[1,2]. The unavailability of publicly available data, the accelerated pace of IT innovation, the possible interactive effects between IT and human resources, and the intangible nature of IT capability are among the obstacles that hinder an understanding of whether and how IT can create value for a firm. Another explanation for the inconclusiveness in the literature is that most studies dealing with the impact of IT on firm performance fail to explicitly distinguish (1) IT investments from IT capability, and (2) value creation from firm profitability. This paper addresses those issues and investigates whether IT capability of a firm can create economic value and/or enhance profitability.

Researchers and professionals often assume that investment in IT will lead to gains in both profits and productivity, which in turn creates value for the firm. However, this does not seem to be a straightforward line of reasoning. Many empirical studies that examined the relationship between IT investments and various measures of performance produced mixed results [3]. Investments in IT do not necessarily yield results as anticipated.

Before we can *further* our understanding of IT value, we must clarify some intermingled concepts commonly used in the IT value literature. First, the concepts of IT investments in IT capability can be divided into two different types that result from two streams of studies and must be distinguished. The former is understood simply as the amount of money a firm invests on IT. However, large IT expenditures by a firm may reflect its inefficient IT operations or poor planning rather than a high level of IT innovation or capability [4]. Firms that invest heavily on IT without developing a corresponding IT capability will find themselves at a comparative disadvantage. As to a firm's IT capability, the definition by Bharadwaj is useful: "its ability to mobilize and deploy IT-based resources in combination or co-present with other resources and capabilities" [5, p. 170]. Firms with superior IT capability enjoy superior financial performance by bolstering their revenues, increasing productivity, and/or decreasing costs.

Second, efficiency performance measures (such as productivity, returns on equity, and Tobin's Q) differ from effectiveness performance measures (such as economic value-added, market value-added, and IT- enabled strategic options). Much of the earlier research examined the correlations between IT expenditures and measures of profitability. Brynjolfsson and Hitt [6] suggest that the value of IT should be measured by intangible dimensions such as improvements in quality, customer service, and new product development. A key issue facing IT researchers and practitioners is the difficulty of realizing the full potential of IT. Bakos and Kemerer [7] identify three different types of IT values: (1) normative value (based on expected values), (2) realist value (based on observed outcomes) and (3) perceived value (based on subjective user evaluations). Research results dealing with different types of IT values should not be confused.

2. IT capability and firm performance

Although the relationship between IT capability and a firm's performance has long been an important research topic, conclusive evidence about whether IT contributes to a firm's productivity is not available [8]. On the one hand, several studies find a positive correlation between IT spending and business profitability. Dewan and Min [9] reported that excess returns to IT investment and excess returns on IT investment are associated with other factors of production, labour, and capital. Mitra and Chaya [10] found that higher IT investments are associated with lower costs. Brown et al. [4] showed that the stock market reacts favourably to announcements about firms that have adopted strategic IT, and those