Cross-National and Cross-Industrial Comparison of ICT-Enabled Business Process Management and Performance

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ABSTRACT

Information and communications technologies have changed how firms do business and create value. The objective of this study is to improve the understanding of ICT contribution to firm performance and explore the linkage between ICT impacts and business process management among various countries and industries. This study proposes the ICT-enabled Business Process Management Model. To test the model, survey data from the United States, Taiwan, and Chile was collected. The results show that ICT adoption affects business process management significantly. ICT adoption positively affects workplace reform, leading to workforce reform and improved profits. However, only country differences are recognized in BPM. For the USA, resource planning infrastructure affects workforce reform significantly, and e-commerce infrastructure affects workplace reform significantly, later leading to improved profit. For Taiwan, both resource planning infrastructure and e-commerce infrastructure affect workplace reform significantly, but workforce reform is significantly influenced by resource planning infrastructure. For Chile, the e-commerce infrastructure affects workplace reform significantly, leading to improved profit. This paper contributes to IS research by providing empirical evidence on the impact of ICT adoption on business process management. This paper also explores the impacts of ICT adoption on business process management and financial performance among various countries.

Keywords: Business Process Management, Country Differences, E-Commerce, Information and Communications Technologies, Technology Adoption

INTRODUCTION

Information and communications technologies (ICTs) have changed the way in which firms

do business and create values. Many researchers focus on ICT systems and interaction with firms, such as information capability and business process management (BPM), and claim that ICTs increase firm competitiveness. For example, Lee, Chu, and Tseng (2009), Neirotti, Cantamessa, and Paolucci (2008), Rhim, Park,

and Kim (2007), Sarker and Singh (2006), and Ziaul, Faizul, and Ken (2006) report that ICTs change business practices to re-optimize business processes, which leads to increased efficiency and improved performance. There are several gaps in the literature. First, few studies provide empirical evidence to generalize how ICT adoption affects business process management and performance. Many studies discuss successful factors of business process management, or analyze a specific firm's ICT implementation (e.g., Pan & Jang, 2008; Shin, 2006). Management of operational business processes and related techniques and tools for effective and efficient control flow and data-flow is seldom examined. Secondly, most research has focused on one or two enterprise applications, such as electronic commerce or enterprise resource planning. Lee, Chu, and Tseng (2009, 2011) argue that examination of one kind of technology is not a good approach to studying business reengineering. It ignores the mixed effects of various ICTs on BPM and does not offer a complete picture of the relationships between ICT adoption and BPM. This paper includes ICTs that most firms implement and categorizes them into two main infrastructures (resource planning infrastructure and e-commerce infrastructure) for further analysis. Thirdly, previous literature assumes that all changes resulted from business process management happen simultaneously. Lee et al. (2009) discover that workplace reform influences workforce reform directly and organizational structure indirectly. This paper argues that improvement of workplace, workforce, and organizational structure can directly and indirectly influence performance. Lastly, ICT activities in firms may differ significantly across countries (Limaye & Victor, 1991; Harvey, 1997; Krumbholz, Galliers, Coulianos, & Maiden, 2000; Watson, 1994; Bagchi, Hart, & Peterson, 2004). The ICT adoption depends on the specific environment in which they are embedded (Limaye & Victor, 1991). However, previous research rarely examines contributions of ICTs at the country level. This paper contributes to our knowledge about how BPM differs across countries, and how country differences moderate the impacts of ICT adoption on BPM, and how BPM country differences moderate influences of BPM on performance.

The objective of this research is to test a proposed ICT-BPM-Performance model to investigate (1) impacts of ICTs on BPM; (2) effects of BPM on performance; and (3) effects of country differences on such impacts. The findings would be valuable in understanding the complexity of ICT adoption and predicting outcome of business process management at the country level.

The paper is organized in five sections. The next section provides an overview of past studies on ICT adoption and possible impacts on business process and profit. Then, the authors present an analytical framework and methodology used in the study. The empirical results are then presented. The final section discusses the results, implications and limitations of the study.

CONCEPTUAL BACKGROUND ICT ADOPTION AND BPM

Business process reengineering (BPR) is an approach that firms take to re-optimize business processes for the purpose of obtaining competitive advantage and enhancing business performance, such as cost saving, quality breakthroughs, better customer services, time reduction, and revenue increases (Morris & Brandon, 1993). In most BPR cases, ICTs play a critical role in reshaping business practices. For example, Morton (1996) finds that ICTs are important enabler of BPR because ICTs permit the distribution of power, function, and control to wherever they are most effective, and further change the ways in which production, coordination activities, and data processing are carried out. Many experts (Akhavan, Jafari, & Ali-Ahmadi, 2006; Attaran, 2004; Freeman, 2000; Venkatraman, 1991) agree that ICTs could facilitate firm collection and analysis of information and development of strategic vision, as well as allow collaborative teamwork and determine the best approach for business pro-

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