

## Chapter 6.3

# IT Infrastructure Capabilities and Business Process Improvements: Association with IT Governance Characteristics

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### ABSTRACT

It has been widely discussed in the management information systems (MIS) literature that the outcomes of information technologies (IT) and systems may be subject to the influence of the characteristics of the organization, including those of the IT and business leadership. This study was conducted to examine the relationships that may exist between IT infrastructure capabilities (ITC), business process improvements (BPI), and such IT governance-related constructs as the reporting relationship between the chief executive officer (CEO) and chief information officer (CIO), and senior management support of IT and BPI projects. Using a sample of 243 multinational and Hong Kong-listed firms operating in Greater China, this

study yielded empirical support for the perceived achievement of capabilities in some dimensions of the IT infrastructure in the companies under study. It was found that the BPI construct was related to the reporting relationship between the CEO and CIO (CEO-CIO distance), and to the levels of senior management support. The dimensions of the ITC construct were also investigated and identified by an exploratory factor analysis (EFA). Associations were found between the selected organizational constructs and the ITC dimensions, except in two hypothesized relationships. Those between CEO-CIO distance and the ITC dimensions of data integration and training were not supported at the significance level of 0.05.

## INTRODUCTION

The last decades have seen generous investment in information technologies (IT) by companies around the world (Mitra, 2005; Strassman, 2002), and expenditures for IT infrastructure are estimated to account for almost 60% of a company's IT budget (Byrd & Turner, 2000). As IT has increasingly been perceived as a critical business enabler, companies are eager to take advantage of IT to support their operational and strategic objectives. Despite the huge investments made in IT in recent decades, the effects of such investment are less than satisfactory in terms of organizational benefits (Dasgupta, Sarkis & Talluri, 1999; Hu & Plant, 2001). One of the reasons for this paradox is the mismanagement of IT projects, as shown in a number of notorious examples of IT failures (Grossman, 2003; Spitze, 2001). Against this background, a series of sensible questions can be asked. What are the factors that would favorably affect the outcomes of such investments in IT initiatives? What are the proper types and amounts of IT investment a company should make? The first one points to many aspects of IT planning, implementation and management while the second relates to the proper investment decisions that need to be made, perhaps jointly, by the senior IT and business leadership (Ein-Dor & Segev, 1978; Ross & Weill, 2002).

The IT literature has presented many organizational factors relevant to the successful adoption of IT, ranging from project management issues to user involvement, and senior management support (Caldeira & Ward, 2002; Chatterjee, Grewal & Sambamurthy, 2002). Ignoring or mismanaging these factors may subject the projects to the risk of failure (Sumner, 2000). Among the many organizational issues that are said to affect the investment, deployment and use of IT, are IT governance-related factors. As defined by Sambamurthy & Zmud (1999), "IT governance arrangements refers to the patterns of authority for key IT activities in business firms, including IT

infrastructure, IT use, and project management" (p. 261). "The patterns of authority" could have many implications to the investment decisions, and running of the enterprise-wide IT initiatives. For instance, it may affect how much recognition and support an IT project could receive from the various levels of the organizations, and whether appropriate funding and resources would be allocated. In our article, the term "IT governance characteristics" focuses on the (a) reporting relationship between the chief executive and the IT leader, (b) the support and commitment of top management received by the IT projects, and (c) the support and commitment of top management on business process improvement. The former is used as a surrogate for the seniority of the IT leader as will be explained and discussed further in the next section. A review of the literature about enterprise IT and systems adoption indicates that many of the enterprise IT projects would not be successful unless the deployment of IT is accompanied by changes to business practices and processes (Davenport, 1998; Sumner, 2000; Wu, 2002). Thus, senior management's attitudes and commitment on business process changes would also be critical to the success of enterprise IT projects.

While many studies have discussed, and some empirically investigated the relationships among IT adoption, business process changes and such organizational factors as senior management support and the seniority of IT leadership, there is still a need for additional empirical evidence to support these concepts (Grover, Teng, Segars, & Fiedler, 1998). On the other hand, such studies mostly examined the relationships at a coarse level, and have not attempted to investigate what aspects of IT are affected by these IT governance factors and what aspects are not. It would be more interesting to investigate these associations with IT at finer granularities, that is, considering the various dimensions of IT. Therefore, the primary goals of this study are (a) to conduct a thorough literature review on the selected IT governance

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