Information Systems Capabilities and Their Effects on Competitive Advantages: A Study of Chinese Companies

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ABSTRACT

Over the past three decades, business managers and academic researchers have shown considerable interest in understanding how information systems (IS) can lead to competitive advantages for firms. Although in the United States researchers have found that IS competences lead to competitive advantages, it remains unknown whether firms working in emerging economies can capitalize on IS competence for competitive advantages. This article examines the moderating effect of the learning intensity of organizations on the relationship between IS competence and competitive advantages in 122 Chinese firms. Data were collected from a mailed survey of 122 information-technology (IT) managers. The results indicate that flexibility of IT infrastructure, IT business skills, and learning intensity have significant effects on competitive advantages. The learning intensity of organizations positively moderates the relationship between IS business skills and competitive advantages, but has no moderating effect on the relationship between the flexibility of IT infrastructure and competitive advantages.

KEYWORDS

Chinese Firms, Competitive Advantages, Emerging Economies, IS Competence, IT Business Expertise, IT Infrastructure

INTRODUCTION

A central concern in information systems (IS) strategy is understanding how organizations create value with information technology (IT) (Bakos & Treacy, 1986; Cash & Konsynski, 1985; Galliers & Leidner, 2014; Jarvenpaa & Ives, 1991; Leidner, Lo, & Preston, 2011; Porter & Miller, 1985; Seddon, 2014). In the 1980s, a growing body of literature argued that IT can be used to raise barriers to entry, increase bargaining power with suppliers and customers, offer new products and services, or change the rules of competition (McFarlan, 1984; Porter & Miller, 1985). Over the years, however, a number of scholars have noted that sustaining advantages through IT applications may be difficult, because such applications are eventually imitated and appropriated by competitors (Chae, Koh, & Prybutok, 2014; Clemons & Row, 1991; Mata, Fuerst, & Barney, 1995; Sambamurthy & Zmud, 1997). Thus, strategic IT applications eventually become strategic necessities for the continued existence of firms.

The recent popularity of the resource-based view (RBV) of firms has shifted the focus toward the internal resources and competences of firms. A growing body of research in this arena suggests that IT per se may not be the main source of firm-level competitiveness (Mata, Fuerst, & Barney, 1995; Powell & Dent-Micaleff, 1997); it is, rather, the management of information and technology...
(Sambamurthy & Zmud, 1997) and complementary resources (Clemons & Row, 1991; Dutta, 2015; Nevo & Wade, 2011) that determine the competitiveness of firms. In other words, how a firm utilizes its information systems, in combination with other firm-level resources, determines the competitive strength of the firm.

Using the RBV of firms, IS scholars indicate that firms are heterogeneous in developing and nurturing IS competences; therefore, they are likely to have a different potential in leveraging information systems for competitiveness (Barney, 1991, 1997; Onetti, Zucchella, Jones, & McDougall-Covin, 2012; Peteraf, 1993). For example, Mata, Fuerst, and Barney (1995) note that for sustaining and capitalizing IT benefits, a firm must possess managerial IT skills. Ross, Beath, and Goodhue (1996) posit the importance of IT groups that possess both technical and business problem-solving skills. Keen (1991) acknowledges the role of the commitment of top management in leveraging IT for competitiveness. Clemons and Row (1991) argue the benefits of complementary resources for long-term advantages.

Bharadwaj (2000) finds support for the claim that higher IS competence leads to better financial performance. Her results are supported by Santhanam and Hartono (2003). However, neither of these authors empirically validated the factors associated with IS competences. From an analytical point of view, therefore, it becomes difficult to ascertain the relative roles of the individual factors embedded in IS competences. In recent years, however, IS scholars and business practitioners have found that IS competences contribute to competitive advantages of businesses (Im, Grover, & Teng, 2013; Tallon, 2010). Various researchers have examined how IT interacts with complementary resources to create profitability differentials (Bhatt & Grover, 2005; Mithas, Tafti, Bardhan, & Goh, 2012; Tallon, 2010) and how IT returns are mediated by organizational processes such as customer satisfaction (Mithas, Krishnan, & Fornell 2005).

Though there are some exploratory studies in context of Chinese firms describing the relationship of IS and business advantages (Lou, Yang, & Sheng, 2012), these studies have primarily focused on the direct relationship between the use of information systems (IS) and business profitability (Wang, Zhang, & Zhu, 2007). Some other studies have explored the links between IS investment and business profitability (Lin, Liang, & Zeng, 2007). However, none of the above studies have explored the relationship between IS competence and business advantages. Our study is an attempt to specifically focus on the relation of commonly used categorization of IS competence—IS infrastructure flexibility, IS business expertise, and IS business relationship (Bhatt & Grover, 2005; Ross, Beath, & Goodhue 1996) with business advantages for Chinese firms. In addition, we investigate the moderating effect of the intensity of organizational learning on the relationship between IS competence and business advantages firms. An exploration of the moderating effect of the intensity of organizational learning on the relationship between IS competence and business advantages is important because organizational learning provides a foundation of competence development and business advantages (Drejer, 2000; Teece, Pisano, & Shuen, 1997).

Theoretical Background

Contemporary approaches in strategy have seen a shift from an industry-based competitive force analysis to the internal resources of the firms in explaining the advantages in firm performance (Amit & Shoemaker, 1993; Barney, 1986; Dierickx & Cool, 1989; Peteraf, 1993; Rumelt, 1987). In this approach, each organization is considered to consist of unique resources and capabilities, based on which organizations accrue rents (Teece, Pisano, & Shuen, 1997). Although an organization can readily buy superior resources from the market, it still needs to develop and deploy capabilities to convert those resources into services (Penrose 1959).

In essence, central to the theme of the RBV of the firm is the role of organizations in developing and deploying scarce resource capabilities (Wernerfelt, 1984). These capabilities are durable and provide long-term advantages to the firm, because the development and deployment of competences are path-specific and may take several years to evolve (Nelson & Winter, 1982), so it is difficult for
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