Resource-Based View, Knowledge-Based View and the Performance of Software Development Companies: A Study of Brazilian SMEs

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ABSTRACT

Software development companies face a globalized, highly competitive and turbulent environment, where efficiency, efficacy and innovation capacity are critical for survival. In this context, small and medium enterprises (SMEs) tend to suffer the most due to the scarcity of resources to which they are usually subjected and their dependence on a few more powerful customers. This paper describes the elaboration and test of a model that draws on the resource-based view and knowledge-based view to explain the differences in performance of software SMEs. The analysis of data collected from 265 Brazilian companies suggests that: absorptive capacity contributes significantly to the development of a company's stock of technological knowledge; the flexibility of the IT infrastructure, managerial capacity, and IT technological knowledge are strong predictors of software development performance; and organizational performance is positively influenced by software development performance and managerial capacity. The implications of these findings are then discussed.

Keywords: Absorptive Capacity, Brazil, Competitiveness, Knowledge-Based View, Resource-Based View, Software Development

INTRODUCTION

The global IT services and software development market has been consistently growing at an average yearly rate above 21%, and reached a total volume of US$ 884.5 billion in 2010 (ABES, 2011). Software development by itself has become a strategic sector in many countries, especially those with emerging economies (e.g., Arora & Gambardella, 2005, 2006; Heeks, 1999, 2007). While on the one hand, software
exports hold the promise of leveraging the growth of their gross domestic product (GDP), as happened in countries such as India, Taiwan and Ireland (Arora & Gambardella, 2005), on the other hand, the productivity and quality improvements from domestic software production may be transmitted to other sectors of the domestic economy through various input-output links (Mingzhi & Ming Gao, 2003, p. 62). In fact, the presence of an active software sector in a developing country has been show to generate positive economic impacts (e.g., employment creation, income generation, productivity improvement, human capital formation), economic externalities (e.g., growth in supply, related and consumer sectors), and social and organizational externalities (e.g., demonstrating the benefits of entrepreneurship and new organizational structures and processes) (Heeks, 2007).

In the US, Brazil, Canada, China, India, Finland, Ireland, Hungary, and many other nations, small companies with 50 or fewer employees represent up to 90% of all software organizations (ABES, 2011; Nirjar & Tylecote, 2005; Richardson & von Wangenheim, 2007). As most small and medium enterprises (SMEs), these firms usually have little access to financial, material and human resources and technical and managerial capacities, and depend on one or a few large customers with considerable bargain power (Mathiassen & Vainio, 2007; Nirjar & Tylecote, 2005). In addition, they are immersed in highly complex and turbulent business environments, where fast-paced changes in customer needs, market conditions and available technology demand from companies the capacity “to build, integrate and reconfigure resources to adapt to emerging needs and opportunities” (Mathiassen & Vainio, 2007, p. 521; Richardson & von Wangenheim, 2007). As a result, in comparison with large organizations, software SMEs need to rely more on certain externally focused competences (Cragg, Caldeira, & Ward, 2011; Parry et al., Kupiec-Teahan & Rowley, 2012). Accordingly, Richardson and von Wangenheim (2007) argue that “small companies aren’t just scaled-down versions of large firms,” as far as they tend to be extremely responsive and flexible, focus on market niches often disregarded by large companies, and rely on organizational and individual networks to access knowledge and other resources that support the development of more complex products and services. In this sense, organizational theories built from the perspective of a large enterprise may not hold for SMEs, and small and medium software companies in particular (Cragg et al., 2011).

In spite of the importance and uniqueness of software SMEs, the literature on potential antecedents of organizational performance and competitiveness is still underdeveloped. In particular, there is a lack of quantitative studies that statistically test models that are supported by well-developed theories. To address this gap in the scholarly literature, this study proposes and empirically assesses a model that explains variations in the overall performance software SMEs and in the outcomes of their development processes. The antecedents of process and organizational performance included in the model were derived from a review of previous research on information systems development success, and synthesize the factors that seem to be the most important to the competitiveness of software SMEs. The derivation of the hypotheses proposed in the study was guided by two traditional theoretical perspectives: the resource-based view (RBV) (Barney, 1991; Wernerfelt, 1984; Winter, 2003) and the knowledge-based view (KBV) (Grant, 1996; Lane, Koka, & Pathak, 2006; Lichtenthaler, 2009). The complementarity of the two approaches allows for a holistic view of the effects of knowledge and other firm capabilities on firm performance and competitiveness.

The contribution of our research is threefold. First, as stated, it expands current scientific knowledge on the antecedents of success in software SMEs. Moreover, by statistically testing antecedents that are often pointed out as the most critical to software development success, our study allows the comparison of
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