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ABSTRACT

Gaining sustainable competitive advantage (SCA) is a desire for almost every organization; however, acquiring such advantage is not an easy task. Many organizations implement information technology (IT) systems to be competitive in the market, and many researchers have examined the link between IT and SCA. Organizations need to focus not only on IT resources but also on how to manage these resources to be competitive in the marketplace. In this paper, a new model is proposed based on resource-based view and strategic alignment model. By linking strategic IT resources to alignment mechanisms, this model shows the ability of IT as a facilitator in gaining competitive advantage.

Keywords

Resource-based view, alignment, sustainable competitive advantage

INTRODUCTION

Organizations want not only to gain competitive advantages, but also want these advantages to last for the longest possible time. Many IT applications offer the possibility for competitive advantage, however, over time competitors will be able to imitate these applications; they become a prerequisite for doing business, and the competitive advantage only lasts a short time. Some IT applications may provide only limited advantages to the first movers before competitors copy these applications (Vitale, 1986). Many competitors are not only imitating the applications, but also hire the same contractors and outsource to the same vendors (Ross et al., 1996). Nevertheless, many firms like Wal-Mart and Federal Express have established that the ability "to apply IT to business opportunities" enhances their competitiveness (Ross et al., 1996). These firms have the ability to apply IT applications for continually changing business opportunities.

The objective of this paper is to investigate the concept of IT as a facilitator of competitive advantage. This investigation is accomplished by designing a new model based on the literature of the resource-based view (RBV) and the strategic alignment model (SAM) (Henderson & Venkatraman, 1999). This proposed model should be useful for both researchers and practitioners in that it will expand the researchers' mindset to include not only IT resources but also alignment mechanism when thinking of maintaining SCA, and offer practitioners a greater chance of gaining SCA.

Competitive advantage is defined as gaining a return-on-investment (ROI) above the industry average (Porter, 1985). According to (Barney, 1991), a competitive advantage is implementing an effective strategy not "simultaneously" implemented by current or future competitors. Sustained competitive advantage is implementing an effective strategy not "simultaneously" implemented by current of future competitors and those competitors being unable to "duplicate" the advantages of this strategy. "A competitive advantage is sustained only if it continuous to exist after efforts to duplicate the advantage have ceased" (Barney, 1991). We can say a firm has a SCA when it is implementing a strategy not implemented by its competitors at the same time, and where these competitors face "significant disadvantages" in getting the necessary resources to implement the strategy (Mata et al., 1995). We should keep in mind that most innovative application of IT will turn to strategic necessities that most companies need to have, and in rare conditions the innovative application will be SCA. Strategic necessity is the IT investment that is implemented not for competitive advantage but because it becomes an important part of doing business.

The rest of this paper is arranged as follows: Section 2 is a literature review; section 3 is an overview of RBV; section 4 is the proposed model; and finally we conclude in section 5 with a summary of results and future directions.

LITERATURE REVIEW

There are many studies that attempted to link IT resources and the firm's performance (Wade and Hulland, 2004). Ross et al., (1996) suggested that the combination of three IT assets, namely IT human resources, technology base, and relationship,

determine the quality of IT delivery, development, and support processes. They argued that the difference is not in the technologies itself but in these three IT assets and how they are implemented in the firm. Clemons and Row (1991) developed a resource-based theory arguing that differences in strategic resources among firms to develop IT innovation are important to maintain SCA. They proposed the "strategic necessity" hypothesis which means IT alone cannot lead to SCA; however it may assist other resources to acquire SCA. Neo (1988) asserted that "existing systems" are important for implementing IT for competitive intentions.

On the other hand, there are only few studies that found that IT has either negative effect on competitive advantage (Warner, 1987), or found that IT has no effect on performance (Venkatraman and Zaheer, 1990; Sager 1988). The majority of the findings show IT has positive impact on acquiring competitive advantage (Kettinger et al., 1994; Feeny and Ives 1990; Clemons and Weber, 1990; Li and Ye, 1999; Clemons and Row, 1991; Schwarzer, 1995; Bharadwaj, 2000)

Some researchers found that IT management is the important key to get SCA. For example, Ray et al. (2001) found that managerial IT skills improved performance of customer service; Mata et al. (1995) adopted resource-based theory to explore whether IT can lead to SCA, and if so, how this can be done. After discussing the theory assertions, the relationship between SCA and the five IT attributes: customer switching costs, access to capital, proprietary technology, technical IT skills, and managerial skills; the authors concluded that only managerial IT skills are likely to lead to SCA. In addition, Pereira (1999) tried to explore whether enterprise resource planning (ERP) technology provides SCA. He found that ERP could lead to SCA if high management skill is applied. Implementing ERP is not enough; changing the organizational culture toward team work, and changing business processes to fit ERP capabilities are required. Also, Waserman, Pagell, and Bechtel (1999) examined the source of competitive advantage from an across-functional perspective; they argued that high performance results from well managed organizational capabilities include tangible assets and intangible assets.

OVERVIEW OF RESOURCE-BASED VIEW

The focus of RBV is resources. Resources include everything in the organization that benefit both the customers and the organization. One classification of resources is tangible and intangible resources. These resources include communication within an organization, and manager's skills (Waserman, Pagell, Bechtel, 1999). Another classification is to human resources (e.g. chief executive commitment), business resources (e.g. suppliers relationships), and IT resources (computer hardware) (Thomas and Anne, 1997); IT resources are an important aspect for getting and maintaining SCA. Clemons and Row (1991) defined them as "any long-lived productive capability" which includes tangible assets such as databases and hardware, and intangible assets such as IT skills, patents, and managerial expertise.

The firm consists of different types of resources such as business and technical resources. In order for these resources to lead to a competitive advantage, they should possess unique characteristics, and in which case they become strategic resources. Also, these strategic resources are called "distinctive competence" (Hayes and Wheelright, 1984), "competitive advantage" (Porter, 1985), "asset stock accumulation" (Dierickx and Cool, 1989), "capabilities" (Stalk, Evan, and Schulman 1992), and "core capabilities" (Clark, Holloway, and Wheelwright, 1994). In order to understand these resources, we need to understand their unique characteristics. For example Barney (1991) listed four of them: value, rareness, inimitability and non-substitutability:

Rareness and heterogeneity mean that strategic resources are not the same among firms but are unique. A unique IT resource is a prospect source of competitive advantage and firms need to build their strategies around these unique capabilities. As Clemon and Row (1991) argue, "Information technology can lead to sustainable competitive advantage when it is used to leverage differences in strategic resources". Valuable resources are valuable when they help in implementing strategies that improve the firm's efficiency. Non-substitutability means that the resource should have no substitute in order to lead to SCA. If there is any other substitute that lead to the same strategy, the first resource loses its ability to lead to SCA. Immobility (inimitability) means these differences among resources should last for long time (Wernerfelt, 1984); if the resources are mobile, then they can easily be acquired by competitors, so SCA can not be obtained when strategic resources are evenly distributed (homogeneity) across competing firms and are highly mobile (Barney, 1991).

For example, the technological applications, such as knowledge bases, and inventory applications, all provide future opportunities; these applications might not be unique and they are easy to copy, but at the same time these applications might rely on unique infrastructure that competitors face a cost disadvantage in imitating such infrastructure (immobility). Thus a follower can copy the application of the first-mover, but will not be able to copy the original distinction that the system relies on for success (Feeny and Ives, 1990). According to Mata et al, (1995), "if a firm without a resource or capability does face a cost disadvantage in obtaining, developing, and using it compared to a firm that already possesses that resource (i.e., resource immobility), then the firm that already possesses that resource can have a sustained competitive advantage". In fact, if this differentiation of the infrastructure is really a unique advantage, it would be very hard for a competitor to challenge.

Resources uniqueness is not only critical, but also a firm's structure uniqueness is important as Clemons and Row (1987) argued that the advantage of the application comes from "unique structural characteristics of the innovating firm".

PROPOSED MODEL

The proposed model (figure 1) focuses on two important pillars; the first one is the dual ability of IT resources to support and to be supported by the corporate strategy, and to enable the IS application strategy. The Second pillar is implementing SAM (Henderson & Venkatraman, 1999) between the internal and external entities of the organization.
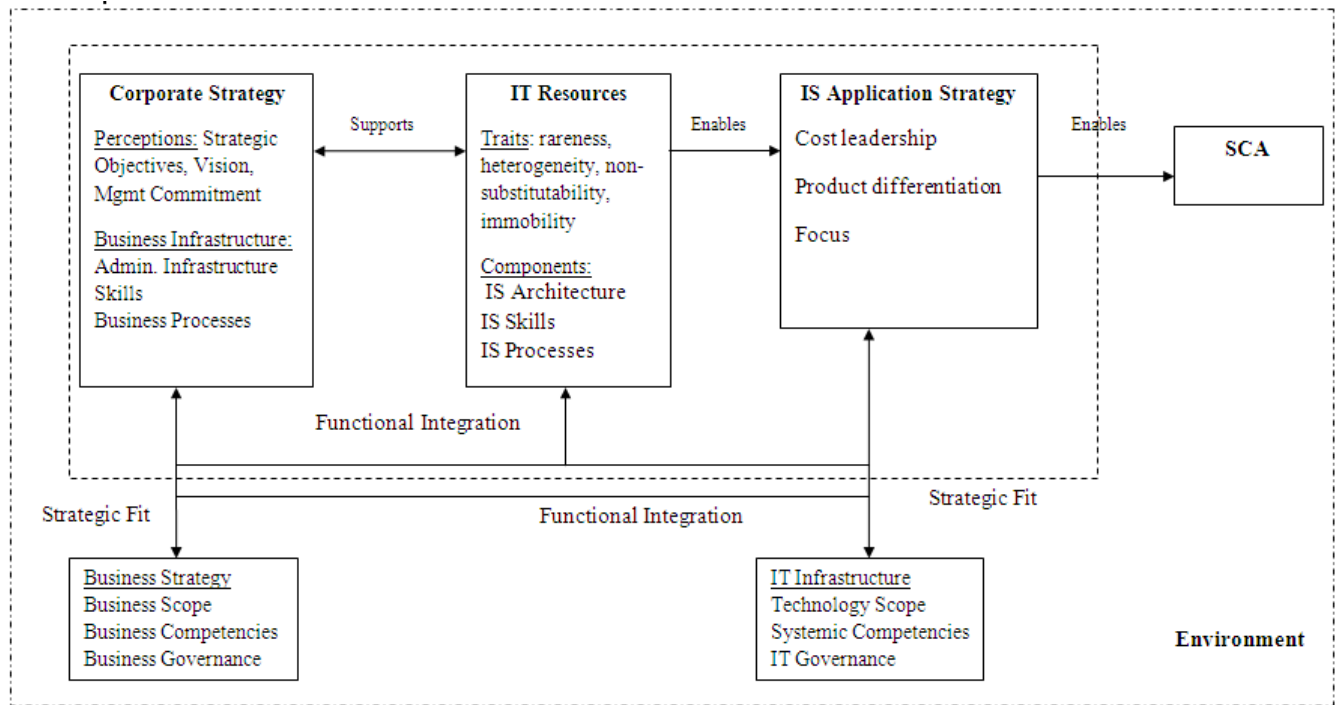
Figure 1: A Model Links IT Resources to Alignment Requirements and SCA

IT Resources and IS Application Strategy

IT is an important component of firms' strategy. The 'enable' link between IT resources and information systems (IS) application strategy in figure 1 means that strategic IT resources should enable important business strategies to acquire SCA. According to Porter (1985), in order to have a competitive advantage, there are three generic competitive strategies: cost leadership, differentiation, and focus. Other researchers expanded these three to include more strategies; for example, Barney (1997) noted that IT resources might be used to implement different types of strategies such as cost leadership, product differentiation, vertical integration, and strategic alliance strategies. If these resources are heterogeneous and immobile among competing firms, these resources have the potential for SCA. IT resources might have the ability to enable a unique strategy that lead to SCA. IT can be used to develop product quality, improve customer service, or decrease costs (Clemons and Row, 1991).

A clear cost leader is Wal-Mart; careful management of inventory systems at Wal-Mart led to minimize storage costs. When a company is applying differentiation strategy, it will offer unique products or services that are valued by its customers. Again, IT resources have the ability to enable this strategy to acquire SCA. For example, FedEx differentiates itself from other competitors. As Keller, Sternthal, and Tybout (2002) noted, "this type of differentiation would be supported by FedEx's heavily promoted tracking capabilities, which distinguish it not only from fax and e-mail, but from other overnight delivery carriers as well".

As a general example, e-commerce firms have new strategies to sustain competitive advantage by implementing one or more of Porter's strategies (Lumpkin et al., 2002); the authors noted that, "the Internet offers overall cost leaders new ability to reduce costs in primary activities such as marketing and support activities such as purchasing"; the authors gave differentiation example from Dell Computer Corporation; Dell allows customers to configure their own computers according

to their specifications. Finally, a focus strategy is implemented when the firm is focusing on a particular geographic market, product line, or group of customers. By implementing focus strategy, the Internet has opened new markets for small firms to compete.

IT Resources and Corporate Strategy

The 'support' link between IT resources and corporate strategy in figure 1 means strategic IT resources should support and supported by the corporate strategy to gain SCA. The model focuses on two important aspects of the corporate strategy. The first one is strategic objectives, and the second one is top-management commitment as important part of the firms' vision.

IT should be used to support firms' objectives, for example IT can be used to meet internal and external customers' business objectives. As Thomas and Anne (1997) suggested that IT affects firms' strategies that have IT implications; so many IT researchers support strong relationship between IT and firms' strategies and the firms should integrate strategic power with IT capabilities (Beath and Ives 1986). Firms implement new systems to raise efficiency (e.g. reduce cost); IT programs should support a firm's strategic objectives. It is required by many IT researchers and consultants that firms should integrate IT with overall strategic planning efforts (e.g. Bakos and Treacy, 1986; Beath and Ives, 1986; Clemons and Row, 1991; Holland et al., 1992).

Top-management needs to be involved in "establishing IT priorities". This is why many firms are forming teams of senior manager to act as "IT steering committees" which express organizational strategies at corporate/business level and specify how IT supports them. Henderson & Venkatraman (1999) noted the strong relationship between the chief executive officer (CEO) commitment and successful IT implementation. CEOs need to support the need of IT, and communicate their IT vision to the organization's strategy. Neo (1988) reported the "management vision and support" as a factor that differentiates between successful IT implementation and unsuccessful IT implementation. Benjamin et al. (1984) talked about the concept of "senior management entrepreneur" who deals with IT as the heart of business thinking; these managers want to know how the firms' strategic decisions are affected by IT.

For example, top management support makes the required IT resources available for implementation. Integrating IT strategy with business strategy and process will be easier. In addition, there will be a guarantee of continuous IT investment over time (Kettinger et al., 1994). Without top management support, important projects may fail. For example, in 1992, Eastman Kodak had decided to implement SAP for its global operations and financial management; the project had been discontinued after two years; "key manager, including the chief financial officer, never fully supported the project". (Pereira, 1999)

Required Alignment

The importance of IS alignment has been confirmed by many research such as Porter (1985), and Kang et al. (2008). IS alignment is the bridge that links the IS view to different views in the organization and its environment (Avial, Goepp, and Kiefer, 2009). Alignment is one of the important factors that assist the recognition of strategic IT application (Neo, 1988). The corporate strategic vision should be aligned with the IS strategic vision and the IT products and services need to be aligned with the firm's strategic objectives.

Based on SAM (Henderson & Venkatraman, 1999), strategic alignment consists of two main parts: strategic fit and functional integration. Strategic fit determines the need for any strategy between external and internal domains while functional integration recognizes the need for strategy inside either an internal or external domain. There are two 'functional integration' links in figure 1; one is internal among IT resources, IS application strategy, and corporate strategy; the other one is external between IT infrastructure and business strategy. In addition, there are two 'strategic fit' links in figure 1; the first one is between internal IS application strategy and external IT infrastructure. The other one is between internal corporate strategy and external business strategy. Business and IT integration is very important for firms to accomplish their competitiveness (Wegmann, 2003). Firms need to have functional integration at the internal level and external levels. Strategic fit should be maintained between internal IS application strategy and external IT infrastructure, and between internal corporate strategy and external business strategy.

As Clemons (1986) suggests, consistency between IS management and strategic planning is important not only for selecting the IT opportunities, but also for protecting these opportunities. IS scope and governance should be consistent with business scope and governance. This consistency should be at all organization levels: top management, middle management, and lower IS management. Top management, for example, provides the required long-term and strategic planning; middle management understands customer requirements and company opportunities; IS management understands the current IT resources, and its competences that are already in place. By doing so, IT applications will allow top-managers to discover and implement opportunities to react to strategic needs better, faster, and cheaper than their competitors.

CONCLUSION

IT resources alone are not likely to generate sustainable competitive advantage. To gain SCA, IT resources need to have the ability to support and be supported by corporate strategy. In addition, IT resources should have the ability to enable IS strategy. In order to guarantee consistency between business and IS strategies, functional integration is required between internal IS application strategy and corporate strategy. Moreover, strategic fit is also needed between internal IS application strategy and external IT infrastructure, and between business and corporate strategy. The proposed model is enhancing the RBV by including an alignment mechanism which is essential for every firm. This enhancement will broaden the researchers' scope in future research. Also, an empirical evaluation of this model is the required next step; future research is needed to answer the questions "how can IT resources enable IS strategy to acquire SCA?" At the same time, "how can IT resources support corporate strategy to be competitive?" And "how can alignment mechanism be implemented to help in achieving SCA?"

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