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Alignment of Information Systems Plans with Business Plans: The Impact on Competitive Advantage

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Abstract

Under the right circumstances, the effective use of information resources can lead to competitive advantage. A model hypothesizes that the importance of information systems in the organization affects participation in IS planning which promotes alignment and produces greater IS-based competitive advantage. A survey of 153 CIOs was analyzed using structural equation modeling. The data supported the model.

Introduction

Strategic applications are those which change a firm's product or the way it competes in its industry (King, 1978). IS based organizational strategies have been used to alter market forces by creating entry barriers, removing existing barriers, and forming alliances with important suppliers and customers.

Declining costs of information technology coupled with vast improvements in capabilities and capacities have helped to transform the IS function from a supportive role to such a strategic one. Many companies view information technology as a strategic resource that, properly exploited, can yield competitive advantage (King, 1986; McFarlan, 1984; Porter and Millar, 1985). IS has the potential to alter the company's strategic direction through information-based competitive strategies (Raghunathan and Raghunathan, 1990). To fulfill this expanded mission, researchers have suggested that the IS area must ensure its plans are aligned with the business mission, objectives, and strategies as outlined in the business plan.

Despite its acknowledged importance, empirical and theoretical studies have neglected the role of IS in creating competitive advantage (Jarvenpaa and Ives, 1991). To validate the importance of alignment, and thus the efficacy of the IS planning practices, it is necessary to establish its association with organizational outcomes. This study presents a model of alignment that leads to IS based competitive advantage. The model hypothesizes that the importance of information systems (as reflected by the information intensity of the value chain) increases participation in information systems planning. This promotes alignment which produces greater IS-based competitive advantage.

Information Intensity of the Value Chain

The value chain, first described by Porter (1985), is a series of activities used by the firm in the process of acquiring raw materials and processing and delivering products or services to the customer. These activities include inbound logistics, operations, outbound logistics, marketing and sales, and service (Stair, 1996). Information may be used directly within an activity, to link activities, or to monitor activities and provide feedback to management.

Every activity that adds value has a physical component and an information component. The information component is comprised of all steps involved in the manipulation, communication and presentation of data necessary to perform the activity (Porter and Millar, 1984). In key relationships this component can be used to develop competitive use of IS (Johnston and Carrico, 1988).

Where the information component is significant, information intensity is built into the firm's value chain. The value chain approach makes possible the proactive search for opportunities to use information strategically. Activities and functions in the value chain can be analyzed to examine linkages where IS can be deployed to create or enhance relationships and support the business thrust of the firm (Rockart and Morton, 1984; Earl, 1987). The extensiveness of the value chain is an indicator of its intensity and can be taken as a proxy for the importance of IS to the firm. This study adopts measures which have been previously tested to operationalize the construct information intensity of the value chain (VCHAIN in Figure 1) (Busch, Jarvenpaa, Tractinsky, and Glick, 1991; Teo, 1994).

Information Systems Planning

Information systems planning has been defined as the process of identifying a portfolio of computer-based applications to assist an organization in executing its business plans and realizing its business goals (Lederer and Sethi, 1991). IS executives have ranked the top two objectives of IS planning as the alignment of IS with business needs and the seeking out of competitive advantage from information technology (Earl, 1993). Strategic IS planning serves to support organizational strategies and to align the IS strategies with the business mission (King, 1978; Calhoun and Lederer, 1990).

IS executives' participation in business planning leads to increased understanding of top management's objectives (Lederer and Burky, 1988). Knowing top management's objectives is a common concern expressed by IS managers (Lederer and Mendelow, 1986). When IS managers are involved in the business planning process they are better informed of the firm's goals (Lederer and Mendelow, 1987). Lack of top management support, lack of appropriate planning processes, and the difficulty in assigning value to intangible benefits have been cited as strong organizational inhibitors to the adoption of IS (King, Grover, and Hufnagel, 1989).

CEO participation in IS planning requires regular communication with the IS executive (Lederer and Mendelow, 1988). Strategic use of IS is most likely to occur where the CEO possesses a basic understanding of the advantages and limitations of various information technologies (Earl, 1993). The CEO must become knowledgeable about IS opportunities and be willing to take advantage of them (Jones, Taylor and Spencer, 1995). Strategic applications may not be rated favorably when subjected to traditional economic analysis and are more likely to be funded if viewed by the CEO as strategic investments rather than costs (Reich and Benbasat, 1990). Executive attitudes about the importance of IS are shaped by the CEO's view of the importance of IS to the firm (Jarvenpaa and Ives, 1991). Lack of understanding and an absence of experience with information technology by the CEO leads to its underutilization and loss of opportunities (Bakos and Treacy, 1986). To exploit IS strategically, the CEO must view it as a means to gaining competitive advantage (Jarvenpaa and Ives, 1990). Executive involvement in IS planning is most important for strategic IS applications. (McFarlan, McKenney and Pyburn, 1983).

These ideas were used to operationalize two constructs: IS executives participate in business planning (ISPART) and the CEO participates in IS planning (CEOPART).

Alignment of IS Plans with Business Plans

The most pressing IS issue for senior management is the alignment of information systems strategy with business strategy. IS managers have ranked alignment as the second most important issue after planning (Hartog and Herbert, 1986). Strategic alignment of the IS plan with the business plan has been shown to be closely associated with organizational performance (Chan and Huff, 1993).

Business planning is a complex activity requiring periodic examination of mission statements, strategies, and resource commitments, and should be a participative process involving all key managers (Hax and Majluf, 1984). Alignment of the information systems function with the mission, objectives, and strategies of the firm is of first-order importance (Lederer and Mendelow, 1986; Henderson and Venkatraman, 1992).

Alignment of the IS plan with the business plan can be accomplished via transforming the business strategy set into an information systems strategy set (King, 1984). Alignment of the business plan with the IS plan can be accomplished by directly referencing specific IS applications and information technologies in the IS plan.

These ideas was used to operationalize two constructs: the IS plan is aligned with the business plan (ISALIGN) and the business plan is aligned with the IS plan (BPALIGN).

Using IS for Competitive Advantage

Use of IS to leverage the core resources of the firm has recently emerged as an important vehicle for competitive advantage (Clemons, 1991). The ability of IS to add economic value to the firm has been the subject of many case studies which have provided anecdotal evidence of the use of IS to lower costs, differentiate products or services, create switching costs to retain suppliers and customers, and impose barriers to market entry (McFarlan, 1984; Porter and Millar, 1985; Bakos and Treacy, 1986). For example, IS can be used to help a firm become a low-cost producer (Ives and Learmonth, 1984). Also, by providing customers software to reduce transaction costs and creating information partnerships with both customers and suppliers, companies can introduce switching-costs thereby improving the likelihood of retaining customers (Porter and Millar, 1985).

Strategic alignment is a necessary condition for superior financial performance (Das, Zahra, and Warkentin, 1991). IS planning practices which have a strategic impact should create competitive advantage and thus positively affect organizational performance. Such practices are, therefore appropriate measures for producing strategic alignment.

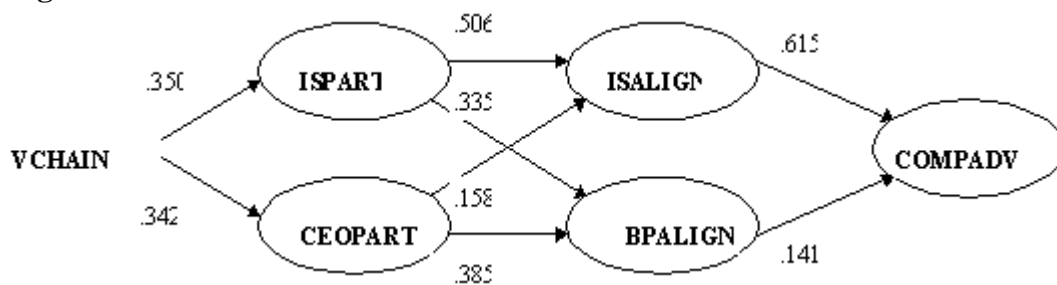
Utilizing Porter's generic business strategies, McFarlan (1984) presented several information-based strategies to: build barriers against new entrants; change the basis of competition; generate new products; build in switching costs; and, change the balance of power in supplier relationships. These actions may be as basic as achieving lower product costs or creating new products by differentiating their products and services by altering the information content (Cash and Konsynski, 1985; Johnston and Carrico, 1988).

Because tested measures were unavailable for the construct IS-based competitive advantage (COMPADV), questions were derived from Porter's (1980) competitive forces model and McFarlan's (1984) information based strategies.

The Model

The model shown in Figure 1 illustrates the causal relationships between the constructs of interest. Path coefficients were derived by structural equation analysis using EQS, a model multivariate analytical software.

Figure 1



Results of Analysis

Data for the model were obtained from 153 questionnaires completed by senior IS executives. Twenty-six questions were used to measure the six constructs. All indicator variables loaded highly with the constructs they measured and were significant at the .01 level. Chronbach's alpha coefficients exceeded a minimum value of .70 for each construct. Model fit was supported by two indices that, when in excess of .90, indicate a good fit for the structural model. The Non-Normed Fit Index and the Comparative Fit Index had values of .939 and .947 respectively. The ratio of chi-square to degrees of freedom for this study was 1.54. Values of less than 2.0 are generally accepted as indicators of good fit. The coefficient of determination for the dependent variable COMPADV was .49 indicating that over half of the variation in the variable was accounted for by the model. Taken together, these parameters support the hypothesized model.

References

References will be supplied by senior author upon request.