

2000

Strategic Implications of Information Systems Resources and Capabilities: A Competence-Based Model

T. Ravichandran

Rensselaer Polytechnic Institute, ravit@rpi.edu

Chalerm Sak Lertwongsatien

Rensselaer Polytechnic Institute, lertwc@rpi.edu

Follow this and additional works at: <http://aisel.aisnet.org/amcis2000>

Recommended Citation

Ravichandran, T. and Lertwongsatien, Chalerm Sak, "Strategic Implications of Information Systems Resources and Capabilities: A Competence-Based Model" (2000). *AMCIS 2000 Proceedings*. 360.

<http://aisel.aisnet.org/amcis2000/360>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2000 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Strategic Implications of Information Systems Resources and Capabilities: A Competence-Based Model

T. Ravichandran¹, Lally School of Management and Technology
Rensselaer Polytechnic Institute, Troy, NY 12180, ravit@rpi.edu

Chalerm Sak Lertwongsatien, Lally School of Management and Technology
Rensselaer Polytechnic Institute, Troy, NY 12180, lertwc@rpi.edu

Abstract

This paper examines the relationship between information systems capabilities and firm performance using resource-based theory as the theoretical lens. We identify and define three key constructs: IS resources, IS capabilities and IS competencies. We develop a research model that relates these constructs and firm performance. The basic premise of our model is that IS competencies have a direct impact on firm performance where as IS resources and capabilities are antecedents to IS competencies. Implications of this study for future research and practice are discussed.

Introduction

The question of whether Information Technology (IT) contributes to firm performance has been answered in many ways. An economic perspective has driven a large number of studies that have assessed the impact on IT investments on firm productivity, consumer value, process outputs and many other tangible and intangible indicators of firm performance. Despite the widely held belief that IT is critical for an organization's survival and growth, the findings of these studies have not convincingly attested this belief (Brynjolfsson, 1993). Questions about the payoff of IT investments continue to be raised even when more encouraging evidence about the business value of IT has emerged (Brynjolfsson and Hitt, 1993; Hitt and Brynjolfsson, 1996; Strassman, 1990). Other researchers, in examining the relationship between IT and competitive advantage, have adopted a strategic choice perspective. Numerous case studies such as American Airline's SABRE system, American Hospital Supply Corporation's (Baxter International) ASAP system, Merrill Lynch's CMA and McKesson's ECONOMOST have illustrated how firms derived competitive advantage by locking in customers and suppliers, erecting entry barriers for competitors and by lowering costs.

However, research aimed at understanding the mechanisms through which IT impacts firm performance has received much less attention. Recent studies have drawn from the resource based theory to argue that technology resources may not necessarily lead to competitive advantage since they can be easily duplicated by other firms (Mata, Fuerst, and Barney, 1995) and that

firm specific, intangible, valuable and difficult to imitate resources can only provide competitive advantage (Beath, Goodhue, and Ross, 1994; Grabowski and Lee, 1993; Sambamurthy and Zmud, 1997; Clemons and Row, 1991; Mata et al., 1991; Rockart et al., 1996; Bharadwaj, 1999). These studies have propose that IT managerial resources and IS capabilities might differentiate firms in terms of their market performance. This paper draws from an extension to resource-based theory, namely the competence-based perspective of strategy to examine how information systems resources and capabilities could provide competitive advantage. A basic premise of this paper is that a firm's competitive advantage can be explained by how competent it is in using information technology to transform its businesses and to improve its operational performance. In the rest of this paper, we develop the theoretical underpinnings of this premise and propose a model that interrelates IS resources, IS capabilities, IS competencies and firm performance.

Theoretical Background

The resource-based theory makes a distinction between *resources*, *capabilities*, and *competencies*. *Resources* are stocks of available factors of production owned or controlled by a firm (Amit and Schoemaker, 1993); these include fixed firm-specific inputs to the production process (Grant, 1991). Resources can be tangible or intangible (Hall, 1992). Intangible resources can be viewed as the "information-based resources," such as consumer trust, supplier relationships, management skills, distribution control, and reputation (Hall, 1992). *Capabilities*, in contrast, refer to a firm's capacity to deploy resources using organizational processes (Amit and Schoemaker, 1993). Capabilities can be viewed as the capacity of a team of resources to perform some task or activity (Grant, 1991), and are often developed in functional and sub-functional areas by combining physical, human and technological resources (Amit and Schoemaker, 1993). *Competencies* are the higher order capabilities that can be perceived as purposive combinations of firm-specific resources and capabilities that enable firms to accomplish a given organizational goal (Teece et al., 1997; McGrath et al., 1995), preferably in a manner superior to competitors (Hitt and Ireland,

¹ Both authors contributed equally to this paper. Address all correspondence to the first author.

1985). Competencies stem from the idiosyncratic combination of resources and capabilities. Over time, firms accumulate unique combinations of resources and capabilities which allow them to generate rents on the basis of distinctiveness (Selznick, 1957). Firms earn above-average returns only after they can differentiate from competitors (Petaraf, 1993). Therefore, in order to gain competitive advantage, firms must have some firm-specific competencies that are distinct as compared to its competitors. Distinctiveness does not necessarily mean having unique competencies; rather it could be the extent to which a firm might be better than its competitors in certain aspects.

Conceptual Model and Research Model

Figure 1 presents our research model. In this section we define the constructs in the model and develop the interrelationships among them.

Firm Performance

For the purpose of this paper, we define firm performance in terms of two dimensions: operating performance and market-based performance. *Operating performance* refers to the fulfillment of economic goals of the firm, measured by productivity and profitability. *Market-based performance* refers to the capability of firms in competing in the industry, measured by market share. Both these variables have been used extensively in the strategy and information systems literature to assess firm performance. Moreover, given our focus on competitive advantage in this study, these two dimensions of firm performance are appropriate as both directly relate to a firm's ability to generate rents in the market place.

IS Competencies

Competencies represent aspects that a firm excels in, preferably in comparison with its competitors (Hitt and Ireland, 1985; McGrath, et al., 1994). Excellence involves the capacity to accomplish the purpose firms choose to follow (McGrath, et al., 1995) in a manner superior to others (Prahalad & Hamel, 1990). It also implies that there is a high degree of convergence between the objectives a firm sets and its ability to achieve them. We define IS competence in terms of two broad dimensions - transformational competence and operational competence. *Transformational competence* refers to the degree to which a firm is capable of using IT to transform itself. Firms differ in the scope of transformation i.e. the breadth and complexity of IT-enabled changes that they can achieve and in the speed of transformation i.e. their agility in accomplishing these changes. While business transformation is important, it is equally critical that organizations are able to have a fair degree of control over the deployment and use of IT in order to ensure that effective IS services are available. *IS operational competence* is reflected in the extent to which business

operations of a firm are free from disruptions due to information systems related failures. The penetration of IT into core business processes has resulted in a critical dependence on information systems. In many cases, the smoothness of business operation relies on the IS department's ability to reliably maintain and run systems and in its ability to respond quickly in case of unexpected disruptions.

These two distinct IS competencies are critical for firms to compete in the market. Transformational competence enhances firms' abilities to create new business opportunities through IT innovations. For example, the ability to develop strategic application systems to redesign inter-organizational processes provided organizations such as American Airlines and McKesson significant competitive leverage. Similarly, IT-enabled innovations such as the cash management system transformed the nature of financial services offered by Merrill Lynch leading to significant shifts in the competitive position of the company in the financial services industry. Transformational competence should enable a firm to compete in the market by differentiating itself through such effects as reducing operation/production cost, adding customer value, and offering unique products/services, which in turn could result in increasing of financial benefit and growth of market share.

In the current business environment where organizations are increasingly dependent on their information systems IS operational competencies has become a strategic capability and a key differentiator among firms. Estimates indicate that an outage of critical production systems could result in hourly losses to the tune of \$6.5 million for a brokerage operation, \$2.6 million a credit-card sales authorization system and \$14,000 in automated teller machines (Radding, 1999). In the highly dynamic electronic commerce world, organizations could incur significant business losses due to system failures. Many financial analysts today explicitly assess a firm's IS operational competence in their valuations since systems failures can have a major effect on stock prices in the short run as was seen in the case of eBay, America Online and Charles Schwab & Co. indicate (Dalton, 1999). More importantly, the intangible business losses such as diminishing customer trust and loyalty associated with system outages could have a lasting effect on firm profitability and growth (Hall, 1992; Michalisin, Smith, and Kline, 1997).

In summary, we expect variations in IS competencies to be associated with variations in firm performance. This relationship is reflected in the following hypothesis:

H1: There is a positive relationship between IS competencies and firm performance.

IS Resources

Three board category of IS resources have been identified namely, human resources, technology resources and relationship resources. We synthesized the IS literature to identify attributes of these resources that have been emphasized in the past research as being critical for effective IS performance (e.g., Beath, et al., 1994; Sambamurthy and Zmud, 1997; Clemons and Row, 1991; Mata et al., 1991; Rockart et al., 1996; Ross et al., 1996; Feeny and Willcocks, 1998; Bharadwaj, 1999). These include the skills of IS human resource, the sophistication of the IT infrastructure, and the quality of the partnerships between IS and key external and internal constituents.

IS human resource skills refer to the knowledge and experience required to effectively perform IS functions (Lee et al., 1995a; Ross et al., 1996; Feeny and Willcocks, 1998). The skills of IS human resource also reflect firm-specific knowledge, experiences, and personal relationships (Coff, 1997). The specificity of human resource may result from a variety of factors. For example, when employees are used in exceptional circumstances or possibly interdependent arrangements, they tend to acquire more firm specific knowledge and expertise (Becker, 1964). Furthermore, the longer the employees work in an organization, the more likely they will acquire firm specific knowledge.

It should be obvious that firms with competent IS staff are more likely to perform IS activities efficiently and effectively and be able to leverage IS applications for competitive advantages, than firms with lesser skilled IS personnel (King et al, 1989; Teo & King, 1997). Good technical skills are required to bridge old and new systems, to deliver data across locations and applications, and to recognize opportunities to apply new technologies as they become available. Business skills are required to convince users that the IS department understands their goals, concerns, languages, and processes and are able to help them achieve those goals. Managerial and interpersonal skills are critical for effective task execution and coordination in many work setting and more so in IS projects where coordination requirements are particularly high.

IT infrastructure sophistication refers to the extent to which the infrastructure is capable of responding to the demands placed on it by the organization (Ducan, 1995; Keen, 1991). IT infrastructure sophistication is reflected by the connectivity, compatibility, speed and appropriateness of IT infrastructure (Duncan, 1995). Sophistication of IT infrastructure affects the firm's ability to utilize IT to enhance its performance. Platform readiness for new software, easy access to relevant data, and the presence of necessary networking systems all affect cost and development time (Rockart and Hofman, 1992). Firms having the right tools and technology for implementing and operating IT applications to support the present and future business demands provide a degree of

freedom for the business to respond to environmental shifts (Sambamurthy and Zmud, 1997).

Internal partnership quality pertains to the congruity of goals and actions of Information Systems Department (ISD) and business units (Henderson, 1990). Key traits of internal partnership quality include benefit and risk sharing, commitment, trust, mutual dependence, and joint planning (Anderson and Narus, 1990; Henderson, 1990; Lee and Kim, 1999). The information systems department is continually involved in technology transfer processes to line business units (Cooper and Zmud, 1990). As a result, there is a need for shared knowledge and understanding between IS and line business managers, which can be established through partnerships (Henderson, 1990; Nelson and Coopride, 1996). *Vendor partnership quality* is defined as how well the outcome of a partnership between the information systems department and the service providers matches participants' expectation (Lee and Kim, 1999). The IS literature has pointed to the link between IT success and the quality of vendor partnership. For example, Klepper and Jones (1998) point out that partnerships with outsourcing vendors may help a firm to reduce unanticipated changes in contracts and investments that might threaten the success of IT projects. According to a case study of United Services Automobile Association (USAA) (Lasher et al., 1991), the success of a large-scale image processing project was a direct result of the strategic partnership between IBM and USAA. These partnerships allowed the two organizations to share risk, bring together complementary knowledge and resources, and create a basis for a continuing productive relationship.

IS human resource skills, IT infrastructure, and relationship quality are important factors for developing IS competencies. These resources are critical for the information systems department to carry out its functions effectively, which in turn is the basis for competence development. Therefore, we propose the following relationship:

H2: There is a positive relationship between superior IS resources and IS competencies.

IS Capabilities

We adopt a process perspective in defining IS capabilities. By this we mean, a firm's capability in a functional area is largely determined by the quality and sophistication of its processes. We identify four IS capabilities: *IS planning, systems development, IT support and systems operation*. These capabilities relate to the core IS activities of planning, systems development, systems support, and systems operation (Feeny et al., 1996; Tavakolian, 1989). A sophisticated IS planning process reflects a high degree of convergence between IS and line business managers on the priorities for IS activities (Boynton et al., 1994). This convergence enables the synergistic integration of IT and business knowledge (Boynton et al., 1994), which in turn improves

the identification and development of strategic IT applications (Reich and Benbasat, 1990). IT applications are the core element in process innovations or for creating the functionality that makes products valuable to customers (Quinn et al., 1996). This requirement demands that firms rapidly deliver IT based-products in short development cycle times and within assigned budgets (Hofman and Rockart, 1994; Clark et al., 1997). Firms with a capable systems development process are more likely to meet such demands. At all organizational levels and in all divisions, there is a need for managing the use of technology. With mature support processes an IS department should be able to supply and educate users with sufficient IT information. IT can not yield the maximum benefits to firms unless it is operated and utilized properly. Since the main drivers of the strategic IT systems are end-users, the success of those systems is partly dependent on how well an ISD supports and educates users. Furthermore, systems operation capability reflected by activities such as emergency planning, backup-recovery, security control, performance tuning, and maintenance, and use of technology for systems control becomes an important enabler for providing competent IS services to the organization. In sum, four critical dimensions of IS capabilities are required for IS competence development. The extent to which these process attributes are established is likely to determine the firm's ability to utilize IT to support and facilitate business transformations and operations effectively. Therefore, we propose the following relationship:

H3: There is a positive relationship between IS capabilities and IS competencies.

Discussion

In this paper we developed a theoretical model that delineated three key constructs: IS resources, IS capabilities and IS competencies. We drew from the resource-based theory and its extensions to interrelate these constructs. Our research model highlights that it is not sufficient to develop superior functional capabilities as reflected by superior IS resources and capabilities. What is likely to differentiate firms will be their ability to deploy these resources to transform the business while at the same time reduce the risk of business losses due to system failures. While we examined the direct impact of resources and capabilities on competencies in this paper, it is likely that many organizational factors could moderate these relationships. Additional conceptual framework is required to describe factors that can influence the relationship between IS resources and capabilities, and IS competencies.

One potential factor is strategic intent (Hamel and Prahalad, 1989). While IS resources and capabilities are necessary determinants, IS competencies do not emerge automatically merely from possessing superior IS resources and capabilities. Strategic intent guides a firm

toward specific actions by enabling a firm to channelize resources and capabilities toward a defined direction, and by focusing competencies toward the organizational goals (Hamel and Prahalad, 1989). As a continuation of this research, we are examining the moderating effects of a firm's strategic intent on the relationships between IS resources, capabilities and IS competencies.

The research reported in this paper has both theoretical and practical implications. From a theoretical standpoint, this research synthesizes previously disparate studies in the area of IS management (Ross et al., 1996; Rockart et al., 1996; Feeney and Willcocks, 1999) to develop a model that explains IS performance and its relationship with firm performance. This paper has also differentiated the three concepts: resources, capabilities, and competencies, particularly in the context of IS. Though these three concepts have been frequently used in the IS literature, only limited studies have attempted to define and operationalize the concepts properly. We employ the resource-based theory to develop the definitions of and the dimensions underlying the three concepts. While the three concepts are interrelated and overlapped to some extent, they are defined and operationalized distinguishably in this study. IS resources are defined as factors that are "owned" by firms that serve as a basis for performing IS activities. IS capabilities are characterized by the quality and sophistication of key IS processes. Finally, IS competencies are perceived as reflective of a firm's ability to accomplish key business objectives through the use of information technology.

From a practical standpoint, the model could serve as a basis for IS performance evaluation. While a number of performance evaluation models have been proposed, most of them assess IS performance in few functional areas such as systems development or planning or systems acceptance and use. The model presented here provides a more comprehensive treatment of IS performance measurement and thus can serve as a basis for developing performance assessment tools for managerial use.

References

- Amit, R. and Schoemaker, P.J.H. "Strategic Assets and Organizational Rent," *Strategic Management Journal* (14:1), 1993, pp. 33-46.
- Anderson, J.C. and Narus, J.A. "A Model of Distributor Firm and manufacturer Firm Working Partnerships," *Journal of Marketing* (54), January 1990, pp. 42-58.
- Beath, C.M., Goodhue, D.L., and Ross, J.R. "Partnering for Business Value: The Shared management of the IS Infrastructure," *Proceedings of the 15th International Conference on Information Systems*, Vancouver, Canada, 1994, pp. 459-460.

- Becker, G.S. *Human Capital*, Columbia University, New York, 1964.
- Bharadwaj, A. "A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation," *MIS Quarterly*, December 1999.
- Boynton, A.C., Zmud, R.W., and Jacobs, G.C. "The Influence of IT Management Practice on IT Use in Large Organizations," *MIS Quarterly*, September 1994, pp. 299-318.
- Brynjolfsson, E. "The Productivity Paradox of Information Technology," *Communications of the ACM* (36:12), December 1993, pp. 66-77.
- Brynjolfsson, E. and Hitt, L. "Is Information Systems Spending Productive? New Evidence and New Results," *Proceedings of the 14th International Conference on Information Systems*, Orlando, FL, 1993.
- Clark, C.E., Cavanaugh, N.C., Brown, C.V., and Sambamurthy, V. "Building Change-Readiness Capabilities in the IS Organization: Insights From the Bell Atlantic Experience," *MIS Quarterly*, December 1997, pp. 425-455.
- Clemons, E.K. and Row, M. "Sustaining IT Advantage: The Role of Structural Differences," *MIS Quarterly* (15:3), September 1991, pp. 275-292.
- Coff, R.W. "Human Assets and Management Dilemmas: Coping with Hazards on the Road to Resource-Based Theory," *Academy of Management Review* (22:2), 1997, pp. 374-402.
- Cooper, R.B. and Zmud, R.W. "Information Technology Implementation Research: A Technological Diffusion Approach," *Management Science* (36:2), February 1990, pp. 123-139.
- Dalton, G. "Schwab Stays Focused," *Informationweek*, March 8, 1999, pp. 32-36.
- Duncan, N.B. "Capturing Flexibility of Information Technology Infrastructure: A Study of Resource Characteristics and their Measure," *Journal of Management Information Technology* (12:2), Fall 1995, pp. 37-57
- Feeny, D., Earl, M., and Edwards, B. "Organizational Arrangements for IS: Roles of Users and Specialists," in *Information Management: The Organizational Dimension*, M.J. Earl (ed.), Oxford University Press, 1996, pp. 231-246.
- Feeny, D.F. and Willcocks, L.P. "Core IS Capabilities for Exploiting Information Technology," *Sloan Management Review*, Spring 1998, pp. 9-21.
- Grabowski, M. and Lee, S. "Linking Information Systems Application Portfolios and Organizational Strategy," in *Strategic Information Technology Management: Perspectives on Organizational Growth and Competitive Advantage*, R. Banker, R. Kauffman, and M.A. Mahmood (eds.), Idea Group, Harrisburg, PA., 1993, pp. 33-54.
- Grant, R.M. "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation," *California Management Review*, Spring 1991, pp. 114-135.
- Hall, R. "The Strategic Analysis of Intangible Resources," *Strategic Management Journal* (13), 1992, pp. 135-144.
- Hamel, G. and Prahalad, C.K. "Strategic Intent," *Harvard Business Review* (67:3), 1989, pp. 63-76.
- Henderson, J.C. "Plugging into Strategic Partnerships: The Critical IS Connection," *Sloan Management Review*, Spring 1990, pp. 7-18.
- Hitt, L. M. and Brynjolfsson, E. "Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Value," *MIS Quarterly*, June 1996, pp. 121-142.
- Hitt, M.A. and Ireland, R.D. "Corporate Distinctive Competence, Strategy, Industry and Performance," *Strategic Management Journal* (6), 1985, pp. 273-293.
- Hofman, J.D. and Rockart, J.F. "Application templates: Faster, Better, and Cheaper Systems," *Sloan Management Review*, Fall 1994, pp. 49-60.
- Keen, P.G.W. *Shaping the Future: Business Design through Information Technology*, Harvard Business School Press, Cambridge, MA, 1991.
- King, W.R., Grover, V., and Hufnagel, E.H. "Using Information and Information Technology for Sustainable Competitive Advantage: Some Empirical Evidence," *Information and Management* (17), 1989, pp. 87-93.
- Lasher, D.R., Ives, B., and Jarvenpaa, S.L. "USAA-IBM Partnerships in Information Technology: Managing the Image Project," *MIS Quarterly* (15:4), 1991, pp. 551-565.
- Lee, J. and Kim, Y. "Effect of partnership Quality on IS Outsourcing Success: Conceptual Framework and Empirical Validation," *Journal of Management Information Systems* (15:4), Spring 1999, pp. 29-61.

- Lee, D.M.S., Trauth, E.M., and Farewell, D. "Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic/Industry Investigation," *MIS Quarterly*, September 1995a, pp. 313-340.
- Mata, F.J., Fuerst, W.L., and Barney, J.B. "Information technology and Sustained Competitive Advantage: A Resource-Based Analysis," *MIS Quarterly*, December 1995, pp. 487-505.
- Michalisin, M.D., Smith, R.D., and Kline, D.M. "In Search of Strategic Assets," *The International Journal of Organizational Analysis* (5:4), October 1997, pp. 360-387.
- McGrath, R.G., Venkataraman, S., and MacMillan, I.C. "The Advantage Chain: Antecedents to Rents From Internal Corporate Venture," *Journal of Business Venturing* (9:5), September 1994, pp. 351-370.
- McGrath, R.G., MacMillan, I.C., and Venkataraman, S. "Defining and Developing Competence: A Strategic Process Paradigm," *Strategic Management Journal* (16), 1995, pp. 251-275.
- Nelson, K.M. and Coopridge, J.G. "The Contribution of Shared Knowledge to IS Group Performance," *MIS Quarterly*, December 1996, pp. 409-432.
- Petaraf, M.A. "The Cornerstones of Competitive Advantage: A Resource-Based View," *Strategic Management Journal* (14), 1993, pp. 179-192.
- Prahalad, C.K. and Hamel, G. "The Core Competence of the Corporation," *Harvard Business Review* (68:3), 1990, pp. 79-91.
- Quinn, J.B., Baruch, J., and Zien, K.A. "Software-Based Innovation," *Sloan Management Review*, Summer 1996, pp. 11-24.
- Radding, A. 1999. Disaster!, *Computerworld*, May 31: 70-73
- Reich, B.H. and Benbasat, I. "An Empirical Investigation of Factors Influencing the Success of Customer-Oriented Strategic Systems," *Information Systems Research* (1:3), September 1990, pp. 325-347.
- Rockart, J.F. and Hoffman, J.D. "Systems Delivery: Evolving New Strategies," *Sloan Management Review*, Summer 1992, pp. 57-64.
- Rockart, J.F., Earl, M., and Ross, J.W. "Eight Imperatives for the New IT Organization," *Sloan Management Review*, Fall 1996, pp. 43-55.
- Ross, J.W., Beath, C.M., and Goodhue, D.L. "Develop Long-Term Competitiveness through IT Assets," *Sloan Management Review*, Fall 1996, pp. 31-42.
- Sambamurthy, V. and Zmud, R.W. "At the Heart of Success: Organizationalwide Management Competencies," in *Steps to the Future: Fresh Thinking on the Management of IT-Based Organizational Transformation*, C. Sauer, P.W. Yetton, and Associates (eds.), Jossey-Bass Publishers, San Francisco, CA, 1997, pp. 143-163.
- Selznick, P. *Leadership and Administration*, New York, 1957.
- Strassmann, P.A. *The Business Value of Computers*, Information Economics Press, Conn., 1990.
- Tavakolian, H. "Linking the Information technology Structure with Organizational Competitive Strategy: A Survey," *MIS Quarterly* (13:3), September 1989, pp. 309-317.
- Teece, D.J., Pisano, G., and Shuen, A. "Dynamic Capabilities and Strategic Management," *Strategic Management Journal* (18:7), 1997, pp. 509-533.
- Teo, T.S.H. and King, W.R. "Integrating Between Business Planning and Information Systems Planning: An Evolutionary-Contingency Perspective," *Journal of Management Information Systems* (14:1), Summer 1997, pp. 185-214.

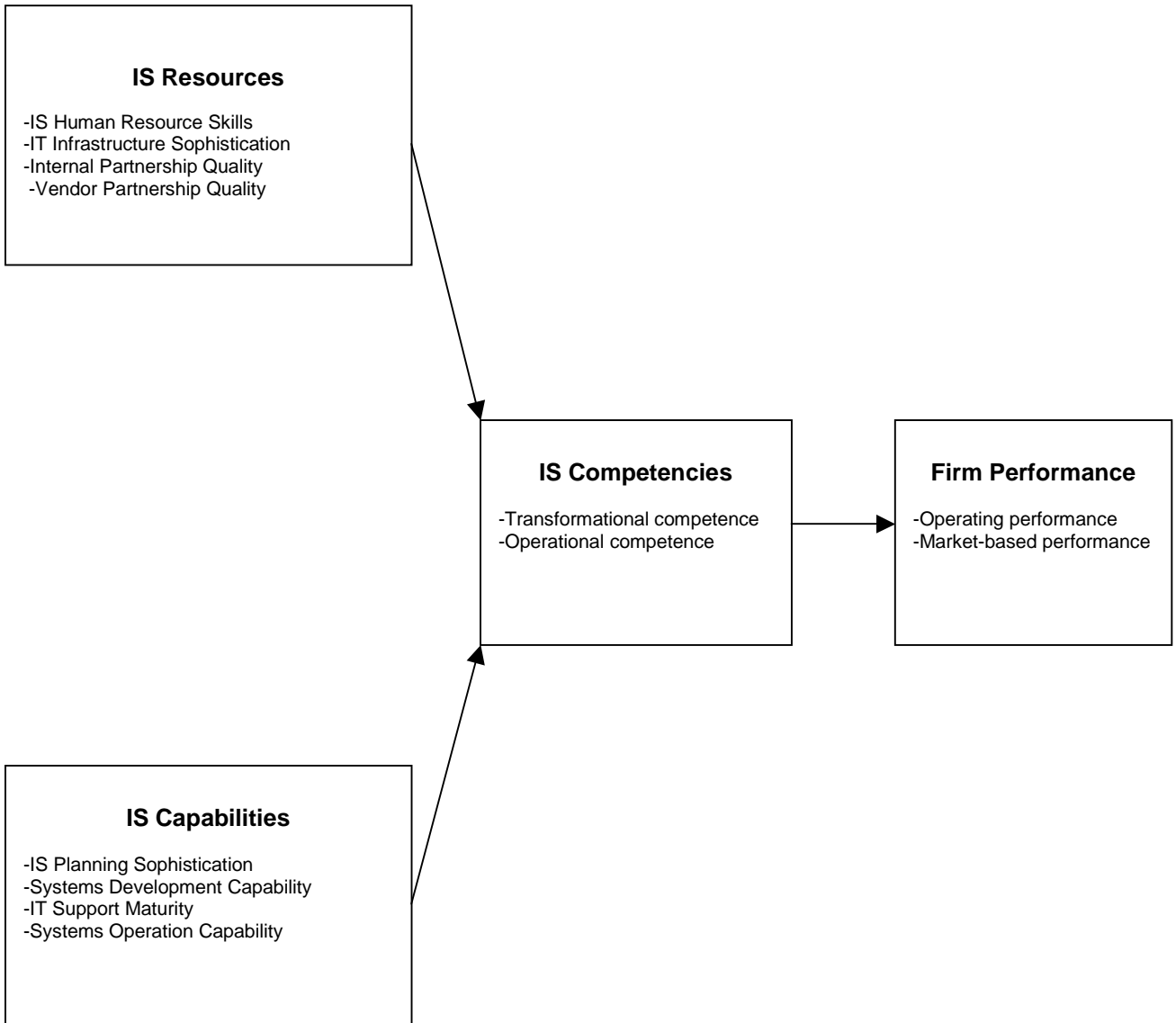


Figure 1: Research Model