

A Process-oriented Assessment of the Alignment of Information Systems and Business Strategy: Implications for IT Business Value

Paul P. Tallon

Kenneth L. Kraemer

Center for Research on Information Technology and Organizations,
Graduate School of Management,
University of California, Irvine, CA 92697-4650

Phone: (714) 856-2056
Fax: (714) 824-8469
email: PTallon@uci.edu

*For Submission to the Fourth Americas Conference on Information Systems
(AIS), Baltimore, Maryland, August 14-16, 1998*

Information Systems Strategy and Implementation Mini-Track

Word Count: 1,694
(Excluding References)
Working Paper: ITR-139

July 20, 1999

*A Process-oriented Assessment of the Alignment of Information Systems and Business Strategy: Implications for IT Business Value**

ABSTRACT

It has been argued that organizations' inability to realize sufficient value from their IT investment is due in part to an absence of strategic alignment. In an attempt to formally evaluate this notion, we introduce a conceptual model containing the determinants (management practices) and consequences (IT business value) of strategic alignment. Using this model, we develop a process-level perspective on strategic alignment centered around the processes in the value chain. Finally, we describe a series of three survey instruments designed to evaluate strategic alignment and its impact on IT business value.

* A longer version of this paper is available from the first author.

1. Introduction

Although business executives continue to voice concern for information technology (IT) business value, defined as the contribution of IT to firm performance, strategic alignment or the alignment of information systems (IS) strategy with business strategy, has emerged as the single most important issue facing business executives in Europe and North America (Computer Sciences Corporation 1996). Although IT business value and strategic alignment are often treated as separate issues, researchers have linked both issues by arguing that organizations' inability to realize sufficient value from their IT investments is due in part to an absence of strategic alignment (Henderson and Venkatraman 1993; Woolfe 1993). If, as these researchers suggest, payoffs from IT investment are a function of strategic alignment, then any attempt to measure or otherwise influence IT business value must consider the extent to which IS and business strategies are aligned. Similarly, if an organization tries to reposition or change its strategic alignment, some consideration must be given to the subsequent shift in the payoffs the organization receives from its IT investment.

With the exception of some preliminary work by Chan, Huff, Barclay and Copeland (1997), the empirical IS literature has neglected to examine the implications of strategic alignment for IT business value. In an effort to address this situation, we introduce a conceptual model containing management practices (representing the determinants of strategic alignment) and IT business value (representing the consequences of strategic alignment). By modeling strategic alignment in this way, we hope to show how senior executives can use management practices around the concept of strategic alignment to deliver improved levels of IT business value and firm performance. We describe how this model can be evaluated using a process-oriented perspective on strategic alignment centered around the processes in the value chain. Finally, using the notion of dynamic capabilities (Teece, Pisano and Shuen 1997) and the resource-based view of the firm (Penrose 1959; Wernerfelt 1984), we provide some additional insights into how strategic alignment can be evaluated in practice.

2. Defining Strategic Alignment

We consider strategic alignment under two headings, “technology shortfall” and “strategy shortfall”. As shown in Figure 1, technology shortfall arises when an organization's IT capability fails to provide adequate support for its business strategy. As a result, the organization is held in check by its IT capability. Strategy shortfall, on the other hand, arises when an organization's business strategy fails to take full advantage of its existing IT capability. For instance, business opportunities are present in the environment for which technological support is available, yet for some reason the business strategy has neglected to take full advantage of these opportunities.

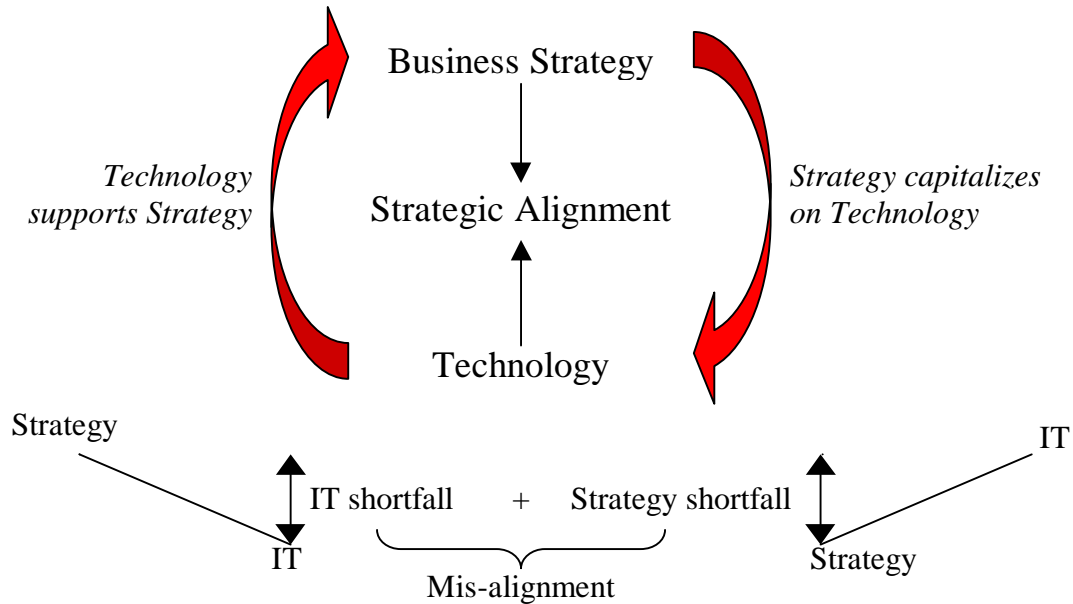


Figure 1. Exploring the Dimensions of Strategic Alignment

From Figure 1, we define strategic alignment as *the extent to which the IS strategy supports, and is supported by, the business strategy*. This definition serves to focus our research efforts on activities central to the implementation of IS and business strategies. This facilitates a more dynamic assessment of strategic alignment than if we were just to focus on strategic objectives or strategic planning activities, as has been the case with much of the existing literature in this area.

3. A Conceptual Model of Strategic Alignment

Consistent with prior research on strategic choice (Child 1972), previous studies have portrayed the “content” of alignment as a series of intersecting and mutually consistent choices across four domains comprising *business strategy*, *IS strategy*, *organizational infrastructure and processes* and *IS infrastructure and processes*. While this answers the “what is alignment” question, it does not allow consideration of strategic alignment as a continuous process, nor does it consider the management practices used in moving an organization towards alignment. As described by Venkatraman, Henderson and Oldach (1993), management practices act as “alignment mechanisms” that deal “with the management challenge of translating the strategic choices made . . . into administrative practices and operational decision-making”(p. 144). Essentially, these alignment mechanisms are tools that enable IS and organization management to oversee and manage the content and process of alignment. Examples include involving business executives in IS planning (Broadbent and Weill 1993), promoting dialogue between IS and business executives (Keen 1991), or the creation of a shared IT vision and mutual recognition of business and IS objectives (Reich and Benbasat 1996).

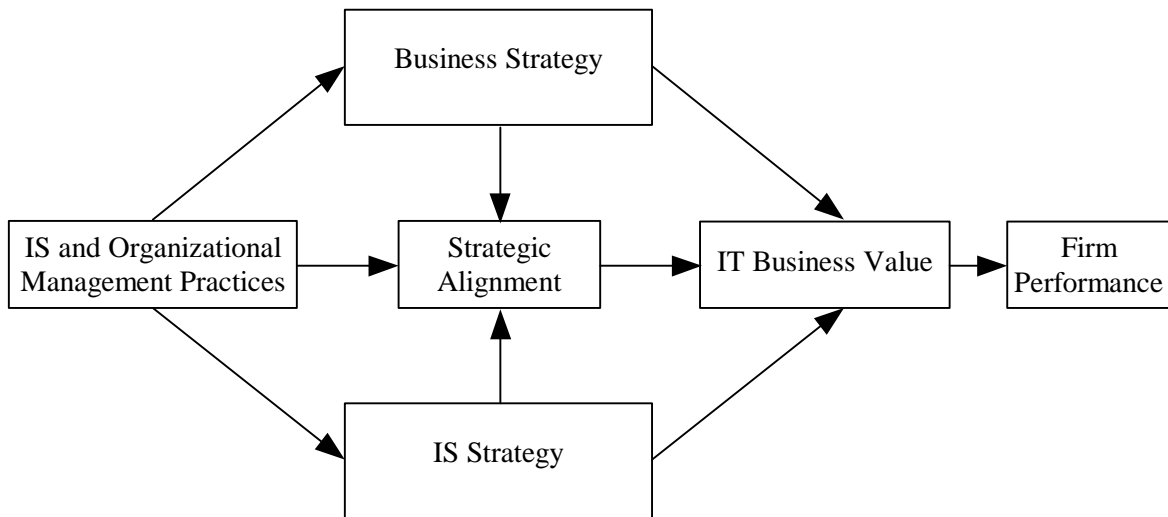


Figure 2. Conceptual Model of Strategic Alignment

Using the above arguments, we construct a conceptual model containing the determinants (management practices) and consequences (IT business value) of strategic alignment (Figure 2). In the next section, we describe how a process-level perspective can be used to evaluate this model in practice.

4. Developing a Process-level Perspective

Various researchers have highlighted the potential benefits from adopting a process-oriented perspective on IT business value (Crowston and Treacy 1986; Bakos 1987). It has been argued that the first order impacts of IT investment should be measured at lower operational process levels within the organization, since this is typically the level at which the technology is implemented (Barua, Kriebel and Mukhopadhyay 1995). This supports the argument that firms derive value from their IT investment through its impacts on intermediate business processes (Mooney, Gurbaxani and Kraemer 1995). These intermediate processes include a wide range of managerial and operational processes that comprise a firm's value chain (Porter 1985). If we decide to adopt process-level measures of IT business value, then to be consistent, we should also consider adopting process-level measures of strategic alignment.

There are a number of benefits associated with process-level measures of strategic alignment. First, process-level measures are likely to yield greater insights into where the organization is mis-aligned, helping to isolate value bottlenecks within the organization. If strategic alignment was measured at the firm-level, IS and business executives might simply know that their organization was mis-aligned, but would not have sufficient information to isolate the source of the mis-alignment. Second, researchers have argued that it is difficult to measure strategy at the firm-level because of its multifaceted nature (Hambrick 1980; Ginsberg 1984). If we adopted a process-level perspective instead, we could represent strategy as a series of activities¹ or routines within each business process. Describing

¹ Porter (1985) defines *value activities* as the "physically and technologically distinct activities a firm performs. These are the building blocks by which a firm creates a product valuable to its buyers. Value activities are . . . the discrete building blocks of competitive advantage"(p. 38).

strategy in this way as a series of intersecting activities fits neatly within the definition of a process as a sequence or ordered set of activities (Davenport 1993). This means we avoid having to force-fit business strategy into one of the established generic strategy types. In summary, measuring IS and business strategy at the process-level allows us to take a closer look at key activities within each process configuration, and more importantly, to observe the extent to which IT is successful at supporting those activities. Consequently, there is considerable support for adopting a process-level perspective on strategic alignment.

5. Combining Dynamic Capabilities with the Resource-Based View

If we consider organizational capabilities as an expression of business strategy (Grant 1991), an opportunity for strategic alignment will arise if technological resources are directed towards the maintenance, improvement and creation of capabilities that underlie the business strategy. Capabilities are defined by Amit and Schoemaker (1993) as “a firm’s capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end”(p. 35). Similarly, Grant (1991) argues that “while resources are the source of a firm’s capabilities, capabilities are the main source of its competitive advantage” (p. 119). Recognizing resource heterogeneity and its ability to confer sustainable competitive advantage, the resource-based view of the firm characterizes the firm as a collection of productive (physical and human) resources (Penrose 1959; Wernerfelt 1984). Resources are defined as “all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm to conceive of and implement strategies that improve its efficiency and effectiveness”(Barney 1991: p. 101). An obvious resource that fits with this definition is IT. ² Thus the link between resources and capabilities is well established.

² Based on Barney’s (1991) resource definition, IT includes all aspects of IT infrastructure (hardware, software, telecommunications), IS management, technical expertise and data.

The adoption of a dynamic perspective on strategic alignment necessitates a shift in emphasis towards dynamic capabilities (Teece, Pisano and Shuen 1997). Dynamic capabilities describe an approach to strategy that tries to “identify the dimensions of firm-specific capabilities that can be sources of advantage, and to explain how combinations of competences and resources can be developed, deployed and protected . . . in order to stress exploiting existing internal and external firm-specific competences to address changing environments”(p. 510). In that sense, the term dynamic refers to “the capacity to renew competences so as to achieve congruence with the changing business environment” (p. 515). Recognizing that strategic alignment “is not an event but a process of continuous adaptation and change”(Henderson and Venkatraman 1993: p. 5), the assignment of IT resources to capabilities must be continuously re-evaluated to prevent the organization slipping into a state of mis-alignment.

Table 1. Strategic Alignment — Survey Instrument Description

| Items Included Under Each Questionnaire | Business Strategy | IS Strategy | IT Business Value |
|--|--------------------------|--------------------|--------------------------|
| Respondent | Strategic Planner | IS Manager | Business Executive |
| Processes within the Value Chain: | | | |
| Organizational Planning and Support | ✓ | ✓ | ✓ |
| Supplier Relations (In-bound logistics) | ✓ | ✓ | ✓ |
| Production and Operations | ✓ | ✓ | ✓ |
| Product and Service Enhancement | ✓ | ✓ | ✓ |
| Marketing and Sales | ✓ | ✓ | ✓ |
| Customer Relations (Out-bound logistics) | ✓ | ✓ | ✓ |
| Competitive Dynamics | ✓ | ✓ | ✓ |
| IS and Organizational Management Practices | — | ✓ | ✓ |

✓ indicates the instrument where the items in question are measured.

In an attempt to empirically evaluate our conceptual model, we have used the above arguments to develop three survey instruments that measure business strategy, IT support for the business strategy and IT business value. While space restrictions will not permit a broader discussion of these instruments, in Table 1 we provide some general information on the content of each questionnaire.

6. Conclusion

The evolving nature of IT and the ever-increasing pace of industrial, social, political and environmental change underscores the importance of strategic alignment. As organizations evolve, and engender new forms of IT-enabled competitiveness, strategic alignment is likely to assume an even greater degree of importance. With IT spending forecasted to grow at unprecedented rates, business executives need to be able to utilize IT resources in the most effective manner possible. The strategic alignment model presented in this paper presents both IS researchers and business executives with a challenging paradigm within which to consider the simultaneously pursuit of strategic alignment and IT business value.

7. REFERENCES

- Amit, R. and P. Schoemaker "Strategic Assets and Organizational Rent," *Strategic Management Journal*, 14, 1, 1993, 33-46.
- Bakos, J. Y. "Dependent Variables for the Study of Firm and Industry-Level Impacts of Information Technology," in J. I. DeGross and C. H. Kriebel (Editors) *Proceedings of the Eight International Conference on Information Systems*, Pittsburgh, Pennsylvania, December 1987, 10-23.
- Barney, J. B. "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, 17, 1, 1991, 99-120.
- Barua, A., C. H. Kriebel and T. Mukhopadhyay "Information Technologies and Business Value: An Analytic and Empirical Investigation," *Information Systems Research*, 6, 1, 1995, 3-23.
- Broadbent, M. and P. Weill "Improving Business and Information Strategy Alignment: Learning from the Banking Industry," *IBM Systems Journal*, 32, 1, 1993, 162-179.
- Chan, Y. E., S. L. Huff, D. W. Barclay and D. G. Copeland "Business Strategy Orientation, Information Systems Orientation and Strategic Alignment," *Information Systems Research*, 8, 2, 1997, 125-150.
- Child, J. "Organizational Structure, Environment, and Performance: The Role of Strategic Choice," *Sociology*, 6, 1972, 1-22.
- Computer Sciences Corporation *Critical Issues of Information Systems Management*, Annual Report, 1996.
- Crowston, K., and Treacy, M. E. "Assessing the Impacts of Information Technology on Enterprise Level Performance." In L. Maggi, R. Zmud and J. Wetherbe (Editors), *Proceedings of the Seventh International Conference on Information Systems*, San Diego, California, 1986, 377-388.
- Davenport, T. H. *Process Innovation: Reengineering Work through Information Technology*. Boston: Massachusetts, Harvard Business School Press, 1993.
- Ginsberg, A. "Operationalizing Organizational Strategy: Toward an Integrative Framework," *Academy of Management Review*, 9, 3, 1984, 548-557.
- Grant, R. M. "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation," *California Management Review*, 33, 3, 1991, 114-135.
- Hambrick, D. C. "Operationalizing the Concept of Business-Level Strategy in Research," *Academy of Management Review*, 5, 4, 1980, 567-575.
- Henderson, J. C. and N. Venkatraman "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal*, 32, 1, 1993, 4-16.
- Keen, P. G. W. *Shaping the Future: Business Design through Information Technology*. Cambridge, MA: Harvard Business School Press, 1991.
- Mooney, J. G., V. Gurbaxani and K. L. Kraemer "A Process Oriented Framework for Assessing the Business Value of Information Technology," in J. I. DeGross, G. Ariav, C. Beath, R. Hoyer and C. Kemerer (Editors), *Proceedings of the Sixteenth International Conference on Information System*, Amsterdam, The Netherlands, December 1995, 17-27.
- Penrose, E. *The Theory of the Growth of the Firm*. Basil Blackwell: London, 1959.
- Porter, M. E. *Competitive Advantage*. New York: Free Press, 1985.
- Reich, B. Horner and I. Benbasat "Measuring the Linkage Between Business and Information Technology Objectives," *MIS Quarterly*, 20, 1, 1996, 55-81.

Teece, D., G. Pisano and A. Shuen “Dynamic Capabilities and Strategic Management,” *Strategic Management Journal*, 18, 7, 1997, 509-533.

Venkatraman, N., J. C. Henderson and S. H. Oldach “Continuous Strategic Alignment: Exploiting IT Capabilities for Competitive Success,” *European Management Journal*, 11, 2, 1993, 139-149.

Wernerfelt, B. “A Resource-based View of the Firm,” *Strategic Management Journal*, 5, 2, 1984, 171-180.

Woolfe, R. “The Path to Strategic Alignment,” *Information Strategy: The Executive’s Journal*, 9, 2, 1993, 13-23.