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Operational IT Business Alignment as the Missing Link from IT Strategy to Firm Success

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ABSTRACT

Strategic IT business alignment deals with the capability of IT to both shape and support business strategy. It can be interpreted as an organizational learning process that combines business and IT knowledge to support business objectives and can positively affect organizational profitability by creating superior strategies that achieve a competitive advantage. These strategies have to be implemented because strategies are only effective when they are translated into actions readily. Therefore, we introduce the concept of operational IT business alignment, reflecting the functional integration at the structural level and representing the link between business and IT structure. Using structural equation modeling and data from 136 banks, we show that operational IT business alignment positively impacts dynamic IT and business capabilities and in turn strategic alignment and firm performance.

Keywords

Strategic Alignment, Operational Alignment, IT Renewability, Business Renewability, Competitive Advantage.

INTRODUCTION

A key question in IS research is how IT can be used to create a competitive advantage (Sambamurthy, Bharadwaj and Grover, 2003). Addressing this issue, one strand of the Resource-based view (RBV) deals with so-called dynamic capabilities (Teece, Pisano and Shuen, 1997). Eisenhardt and Martin (2000) use the term “dynamic capabilities”, in particular addressing volatile environments, and focus on the manipulation of resources to create new strategies.

The literature on alignment is another strand of research engaged in IT business value that focuses on the interaction between the business and the IT domain. There is a general consensus among researchers and practitioners alike that IT business alignment (ITBA) is necessary to improve business performance. But the way how to achieve it remains unclear (Feurer, Chaharbaghi, Weber and Wargin, 2000). Alignment is predominantly viewed under a strategic perspective, whereas research into the structural level is rare and research simultaneously considering both levels seems to be non-existent (compare Bergeron, Raymond and Rivard, 2004).

This study combines both strategic and operational levels of alignment and dynamic capabilities to address the question how can IT be used to achieve a competitive advantage. Furthermore, we adopt a process level perspective because literature suggests that the role of IT should primarily be measured through its intermediate process-level effects (Barua, Kriebel and Mukhopadhyay, 1995). Additionally, following recent research, non-IT resources are considered to account for complementary effects (Wade and Hulland, 2004).

This paper thus extends prior research by explicitly considering:

- complementary non-IT-resources (i.e. *business skills*)
- dynamic capabilities in both the IT domain (*IT renewability*) and the business domain (*business renewability*)
- *IT business alignment* at a *strategic* and an *operational* level

Furthermore, the interrelationships between the alignment perspectives, the dynamic capabilities and competitive advantage are investigated. Our research questions in this paper are:

Q1: How are the operational and strategic levels of ITBA interrelated?

Q2: What is the influence of business skills and IT and business renewability on competitive advantage?

Theoretically, we draw on the knowledge-based theory that suggests that a firm’s ability to successfully deploy IT depends on the development of interrelated knowledge between the business and IT domain with organizational routines as mechanisms of knowledge integration (Grant, 1996).

RELATED LITERATURE

Dynamic Capabilities

In markets where the competitive landscape is shifting the dynamic capabilities by which firm managers “integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (Teece et al., 1997) become a source of sustained competitive advantage due to their complexity, causal ambiguity, and path dependency. In particular, the manipulation of knowledge resources is critical in such markets (Grant, 1996; Kogut, 1996). According to the knowledge-based theory that builds on the RBV (Alavi and Leidner, 2001), dynamic capabilities can be interpreted as information intensive routines, reconfiguring all types of resources but primarily knowledge (Leonard-Barton, 1992). Organizational routines refer to regular and predictable patterns of activity among the human capital (Nelson and Winter, 1982) and are mechanisms of knowledge integration that are particularly effective when tacit knowledge and informal communication are involved (Grant, 1996).

Alignment

The inability to realize value from IT partly results from a lack of alignment between the business and the IT strategies of a firm (Henderson and Venkatraman, 1993). Strategic alignment is viewed as a dynamic process of continuous adaptation and change that can be interpreted as an organizational learning process that combines business and IT knowledge in order to support business objectives (Reich and Benbasat, 1996).

Drawing on the knowledge-based theory, the four alignment domains (IT and business strategy, IT and business structure) of the Strategic Alignment Model (SAM) (Henderson and Venkatraman, 1993) can be interpreted as different areas of knowledge. Individuals within each area specialize in specific types of knowledge which is efficient for knowledge acquisition. To produce an organizational outcome knowledge from the different areas must be applied together requiring the transfer of knowledge (Grant, 1996). Thus, alignment processes that promote knowledge sharing are essential in determining IT profitability (Tallon, Kraemer and Gurbaxani, 2000).

RESEARCH MODEL

First, the constructs and then the hypotheses are introduced. Figure 1 depicts the research model. Table 1 summarizes references and key indicators.

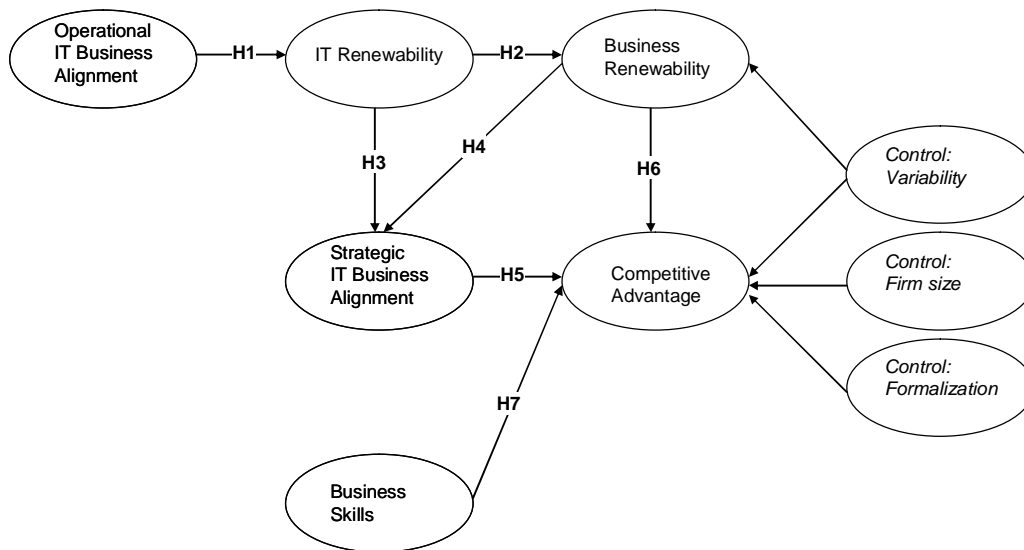


Figure 1. Research Model

Constructs and Hypotheses

The dependent variable: competitive advantage

“Competitive advantage grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm’s cost of creating it” (Porter, 1985) and basically can be achieved by cost leadership or differentiation. Based on “superior” products or services a firm can achieve a relative performance plus with respect to the competitors over some period of time that is called competitive advantage (Bhatt and Grover, 2005).

In this paper, the term *competitive advantage* is understood as an outcome (Peppard and Ward, 2004) and refers to a firm’s ability to achieve a better position than its competitors in a relevant market such as a region, for example.

Renewability

In this paper, we use the term renewability to refer to the dynamic nature of IT and business capabilities. According to Teece et al. (1997), the” term ‘dynamic’ refers to the capacity to renew competences so as to achieve congruence with the changing business environment”. The term renewability in our understanding goes beyond the notion of adaptability, integration and reconfiguration in that it points not only to the (re)deployment of existing resources, but also to the development of new ones.

Business renewability enables the organization to adapt to changing market conditions and allows for quick responses to market forces and uncertainty in the environment (Lucas and Olson, 1994). The greater the flexibility, the more options the firm has for diversifying into less related end products, for example.

H6: Therefore, it can be argued that business renewability contributes positively and directly to competitive advantage.

Renewability of the IT domain was mostly researched in terms of IT infrastructure flexibility (Byrd and Turner, 2001). IT infrastructure flexibility determines the ability of the IS department to respond quickly and cost-effectively to systems demands which evolve with changes in business practices or strategies (Duncan, 1995). Therefore, IT emerges as critical enabler of business transformation (Porter and Millar, 1985).

H2: Thus, we hypothesize that IT renewability is positively and directly related to business renewability.

Strategic alignment is seen as an evolutionary process of continuous adaptation (Henderson and Venkatraman, 1993) that benefits from renewability regarding the IT (Weill, Subramani and Broadbent, 2002) and the business domain.

H3, H4: Hence, using the dynamic capabilities approach we argue that both IT and business renewability have a positive and direct influence on strategic alignment.

IT Business Alignment

The construct *strategic ITBA* reflects the functional integration at the strategic level and represents the link between business and IT strategy. It deals with the capability of IT to both shape and support business strategy. Most research found a positive influence of alignment perspectives on IS effectiveness (Chan, Huff, Barclay and Copeland, 1997; Sabherwal and Chan, 2001; Tallon et al., 2000).

H5: Therefore, we hypothesize a positive and direct relationship between strategic alignment and competitive advantage.

These strategies have to be implemented, though, because “strategies are only effective when they are translated into actions readily” (Feurer et al., 2000). Therefore, *operational ITBA* reflects the functional integration at the structural level. In terms of the SAM it thus reflects an internal alignment perspective and focuses on operational processes. This construct is somewhat under-researched in the literature and is therefore built on sets of enablers identified in prior research. In particular, relationships (cognitive dimension), shared domain knowledge, and formal and informal interaction have been identified as the most significant enablers (Reich and Benbasat, 1996, 2000; Tiwana, Bharadwaj and Sambamurthy, 2003). We refer to these sets of enablers as cognitive enablers, knowledge enablers, and communication enablers.

IT renewability interpreted as knowledge-based routines (Grant, 1996) can be enhanced by operational ITBA through providing the IT domain with cross-domain knowledge (Reich and Benbasat, 2000), facilitating knowledge-sharing by frequent interaction and cognitive linkage between the IT and the business domain (Reich and Benbasat, 1996; Tiwana et al., 2003), and increasing the responsiveness to a changing environment by promoting the ability to renew IT competence as a means to preserve the relationship between the business and the IT domain (Young-Ybarra and Wiersema, 1999).

H1: Therefore, operational ITBA is hypothesized to positively and directly influence IT renewability.

Business Skills

Lots of studies investigated technical and managerial IT and business skills in various forms and mostly discovered a (strong) positive link to some performance measures (e.g. Bassellier and Benbasat, 2004; Bharadwaj, 2000; Mata, Fuerst and Barney, 1995). In the context of the knowledge-based theory, business skills are a form of specialized knowledge to perform productive tasks that is necessary to transform inputs to outputs (Grant, 1996). Although, it is acknowledged that undifferentiated human capital is valuable but cannot be a source in particular of a sustained competitive advantage (Mata et al., 1995), human capital is most valuable and most inimitable when it is firm-specific and developed in a process of learning (Hatch and Dyer, 2004). Correspondingly, it was found that human capital is associated with higher performance, particularly if educated and trained in an organization-specific manner (Carmeli and Tishler, 2004).

H7: Therefore, we hypothesize that business skills are positively and directly related to competitive advantage.

Control Variables

Organizational maturity is the degree to which organizational processes are systematized and formalized through rules, procedures, and management practices (Raymond, 1990). Organizational maturity is known as *formalization* and requires that organizational processes are well understood. What is well understood does not include causal ambiguities and can be made explicit (Nonaka, 1994), for example in the form of up-to-date documentation. This may result in an improved business performance (see Raymond, 1990).

Organizational or *firm size* in our survey is defined by the total assets of the banks. On one hand, large firms often possess resources that can positively influence outcomes, e.g. scale and scope economies or network effects (Bhatt and Grover, 2005). On the other hand, large firms tend to be more inflexible and have higher administration costs than small firms (Li and Ye, 1999). Thus, a larger size can lead to inertia and a resistance to change (Kelly and Amburgey, 1991). Therefore, we expect that the firm size is negatively and directly related to competitive advantage.

Variability of the environment is often referred to as environmental dynamism or turbulence. It is a critical factor confronting practically all organizations and stems from frequent changes to various environmental variables (Lu and Ramamurthy, 2004). Therefore, we refer to variability as the rate of change to tasks, customer preferences, and market conditions.

Environmental munificence was positively related to performance due to an externally-oriented strategy and focusing on time-based competition (Li and Ye, 1999). According to the RBV, such environment helps firms to achieve a competitive advantage, because it decreases the ability to imitate resource configurations due to rapid changes (Eisenhardt and Martin, 2000). Thus, we hypothesize that business renewability as well as competitive advantage is positively influenced by “variability”.

MODEL DETAILS

We first present the research methodology and the instrument construction, followed by the presentation of the research results.

Research Methodology

This study employs a survey among German banks and focuses on the SME credit process. In 2005, questionnaires were mailed to Germany’s top 1,000 banks (according to total assets). 136 completed questionnaires were returned, resulting in a response rate of 13.6% covering about 21% of the Total Assets of these banks. Our sample is statistically representative regarding firm size (assets). The constructs are operationalized at a business process level. The questionnaire was mailed to the chief credit officer in each bank accompanied with a cover letter explaining the intention of the survey. This approach involves two perspectives.

Empirical research regarding alignment at the operational level is very rare. Therefore, as suggested by Eisenhardt (1989), the indicator questions have been derived mainly from validated questionnaires from the literature and adapted to our purpose. Operational ITBA is modeled as second-order construct and is based on three sets of enablers. These sets are identified reflecting the studies by Reich and Benbasat (1996; 2000) and Tiwana et al. (2003), and used to allocate enablers cited in literature. All other constructs are operationalized as first-order constructs. Table 1 presents a summary of the constructs and indicators including some references (please note that the original indicators used in the survey are in German and are translated here).

Construct (References)	Dimensions	Key Indicators
Competitive Advantage (Bergeron et al., 2004; DeSarbo, Benedetto, Song and Sinha, 2005)	Process' owners perception	<ul style="list-style-type: none"> The configuration of our credit process puts us in a position to sustain a competitive advantage in the relevant market. The configuration of our credit process puts us in a position to differentiate from the competitors in the relevant market. Compared to our competitors, we extended our market share over the past three years.
Strategic alignment (Chan et al., 1997; Kearns and Lederer, 2001; Reich and Benbasat, 1996; Tallon et al., 2000)	Strategic linkage	<ul style="list-style-type: none"> The IT strategy is documented. I am familiar with the IT strategy. The IT strategy is accurately aligned with the business strategy.
Business skills (Bassellier, Benbasat and Reich, 2003; Carmeli and Tishler, 2004; Hatch and Dyer, 2004)	Qualification and experience	<ul style="list-style-type: none"> Sales employees are highly experienced in their business. The high experience in customer contact is a particular strength of our employees. I am satisfied with the qualification of the employees engaged in the credit process:
Business renewability (Gosain, Malhotra and El Sawy, 2004; Young-Ybarra and Wiersema, 1999)	Offering flexibility	<ul style="list-style-type: none"> Customers having special requests are just as well satisfied with the performance of the bank as customers with standard requests. Our business process is flexible enough to easily react to changes in the regulatory environment. The business department is able to easily and flexibly handle customized configurations of the credit product.
IT renewability (Byrd and Turner, 2001; Young-Ybarra and Wiersema, 1999)	Proactiveness	<ul style="list-style-type: none"> The IT unit is able to quickly change information systems to consider new credit products. The IT unit is able to quickly change information systems to better support the operation of the credit process. The IT unit reacts flexibly to change requests of the business department. The IT unit implements change requests of the business department in an effective and efficient manner.
ITBA (Bassellier and Benbasat, 2004; Reich and Benbasat, 1996)	Enabler: cross-domain knowledge	<ul style="list-style-type: none"> The IT employees are capable of the interpretation of bank-technical problems and to develop appropriate solutions. The IT employees are knowledgeable about the business activities of the credit process. The IT unit develops and implements change requests in a way useful for the business units.
ITBA (Chung, Rainer and Lewis, 2003; Reich and Benbasat, 1996)	Enabler: Communication	<ul style="list-style-type: none"> There are regular meetings between the IT unit and the business unit to control IT changes processes. There are regular meetings between the IT unit and the business unit to discuss potential process improvements. There are regular meetings between the IT unit and the business unit to ensure an effective and efficient change process.
ITBA (Bhatt, 2003; Chung et al., 2003; Reich and Benbasat, 1996)	Enabler: Cognition	<ul style="list-style-type: none"> IT unit and business unit are equal partners when changes of the core application has to be carried out. IT unit and business unit mutually consult each other very often. Changes to IS are carried out in close collaboration between IT and business unit.

Table 1. Operationalization of Constructs

The constructs are measured using three and four items per construct. Credit process managers were asked to rate each of the items using a five-point-Likert scale where "1" indicates "I completely agree" and "5" indicates "I do not agree". The scale was complemented by an item "I do not know".

Results

We used Partial Least Square (PLS) employing PLS-Graph 3.00 to assess the measurement and the structural model. As a rule of thumb, it is often suggested that PLS requires a sample size ten times greater than the largest number of paths entering

the model. Our sample of 136 banks exceeds this threshold by more than three times (for a critical discussion regarding this rule of thumb see: Goodhue, Lewis and Thompson, 2006). The model to be tested is a second-order factor model with reflective measures. In a first step the measurement model was assessed. Each construct showed the required internal consistency, convergent validity, and discriminant validity (tables 2 and 3). Table 2 shows the construct intercorrelations that are in all cases lower than the square root of the average variance extracted (shaded diagonal elements), demonstrating a good fit between indicators and constructs. Table 3 exhibits the psychometric properties with the loadings and T-statistics of each indicator listed in table 1 (Comp R. = Composite Reliability).

	Bus. skills	ITBA: knowl.	ITBA: comm..	ITBA: cogn.	Bus. Flex.	Comp. Adv.	IT Flex.	Strat. Align.	Var.	Form.	Size
Business skills	0.778										
ITBA: knowledge	0,249	0.816									
ITBA: communication	-0,03	0,448	0.805								
ITBA: cognition	0,041	0,249	0,478	0.944							
Business Flexibility	0,269	0,246	0,202	0,116	0.745						
Competitive Advantage	0,537	0,366	0,004	-0,05	0,354	0.769					
IT Flexibility	0,167	0,544	0,461	0,044	0,186	0,264	0.816				
Strategic Alignment	-0,05	0,272	0,324	0,115	0,361	0,267	0,318	0.823			
Variability	0,017	-0,09	-0,19	-0,23	0,421	0,208	-0,07	-0,11	1		
Formalization	0,058	0,197	0,101	0,143	-0,01	0,169	0,043	0,054	-0,24	1	
Firm Size	0,132	0,198	0,457	0,121	0,155	0,008	0,274	0,249	0,017	-0,04	1

Table 2. Correlations of square root of average variance extracted (shaded cells) and latent variables

Construct	PLS Loadings (T-Statistics)	Comp. R.
Business skills	0.80 (10.86), 0.71 (7.93), 0.82 (13.81)	0.820
ITBA: knowledge	0.89 (37.40), 0.83 (16.95), 0.70 (7.75)	0.855
ITBA: communication	0.93 (68.76), 0.94 (104.46), 0.94 (74.10)	0.846
ITBA: cognition	0.81 (18.93), 0.81 (21.14), 0.78 (16.36)	0.960
Business Flexibility	0.79 (9.62), 0.65 (5.95), 0.77 (8.57)	0.788
Competitive Advantage	0.85 (21.45), 0.71 (8.58), 0.73 (11.20)	0.811
IT Flexibility	0.73 (9.09), 0.85 (22.03), 0.82 (18.49), 0.84 (19.25)	0.887
Strategic Alignment	0.92 (37.40), 0.73 (5.45), 0.80 (7.19)	0.861

Table 3. Psychometric Properties

The second-order construct operational ITBA was measured by three multi-item scales assessing sets of enablers for ITBA. The results for “knowledge” ($\beta = 0.40$, T-value = 7.99, $p < 0.001$), “cognition” ($\beta = 0.43$, T-value = 9.18, $p < 0.001$), and “communication” ($\beta = 0.45$, T-value = 7.87, $p < 0.001$) show significant paths, indicating that the second-order construct was reliably measured.

Finally, the structural model was tested to assess the relationships among various latent constructs. Paths are interpreted as standardized regression weights that correspond to the hypotheses stated in the previous section. The statistical significance of the estimates was calculated by using the bootstrapping procedure with replacement of 500 sub-samples (Chin, 1998). Tests of the hypotheses rely on magnitude, sign, and statistical significance of the path coefficients of the structural model. Figure 2 represents the results. With the exception of the path between business renewability and competitive advantage, all path coefficients are significant (see Figure 2), supporting the corresponding hypotheses.

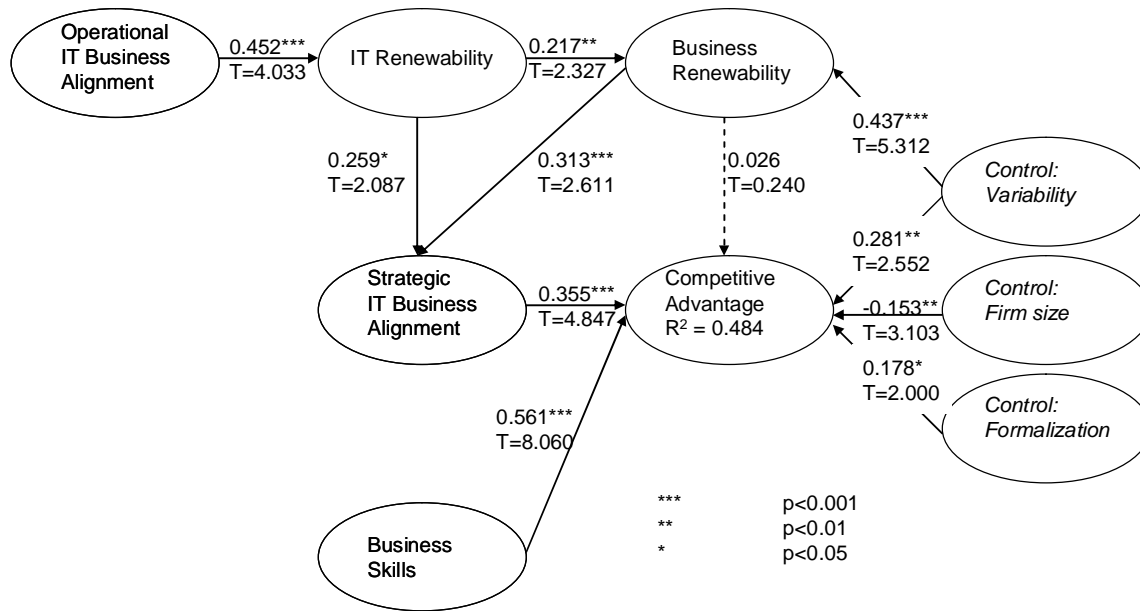


Figure 2. Results

CONCLUSION

Before concluding, some limitations of this study need to be mentioned. First, the development of the operational alignment construct was difficult because of the limited attention in prior literature. Therefore, the measurement model for alignment was developed and based on items derived and adapted from the literature. Second, due to length restrictions of the questionnaire we could not use all of the indicators used in the many prior contributions to the other constructs. Third, competitive advantage and alignment were measured at the same point of time, therefore the results do not reflect long-term impacts. Fourth, we only used answers from the business side, which might have an influence on the results.

Considering these limitations, we can report that overall, the model of competitive advantage proposed, including the second-order construct *operational ITBA*, is well supported by the data, and all independent constructs of the model were found to be influential in contributing directly or indirectly to competitive advantage. The stated hypotheses could be supported at different levels of significance. One hypothesis stating the direct and positive influence of business flexibility (H6) was not supported, although there is evidence in the literature for an impact. Further research has to look into the reasons.

While prior research has mostly emphasized strategic aspects of ITBA, this study provides a more granular perspective by focusing on the process level and simultaneously researching operational and strategic levels. Results of this study show that it is important to integrate knowledge in both the business domain (business renewability) and across domains (ITBA). ITBA focuses on the ability to extract knowledge from the IT domain and apply it within the business domain to fully exploit IT and to take advantage from IT opportunities and vice versa.

Contributing to prior research we could show that:

- both *strategic IT business alignment* and *business skills* positively influence *competitive advantage*
- *operational alignment* positively influences *IT renewability* and indirectly *strategic alignment*
- *IT renewability* positively affects *business renewability*
- both *IT renewability* and *business renewability* positively influence *strategic alignment*
- *strategic alignment* and *business skills* positively influence *competitive advantage*

Notably, business skills were found to strongly influence competitive advantage. The importance of incorporating business skills (of business people) into the analysis of IT value can be demonstrated considering a study of Bhatt and Grover (2005) who find that business skills of IT personnel are only weakly related to competitive advantage. Thus, omitting “original” business skills in our model would mean leaving out a very important variable.

We expect promising results from further research especially incorporating IS usage and further alignment perspectives as well as from explicitly considering turbulent environments.

REFERENCES

1. Alavi, M. and Leidner, D. E. (2001) Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, *MIS Quarterly*, 25, 1, 107-136.
2. Barua, A., Kriebel, C. H. and Mukhopadhyay, T. (1995) Information Technologies and Business Value: An Analytical and Empirical Investigation, *Information Systems Research*, 6, 1, 3-23.
3. Bassellier, G. and Benbasat, I. (2004) Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships, *MIS Quarterly*, 28, 4, 673-694.
4. Bassellier, G., Benbasat, I. and Reich, B. H. (2003) The Influence of Business Managers' IT Competence on Championing IT, *Information Systems Research*, 14, 4, 317-336.
5. Bergeron, F., Raymond, L. and Rivard, S. (2004) Ideal patterns of strategic alignment and business performance, *Information & Management*, 41, 8, 1003-1020.
6. Bharadwaj, A. (2000) A Resource based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation, *MIS Quarterly*, 24, 1, 169-195.
7. Bhatt, G. D. (2003) Managing Information Systems Competence for Competitive Advantage: An Empirical Analysis, in Anne Massey, Salvatore T. March and Janice I. DeGross (Eds.) *Proceedings of the 24th International Conference on Information Systems*, Seattle, Washington, USA, 134-142.
8. Bhatt, G. D. and Grover, V. (2005) Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study, *Journal of Management Information Systems*, 22, 2, 253-277.
9. Byrd, T. A. and Turner, D. E. (2001) An exploratory examination of the relationship between IT infrastructure and competitive advantage, *Information & Management*, 39, 1, 41-52.
10. Carmeli, A. and Tishler, A. (2004) The Relationships Between Intangible Organizational Elements and Organizational Performance, *Strategic Management Journal*, 25, 13, 1257-1278.
11. Chan, Y. E., Huff, S. L., Barclay, D. W. and Copeland, D. G. (1997) Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment, *Information Systems Research*, 8, 2, 125-150.
12. Chin, W. W. (1998) Issues and Opinion on Structural Equation Modeling, *MIS Quarterly*, 22, 1, vii-xvi.
13. Chung, S. H., Rainer, R. K. and Lewis, B. R. (2003) The Impact of Information Technology Infrastructure Flexibility on Strategic Alignment and Applications Implementation, *Communications of the Association for Information Systems*, 11, 191-206.
14. DeSarbo, W. S., Benedetto, C. A. d., Song, M. and Sinha, I. (2005) Revisiting the Miles and Snow Strategic Framework: Uncovering Interrelationships Between Strategic Types, Capabilities, Environmental Uncertainty, and Firm Performance, *Strategic Management Journal*, 26, 1, 47-74.
15. Duncan, N. B. (1995) Capturing Flexibility of Information Technology Infrastructure: A Study of Resource Characteristics and their Measure, *Journal of Management Information Systems*, 12, 2, 37-57.
16. Eisenhardt, K. M. (1989) Building Theories from Case Study Research, *Academy of Management Review*, 14, 4, 532-550.
17. Eisenhardt, K. M. and Martin, J. A. (2000) Dynamic Capabilities: What are They? *Strategic Management Journal*, 21, 10-11, 1105-1121.
18. Feurer, R., Chaharbaghi, K., Weber, M. and Wargin, J. (2000) Aligning Strategies, Processes, and IT: A Case Study, *Information Systems Management*, 17, 1, 23-34.
19. Goodhue, D. L., Lewis, W. and Thompson, R. L. (2006) PLS, Small Sample Size, and Statistical Power in MIS Research, in Ralph H. Sprague Jr (Eds.) *Proceedings of the 39th Hawaii International Conference on System Sciences*, Kauai, HI, USA, 1-10.
20. Gosain, S., Malhotra, A. and El Sawy, O. A. (2004) Coordinating for Flexibility in e-Business Supply Chains, *Journal of Management Information Systems*, 21, 3, 7-45.
21. Grant, R. M. (1996) Prospering in Dynamically-competitive Environments: Organizational Capability as Knowledge Integration, *Organization Science*, 7, 4, 375-387.
22. Hatch, N. W. and Dyer, J. H. (2004) Human Capital and Learning as a Source of Sustainable Competitive Advantage, *Strategic Management Journal*, 25, 12, 1155-1178.
23. Henderson, J. C. and Venkatraman, N. (1993) Strategic alignment: Leveraging information technology for transforming organizations, *IBM Systems Journal*, 32, 1, 3-16.

24. Kearns, G. S. and Lederer, A. L. (2001) Strategic IT Alignment: A Model for Competitive Advantage, in Veda Storey, Sumit Sarkar and Janice I. DeGross (Eds.) *Proceedings of the 22nd International Conference on Information Systems (ICIS)*, New Orleans, Louisiana, USA, 1-12.
25. Kelly, D. and Amburgey, T. L. (1991) Organizational Inertia and Momentum: A Dynamic Model of Strategic Change, *Academy of Management Journal*, 34, 4, 591-612.
26. Leonard-Barton, D. (1992) Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development, *Strategic Management Journal*, 13, 5, 111-125.
27. Li, M. and Ye, R. (1999) Information technology and firm performance: Linking with environmental, strategic and managerial contexts, *Information & Management*, 35, 1, 43-51.
28. Lu, Y. and Ramamurthy, K. (2004) Does Information Technology Always Lead to Better Firm Performance? The Role of Environmental Dynamism, in Ritu Agarwal, Laurie J. Kirsch and Janice I. DeGross (Eds.) *Proceedings of the 25th International Conference on Information Systems (ICIS)*, Washington, D.C., USA,
29. Lucas, J. H. C. and Olson, M. H. (1994) The Impact of Information Technology on Organizational Flexibility, *Journal of Organizational Computing*, 4, 2, 155-176.
30. Mata, F. J., Fuerst, W. L. and Barney, J. (1995) Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis, *MIS Quarterly*, 19, 4, 487-505.
31. Nelson, R. R. and Winter, S. G. (1982) An evolutionary theory of economic change, The Belknap Press of Harvard University Press, Cambridge (Mass.).
32. Nonaka, I. (1994) A Dynamic Theory of Organizational Knowledge Creation, *Organization Science*, 5, 1, 14-37.
33. Peppard, J. and Ward, J. (2004) Beyond strategic information systems: towards an IS capability, *Journal of Strategic Information Systems*, 13, 2, 167-194.
34. Porter, M. E. (1985) Competitive Advantage, The Free Press, A Division of Macmillan, Inc., New York.
35. Porter, M. E. and Millar, V. E. (1985) How information gives you competitive advantage, *Harvard Business Review*, 63, 4, 149-174.
36. Raymond, L. (1990) Organizational Context and Information Systems Success: A Contingency Approach, *Journal of Management Information Systems*, 6, 4, 5-20.
37. Reich, B. H. and Benbasat, I. (1996) Measuring the Linkage Between Business and Information Technology Objectives, *MIS Quarterly*, 20, 1, 55-81.
38. Reich, B. H. and Benbasat, I. (2000) Factors that Influence the Social Dimension of Alignment Between Business and Information Technology Objectives, *MIS Quarterly*, 24, 1, 81-113.
39. Sabherwal, R. and Chan, Y. E. (2001) Alignment Between Business and IS Strategies: A Study of Prospectors, Analyzers, and Defenders, *Information Systems Research*, 12, 1, 11-33.
40. Sambamurthy, V., Bharadwaj, A. and Grover, V. (2003) Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms, *MIS Quarterly*, 27, 2, 237-263.
41. Tallon, P. P., Kraemer, K. L. and Gurbaxani, V. (2000) Executives' Perceptions of the Business Value of Information Technology: A Process-Oriented Approach, *Journal of Management Information Systems*, 16, 4, 145-173.
42. Teece, D. J., Pisano, G. and Shuen, A. (1997) Dynamic Capabilities and Strategic Management, *Strategic Management Journal*, 18, 7, 509-533.
43. Tiwana, A., Bharadwaj, A. and Sambamurthy, V. (2003) The Antecedents of Information Systems Development Capability in Firms: A Knowledge Integration Perspective, in Anne Massey, Salvatore T. March and Janice I. DeGross (Eds.) *Proceedings of the Twenty-Fourth International Conference in Information Systems*, Seattle, Washington, USA, 246-258.
44. Wade, M. and Hulland, J. S. (2004) Review: The Resource-Based View And Information Systems Research: Review, Extension, And Suggestions For Future Research, *MIS Quarterly*, 28, 1, 107-142.
45. Weill, P., Subramani, M. and Broadbent, M. (2002) Building IT Infrastructure for Strategic Agility, *MIT Sloan Management Review*, 44, 1, 57-65.
46. Young-Ybarra, C. and Wiersema, M. (1999) Strategic Flexibility in Information Technology Alliances: The Influence of Transaction Cost Economics and Social Exchange Theory, *Organization Science*, 10, 4, 439-459.