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The Role of Alignment and IS Usage for Business Process Performance: An Empirical Survey among German Banks

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Abstract

There is still a lack of coherent theoretical explanations for why and how IT Business alignment (ITBA) influences process outcomes. This study draws on the knowledge-based theory to develop and test a process-level model that links different types of alignment and IS usage to process outcomes.
While prior research has mostly focused on strategic alignment, we posit that the implementation of strategies into an operational process also is important to achieve beneficial outcomes. Therefore, we investigate the impact of ITBA on performance at a process-level of analysis. Additionally, we propose that business-internal alignment is an important construct contributing to the explanation of performance. Furthermore, we include IS usage and business skills to encompass further essential resources of the business process.
Testing the model using data from 136 banks shows that ITBA and business-internal alignment have direct and positive effects on performance at the process level. Furthermore, IS usage and business skills proved to have significant effects on process performance. Overall, the result contribute to the IT value creation debate by empirically showing the effect of alignment and IS usage on a process level and by revealing the role of business-internal alignment.

Keywords: IT Business Alignment, Business-internal Alignment, IS Usage

1. Introduction

How is Information Technology (IT) linked to organizational performance, and what is the nature of that linkage? Many models were proposed to explain the linkage. One of those models explaining in which ways IT creates business value was proposed by Soh and Markus (1995). They distinguished between the conversion process from IT investment to IT assets, the use process from IT assets to IT impacts, and the competitive process from IT impacts to competitive outcome. This paper will concentrate on the use process.
IS usage was identified as the missing link explaining the impact of IT on performance (Devaraj and Kohli 2003). Supporting the finding of IS usage as a missing link, in a recent study regarding post-adoption variations in usage and value of e-business it was found that „IT business value depends on the extent to which IT is used in the key activities in the firm's value chain" (Zhu and Kraemer 2005, p. 64). IT is used in many firms, in particular in information-intense firms like banks, but the extent to which IT is deployed and the intention towards the use of IT varies among those firms. Some firms intend to deploy IT to gain a competitive edge while other firms use IT to automate tasks or view it as a strategic necessity (Clemons and Row 1991). Furthermore, there is strong evidence that IT benefits may only

accrue when there is a fit between organizational and IT factors (Devaraj and Kohli 2000). Thus, the question in which ways IT is linked to performance can only be addressed if both the IT domain and the organizational or business domain are investigated in parallel to open up the black box of IT value creation.
The alignment literature in particular has addressed the role of linkage between the IT and the business domain for value creation and mostly focuses on strategic aspects. Accordingly, strategic alignment, which is the extent to which IT strategy supports and is supported by the business strategy (Reich and Benbasat 2003), was proposed in the Strategic Alignment Model (SAM) of Henderson and Venkatraman (1993). Since then, strategic alignment has emerged as an important issue among researchers and practitioners alike (Tallon and Kraemer 2003). But despite much theoretical and empirical work on alignment providing valuable insights into many facets of the interplay between IT and business, there are still many questions unanswered. In particular, it is not really understood how the process of alignment actually links the IT and the business domain (Peppard and Ward 2004; Tallon and Kraemer 2003). Furthermore, beside the strategic level the SAM also incorporates alternative alignment types and domains which are rarely addressed in research (see review by Bergeron et al. 2004).
Following a process-level perspective (Barua et al. 1995; Melville et al. 2004) the focus of this paper is on the use process within a specific business process. The goal of this paper is to provide a theoretical perspective and empirical findings regarding the simultaneous influence of the constructs IT business alignment, business-internal alignment, and IS usage on business process performance, complemented by the construct business skills.
Therefore, we explore the following research questions in this paper:

- How and to what extent is IT business alignment related to business process performance?
- What is the influence of business-internal alignment and IS usage on business process performance?

Theoretically, we draw on the knowledge-based theory that suggests that the ability of a firm 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; Kogut and Zander 1992).
The central research contributions are the disclosure of the process-level relationship between IT business alignment and business process performance, the demonstration of the importance of a newly proposed alignment type, business-internal alignment, and a process-level adaptation of the IS usage concept. In particular, we develop and test a model that hypothesizes direct and positive relationships between the proposed constructs and process performance.
The paper is structured as follows. First, the research model and the hypotheses are developed. Based on this, the research model is empirically tested and the results presented. Finally, we discuss limitations, managerial implications, and promising areas of further research on this topic.

2. Development of Research Model and Hypotheses

This section discusses the constructs and the posited hypotheses. After discussing the level of analysis and introducing the dependent variable (process performance), four constructs are introduced and hypotheses are derived. IT business alignment is built on a set of enablers and refers to the mutual understanding between business and IT representatives. Further,

business-internal alignment is proposed as a new alignment type describing the alignment within the operational business domain. Business skills encompass the qualification and experience of the workforce engaged in the credit process. Finally, IS usage reflects the use of an information system within a defined business process.
This approach focuses on constructs relevant for the daily operation of a business process. Other possibly influential factors like strategy type or meta-level factors reflecting process reconfigurations are out of scope of this study (compare Beimborn et al. 2006; Wagner and Weitzel 2006).

2.1 Process-level Analysis

Business processes are the market-oriented processes in which assets are combined in pursuit of strategies and business activities producing output for the market (Davenport 1993). In the market, profits can be earned as a return on superior resource combination within the firm, moderated by environmental factors (Melville et al. 2004). Recent approaches take the level of a business process as the unit of analysis because at this level effects of IT can be identified more accurately, thus explaining the how and why of IT value creation (Barua et al. 1995; Mooney et al. 1996; Tallon et al. 2000). The rationale is that a firm comprising several business processes may excel in some and be average or below average in other processes, which leads in total to some net effect at firm level.
In order to assess the influence of IT at the process level, we focus on the core process of banks that is the process for granting credits (credit process), in particular, the credit process for small and medium enterprises (SME). The reasons for choosing the SME credit process of banks as opposed to other credit processes, for example, are as follows. First, the credit business is a core activity of banks, thus, investigating a credit process is relevant for this industry. Second, the banking industry is rather strictly regulated, providing a frame of analysis, because not only the banking regulatory environment is homogeneous, but also the activities of the credit process are regulated at an abstract level. In particular, the latter means that each bank has to carry out a certain set of activities. Only specific aspects of the process such as concrete sequences of sub-activities, engaged skill levels, or IT systems differ. Third, the SME credit process as opposed to the retail credit process or the credit process for large enterprises encompasses automated and manual activities alike. This provides for greater homogeneity in the analysis and allows studying the differential effect of IT- and Non-IT variables.
The SME credit process encompasses five activities that cover the life cycle of a credit. These are sales, credit assessment and decision, servicing, risk management and monitoring, and workout (dunning process, encashment, and management of bad loans). We investigate SME credits that belong to the so called risk-relevant business. For this type of business regulation enforces that the sales activity has to be carried out by a functional unit of a bank that is separated from functional units serving the other four activities. We refer to the unit serving the sales activities as sales and to the other units as back office.
A process-level measure of actual IT impacts that maps directly to the activities within the credit process is employed. In general, business process performance can be measured in three dimensions: costs, quality and time (derived from Mooney et al. 1996). It represents the efficiency with which internal processes are conducted in order to generate a desired output or service. The focus of this study is on the dimension quality for following reasons. Quality in the credit business refers to granting, processing, and monitoring a credit in concordance with regulatory and bank-internal requirements regarding risk evaluation and certain documentation rules. Missing the quality standards, e.g. regarding the rating or the necessary

complete documentation, has three effects. First, if defects are detected, it causes a delay due to the necessary subsequent amendments. Thus, increasing the time until a credit decision can be made. Second, detected quality deficiencies produce more cost due to rework that have to be done until the process can be completed. Third, if an error is not detected before the credit is granted, it may cause a higher ratio of bad loans later on resulting in a lower profitability of the business.
In particular, the third reason is very important to banks, because high ratios of bad loans caused dramatic problems and losses for banks in the 1990s. It might be the main reason for a more strict regulation of the credit business, introduced by End of June 2004 in Germany. Therefore, the quality aspect, in parts incorporating the time aspect, is of particular importance for the credit business and was chosen as the appropriate process-level measure.

Thus, the basic assumption is: the higher the quality, the higher credit process performance.

2.2 IT Business Alignment and business-internal Alignment

Henderson and Venkatraman (1993) introduced alignment as discussed in the form of the strategic alignment model (SAM). While a study by Palmer and Markus (2000) in the specialty retailing industry could not support an impact of strategic alignment on performance, most research found a positive influence of alignment perspectives on IS effectiveness (e.g. Kearns and Lederer 2000; Tallon and Kraemer 2003; Tallon et al. 2000). The basic proposition of alignment is that at least two factors such as business and IT strategy (strategic alignment) or business and IT structure (structural alignment) must be congruent to affect organizational performance (Bergeron et al. 2004). The knowledge-based theory suggests that knowledge of different knowledge domains has to be integrated. Drawing on the knowledge-based theory we interpret the four domains of the SAM 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). This interpretation corresponds to the discussion of alignment as a process (Kearns and Lederer 2000; Reich and Benbasat 2003).
Alignment can also be interpreted as an outcome. Dealing with IT business alignment (ITBA), Reich and Benbasat (2003) identify two perspectives: the intellectual and the social dimension. The intellectual dimension is the state in which a high-quality set of interrelated IT and business plans exists and the social dimension is the state in which business and IT executives understand and are committed to the business and IT mission, objectives and plans. This paper focuses on the social dimension of alignment for two reasons. First, Reich and Benbasat (1996; 2000) show that the social dimension of alignment has a significant importance for performance. Second, the intellectual dimension requiring internal consistency between IT and business plans to a large extent is enforced by German regulation that requires well documented business processes and information systems used.
Drawing on the knowledge-based theory, in this study ITBA is interpreted as a process of knowledge integration. The employed survey instrument measures ITBA at a given point of time rather than with a longitudinal approach. Therefore, despite theoretically interpreting ITBA as a process of knowledge integration, it is only possible to capture the outcome of this process at the point of time the survey was carried out. The outcome of this process of knowledge integration is investigated in its social dimension.
In the case of IT business alignment, the fit between strategic and/or structural aspects of the business and the IT domain is in focus. The interaction between the business and the IT

domain is not restricted to the strategic level, rather strategy has to be transformed into daily business to achieve effects (Gordon and Gordon 2000). This study adopts a business process level approach and focuses on the structural alignment of the business and the IT domain. IT business alignment builds on sets of manifold enablers investigated in literature. Reich and Benbasat (1996) investigated business-IT linkage in its social and intellectual dimension and identified enablers for these dimensions. In a later study regarding the social dimension of IT business alignment (Reich and Benbasat 2000) they identify shared domain knowledge, IT implementation success, communication, and connections between IT and business planning as factors influencing alignment where only the first factor alone influences long-term alignment. This study focuses on the social dimension of alignment and investigates an operational process. Therefore, using the mentioned research as a structure, it is appropriate to focus on following enablers: enablers for the social dimension of linkage that we refer to as cognitive enablers, knowledge enablers, and communication enablers. These enablers are investigated at the interface between the IT unit and the business unit (composed of sales and back office) and therefore relate to the units as opposed to the activities of the credit process. Thus, ITBA relates to the credit process as frame of analysis rather than to single activities. Additionally to ITBA, we propose and investigate a new alignment type. The structural business internal alignment concentrates on the operational business domain and is defined as the internal consistency within the business structure along the business process. That is, the alignment between the different organizational units (sales and back office) engaged in the business process. The considerations regarding the social dimension of IT business alignment are adapted to this type.
As mentioned above, there is evidence that alignment perspectives directly influence performance. Therefore, we formulate following hypotheses:

Hypothesis 1: Higher levels of structural IT business alignment directly and positively influence business process performance.

Hypothesis 2: Higher levels of business-internal alignment directly and positively influence business process performance.

2.3 Business Skills

The SME credit process consists of manual and automated activities requiring more or less IT support. Therefore, the effect of the Non-IT factor must be considered to get a more complete picture.
In concordance with the SAM the alignment domain “business structure” also encompasses skills available to the business. 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; Castanias and Helfat 2001; Mata et al. 1995). Skills are addressed by the construct “business skills” that refers to the professional expertise of the employees engaged in sales and back office activities. 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). There is evidence in literature that education, training, and experience influences the value of the human capital employed (Hatch and Dyer 2004). In a study among business managers it was found that IT competence and IT experience are antecedents of championing IT (Bassellier et al. 2003). This paper builds on these studies and adapts it for

its purpose. Thus, business skills are measured in terms of qualification and experience of business representatives working in the credit business. Following hypothesis is stated:

Hypothesis 3: Higher levels of business skills will directly and positively influence the business process performance.

2.4 IS Usage

Information systems are used to support a firm's organizational objectives whether to improve operational efficiency or to achieve competitive advantage. DeLone and McLean provided a model that covers the antecedents of the intention to use IS via the individual impact to the organizational impact of IS usage (DeLone and McLean 1992). One of the most well-known models of usage at an individual level is the Technology Acceptance Model (TAM) and its derivatives engaged in the effects of perceived usefulness and ease of use on user acceptance of IS (Venkatesh et al. 2003). Existing studies on IS usage mostly focus on the individual or task level (DeLone and McLean 2003; Doll and Torkzadeh 1998). Although, IS usage, and in particular tests of the DeLone/McLean-Model, is widely addressed in literature, the process-level impact of IS usage is not well developed. Drawing on the knowledge-based theory information systems can be interpreted as embedded knowledge where IS usage is the application of that knowledge (Grant 1996).

Grover et al. (1996) list three IS effectiveness measures at an organizational level to evaluate IS regarding how much the IS helps the organization in gaining competitiveness. IS can be evaluated regarding three evaluation types: impact (economic measure), response (market measure), and process (infusion measure). This study focuses on the process evaluation and define IS usage in the context of a business process as the extent to which an organization deploys IS to support operational tasks. The rationale is that "the benefits an IS provides the organization accrue largely by adding value to primary activities at lower levels within the organization and depend on the organization's operating characteristics" (Ragowsky et al. 2000, p. 192).

The extent to which IS is deployed can be measured along the four dimensions volume, diversity, breadth and depth that was proposed by Massetti and Zmud (1996) when examining EDI usage in complex organizations. Our study is engaged in the investigation of an operational SME credit process with an IS already in place that handles all core activities. We refer to this type of IS as the core IS. Most of this core IS have been deployed several years ago, and thus have been used for a notable period of time. From case studies carried out in advance of the survey we also could infer that these IS regularly cover all activities of the credit process, but with varying functionality and are complemented by additional applications, e.g. for sales support. Therefore, adapted to the context of the credit process, the focus is on the dimension depth. Depth is redefined as the extent to which specific IS functions or modules are used within the process.

Thus, concordant with recent studies exhibiting a positive influence of IS usage on performance variables (e.g. Zhu and Kraemer 2005; Zhu and Xu 2004) following hypothesis is stated:

Hypothesis 4: Higher levels of IS usage will directly and positively influence business process performance.

3. Model Details

The proposed research model is depicted in figure 1. The intent is to evaluate the validity of the model and to discuss the influence of the single constructs on business process performance. Therefore, we focus on the analysis of the relationships among the constructs and its relative influence on performance. We first present the research methodology and the instrument construction, followed by the presentation of the research results.

3.1 Research Methodology

This study employs a field survey among German banks and focuses on the SME credit process. In 2005, questionnaires were mailed to a sample of 1,000 banks. 136 completed questionnaires were received, resulting in a response rate of 13.6% covering about 21% of the Total Assets of these banks. The constructs are operationalized at a business process level. This is based on our belief that variance at the firm level disguising IT impacts can be avoided by focusing on a core process of the banks that confines to the same regulatory environment and customer segment. 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.

First, we used business executives' perceptions as a proxy for process-level impacts of IT. Therefore, the assessment of the usage and impact of IT may be biased. Nevertheless, the use of business executives' perceptions is widely accepted in IS research (Bergeron et al. 2004; Chan et al. 1997; Cragg et al. 2002), because there is evidence in literature that they correlate with objective measures (Tallon et al. 2000).

Second, the limitation of using a single source to represent a bank's position is well recognized. This limitation was relaxed by the use of the expert in charge of the credit process to get the relevant variables (Tallon et al. 2000) and by accompanying the survey by a set of case studies that allowed balancing the view of the manager in charge with other manager's view where we did not find great deviations in the assessment.

As pointed out, literature advocates a process-level analysis. In spite of this requirement, empirical research regarding alignment at this level is very rare. Therefore, the construction and assessment of the variables was an important task, had to be chosen concordant to an accepted instrument or framework (Tallon et al. 2000) and adapted to the research context. As suggested by Eisenhardt (1989), the indicator questions have been derived mainly from validated questionnaires from literature and adapted to our purpose. IT business alignment 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 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 the references (please note that the original indicators used in the survey are in German and are translated here).

Construct (References)	**Dimensions**	**Key Indicators**
Process Performance (Ray et al. 2004)	Quality Process' owners satisfaction	• The share of bad loans is too high. • Compared to competitors our credit process produces higher quality. • I am satisfied with the profitability of the SME credit process.
IS usage (Massetti and Zmud 1996)	Depth of IS usage	• The IS is used in sales very intensely. • The IS is used in risk mgt. very intensely. • The IS is used in workout very intensely.
Business skills (Bassellier	Qualification	• Sales employees are highly experienced in

et al. 2003; Hatch and Dyer 2004)	and experience	their business. • Our employees are highly experienced in personally taking care of customers. • I am satisfied with the qualification of the employees engaged in the credit process:
Business-internal alignment (adapted from Reich and Benbasat 1996 and 2000)	Mutual understanding Executives rating of linkage	• Sales and back office work together very closely. • Understanding between sales and back office could be improved. • Back office employees are very satisfied with the work of the sales unit.
IT Business Alignment (Bassellier and Benbasat 2004; Broadbent and Weill 1993; Reich and Benbasat 1996)	Enabler: cross-domain knowledge	• 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.
IT Business Alignment (Bhatt 2003; Chung et al. 2003; Reich and Benbasat 1996)	Enabler: Cognition	• IT unit and business unit are equal partners when changes of the core application have 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
IT Business Alignment (Chung et al. 2003; Reich and Benbasat 1996)	Enabler: Communication	• 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.

Table 1. 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".

3.2 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, PLS requires a sample size ten times greater than the largest number of paths entering the model (Gefen et al. 2000). Our sample of 136 banks exceeds this threshold by more than three times (for a critical discussion see Goodhue et al. 2006). PLS allows the test of the measurement model (psychometric properties of the

scales used to measure a variable) and the test of the structural model (the strength and direction of the relationships between the variables). The model to be tested is a second-order factor model with reflective measures. ITBA was measured as a second-order construct based on three enablers (knowledge, communication, and cognition). The first-order level contains the reflective items that are highly correlated among themselves as they are a representation of the underlying construct (Gefen et al. 2000). 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 diagonal elements (square root of the average variance extracted), 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).

	1	**2**	**3**	**4**	**5**	**6**	**7**
Process performance	**0,7576**						
IS usage	0,3969	**0,7910**					
Business skills	0,5372	0,2217	**0,8343**				
Business-internal alignment	0,4203	0,0693	0,2957	**0,8326**			
IT business alignment: knowledge	0,3563	0,0730	0,1862	0,0552	**0,8074**		
IT business alignment: cognition	0,1520	0,0050	0,0254	0,0347	0,4073	**0,8341**	
IT business alignment: communication	0,0662	-0,1170	-0,0062	-0,0071	0,2135	0,4419	**0,9494**

Table 2. Construct intercorrelations.

Construct	**PLS loadings (T-statistics)**	**Comp R.**
Process performance	0.6763 (9.25), 0.7647 (12.97), 0.8246 (23.48)	0,8006
IS usage	0.8649 (17.70), 0.7821 (7.48), 0.7193 (5.79)	0,8330
Business skills	0.8292 (15.05), 0.8608 (25.06), 0.8122 (15.18)	0,8729
Business-internal alignment	0.8731 (24.93), 0.8236 (20.03), 0.7994 (11.32)	0,8713
IT business alignment: knowledge	0.8625 (10.42), 0.7691 (7.21), 0.7875 (11.88)	0,8486
IT business alignment: cognition	0.8443 (21.56), 0.8499 (31.12), 0.8077 (18.75)	0,8727
IT business alignment: comm.	0.9398 (82.88), 0.9505 (85.60), 0.9577 (83.56)	0,9648

Table 3. Psychometric properties of the constructs.

After confirming the psychometric properties of the seven multi-item scales, we investigated the second-order construct IT business alignment. This construct was measured by three multi-item scales assessing sets of enablers for IT business alignment. The results for "knowledge" (= 0.3338, T-value = 5.24, $p < 0.001$), "cognition" (= 0.4261, T-value = 11.03, $p < 0.001$), and "communication" (= 0.5519, T-value = 9.93, $p < 0.001$) 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 four hypotheses stated in section 2. The statistical significance of the estimates was calculated by using the bootstrapping procedure with replacement of 500 sub-samples (Chin 1998ab).

Tests of the hypotheses rely on magnitude, sign, and statistical significance of the path coefficients of the structural model. With the hypotheses being unidirectional, tests were carried out at the 1%-level of significance using a one-tailed t-test. Figure 1 represents the results, exhibiting all path coefficients as significant at the 1%-level.

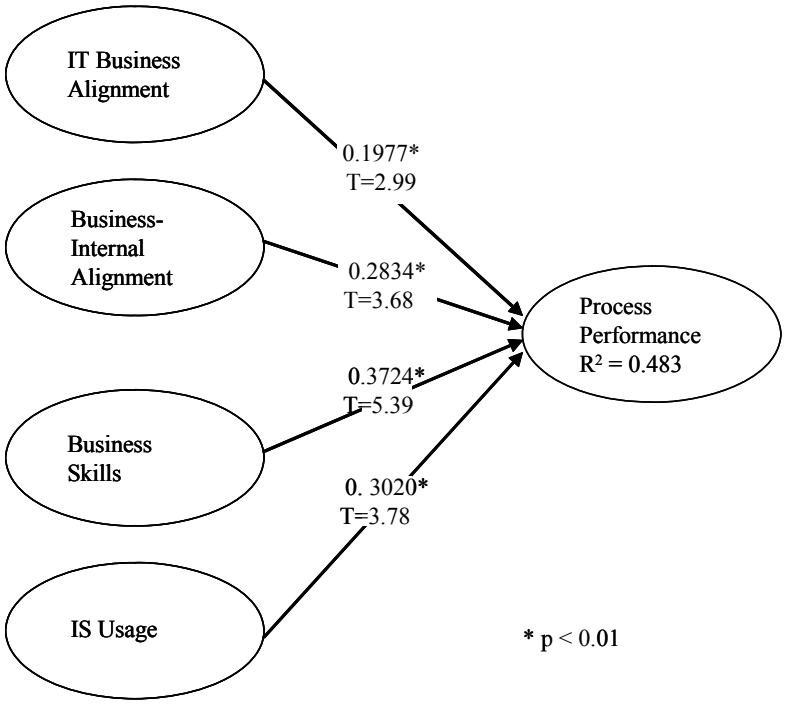

Figure 1. Results.

The predictive validity of the model can be assessed by estimating the total variance explained by the model (R^2) and by calculating a predictive validation index Q^2 (Geisser 1975). The model explained 48.3% of the variance of our dependent variable "process performance". Using a blindfolding procedure that omits parts of the data for a given block of indicators the obtained Q^2 for both the commonality measures of each construct and the redundancy measure for the structural model were stable and positive. Omission distances should be prime numbers less than the sample size of 136. We used the omission distances 29, 67, and 101. Together, these values for R^2 and Q^2 suggest that the model predicts the process performance reasonably well (Chin 1998ab). Finally, the effect size f^2 was computed that measures the relative impact of a specific independent variable on the dependent variable (Chin 1998ba). As required, the effect size f^2 was found to be positive and moderate for all independent variables.

4. Conclusions

Overall, the model of process performance proposed, including the second-order construct IT business alignment is well supported by the data, and all four independent constructs of the model were found to be influential in contributing to process performance. Thus, the stated four hypotheses are supported. Additionally, possible moderating effects of ITBA and mediating effects of the other constructs regarding ITBA were tested but found to be statistically insignificant.

This paper presents one of the rare studies combining alignment and IS usage at the level of a business process. Extending prior research, IS usage and IT business alignment were found to affect the performance of an operational process with an IS already in place. Business skills were also found to influence process performance significantly as forecasted by literature, supporting those arguments. Further, a new construct, termed structural business-internal alignment, was proposed that proved to have a significant direct and positive effect on process performance.

While prior research has mostly emphasized strategic aspects of IT business alignment, this study provides a more granular perspective by focusing on the process level and simultaneously researching into the business domain. Results of this study show that it is important to integrate knowledge in both the business domain (business internal alignment) and across domains (IT business alignment). IT business alignment 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. Similarly, business-internal alignment refers to the knowledge integration across business units engaged in the business process. Both factors account for more than half of the explained variance. Finally, appropriate resources must be implemented within the business process, these are the business skills needed to perform a task and the supporting IS represented by the construct IS usage. The following table summarizes the results.

Research question 1	How and to what extent is IT business alignment related to business process performance? Related research: (Reich and Benbasat 2000; Tallon and Kraemer 2003)
Answer 1	IT business alignment based on three sets of enablers was viewed as knowledge integration that proved to have a significant effect on process performance.
Implications 1	Management should encourage the interworking and knowledge exchange of IT and business representatives, and by communicating the importance of this interaction for the firm.
Research question 2	What is the influence of business-internal alignment and IS usage on business process performance? Related research: (DeLone and McLean 2003; Doll and Torkzadeh 1998; Gordon and Gordon 2000; Kearns and Lederer 2000; Massetti and Zmud 1996)
Answer 2	Business-internal alignment and IS usage have a significant influence on process performance.
Implications 2	Regarding IS usage management should foster the appropriate use of the available systems by training, by a responsive support staff and a flexible change process. Regarding the business-internal alignment close working relationships should be fostered, e.g. by cross-departmental working groups on the common goal of an efficient and effective process.

Table 4. Research questions and implications.

In sum, we simultaneously considered the IT domain and the business domain of a firm, proposing that both domains must be integrated into a set of business processes as the locus of leveraging assets to produce products and services. It was shown that alignment is not restricted to relationships between the traditional alignment domains of the SAM but is also relevant on a more micro level perspective when focusing on relationships within a specific domain. In future work, more comprehensive models that combine additional IS usage and

alignment perspectives as well as additional variables and considerations regarding turbulent environments should be attempted. For example, while our study focused on structural alignment, other studies have shown that strategic alignment (Tallon et al. 2000) might be important at the process level as well.

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