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How to Achieve IT Business Alignment?

Investigating the Role of Business Process Documentation in US and German Banks

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ABSTRACT

It is increasingly acknowledged that generating value from IT requires strategic and operational IT business alignment. But it remains difficult to give concrete suggestions on what drives alignment in day-to-day business. Thorough process documentation might enable cross-departmental transparency and thereby serve as antecedent of operational alignment. We suggest that business process documentation is a straightforward and actionable antecedent of operational IT business alignment. Using data from 200 US and German banks it is shown that indeed documentation strongly drives operational alignment, but surprisingly only in US banks. The implications and avenues for further research on operational alignment are discussed.

Keywords

Business value of IT, IT business alignment, Process documentation.

INTRODUCTION

IT business alignment is widely accepted as an important factor for creating business value from IT (Chan et al. 1997; Kearns and Lederer 2003) and consistently found to be a top management concern (Luftman and McLean 2004). While a large body of the alignment literature focuses on *strategic* IT business alignment, more recently some attention shifted towards alignment in daily business (Reich and Benbasat 2000; Wagner and Weitzel 2006; Beimborn et al. 2006). This *structural* or *operational* alignment also considers the IT business relations in terms of interaction patterns, shared knowledge and mutuality to enable that strategic goals are actually realized in operations. This has opened new perspectives on how alignment between IT unit and business units is related to success and also has enhanced the explanatory power of IT value models. Nevertheless, there remain several open issues in IT business alignment research (Chan and Reich 2007). Besides a concrete framework of *how* IT business alignment affects performance, it is still rather unclear *what* actually drives IT business alignment (Chan and Reich 2007) and what a firm can do to foster alignment. Hence, disclosing possible antecedents of operational alignment seems to be a promising field for researchers (Van Der Zee and De Jong 1999; Yetton and Johnston 2001) while results should give practitioners valuable suggestions on (managerial) action items for establishing a strategic and operational alignment capability. From a different perspective, some authors found process documentation to be a value driver for various reasons. For example, (Wüllenweber et al. 2008) show that process documentation drives outsourcing success because of the related transparency and easier implementation of performance control points. Similarly, (Weitzel 2006) shows a positive impact of documentation via transparency. Encouraged by case study findings in recent alignment projects we expect process documentation to strongly drive operational alignment as it offers employees across units insights into the entire business process, their interdependencies with others and might even contribute to better understanding of what the other side is doing and why. More precisely, we expect business process documentation to facilitate communication as it can only be done jointly by several employees. For the same reason, we expect business process documentation to improve shared knowledge and cognitive linkages. We thus aim at investigating whether process documentation has an impact on operational IT business alignment and ask:

- *How does business process documentation affect operational IT business alignment?*

We collected data in two industrial nations (US and Germany). In both cases, we used a strict business process perspective and chose the process of granting credits to small and medium-sized enterprises (SME) in banks as unit of analysis.

The paper is structured as follows: First, we develop the research model and introduce the relevant constructs (process documentation and operational IT business alignment). Then we describe the underlying methodology and empirically evaluate the model using PLS analysis. Finally, empirical results, limitations, and implications are discussed.

RESEARCH MODEL AND THEORETICAL FOUNDATION

In this section, the research model (figure 1) is developed based on the literature on IT business alignment.
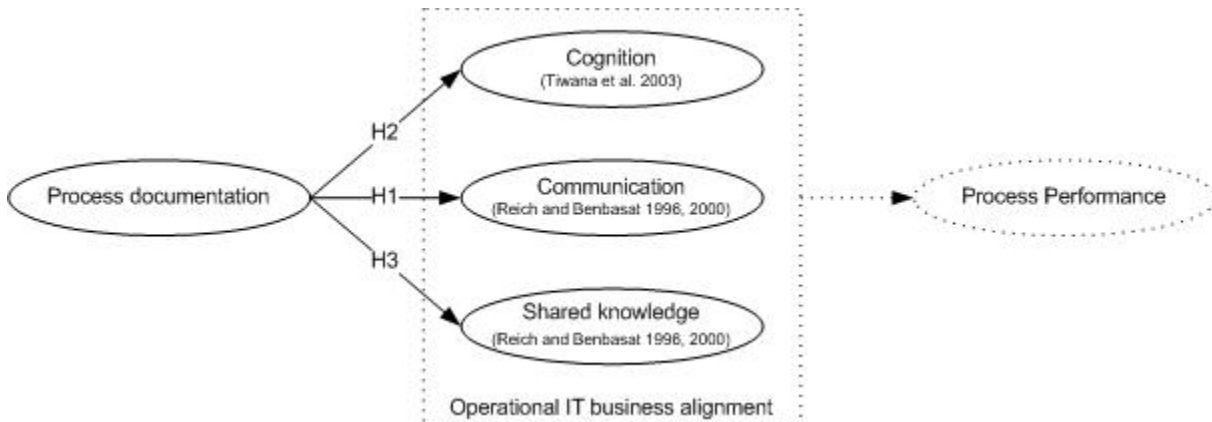

Figure 1. Research Model

Process Documentation

Business process documentation has been identified as being positively correlated with process quality (Weitzel 2006). The importance of sufficiently and well-documented processes arises, among others, from the increasing modularization and decentralization of IT services. While this allows and supports efficient process architectures and flexible cost models on the one hand, new challenges like orchestration issues emerge on the other hand (Iyer et al. 2003; Wijnhoven 2001). Only when IT staff knows and understands the business process to be supported, will IT be able to develop adequate IS that help to create value through the respective business process. Therefore, drawing on the work of Castano, Antonellis, and Melchiori (1999) and Edwards and Peppard (1997), we state that business process documentation is a necessary prerequisite in order to provide a solid foundation on which IT can develop and maintain their IS, and for enabling IT unit and business units to work together effectively and efficiently. In this respect, we investigate the role of process documentation by looking on several aspects. One point is the degree of available documentation regarding the business process (Ungan 2006). Second, the extent to which the respective business process is documented in an action-based way (flow charts, activity diagrams or similar) is examined. Third, it is interesting to see if the process documentation is centrally and consistently archived, if it is easily accessible and understandable by every person, and, fourth, if it has been developed and is maintained in close interaction between business and IT. In any case, documenting business processes might be a promising way to enhance the collaboration of business units and IT unit, in particular for the latter scenario, when the work is done jointly.

Operational IT Business Alignment

IT business alignment generally can be defined as "the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives and plans" (Reich and Benbasat 1996). In general, IT business alignment can be distinguished into a strategic (or: intellectual) dimension and a structural (or: social) dimension (Reich and Benbasat 1996). The first was originally proposed in the Strategic Alignment Model (SAM) (Henderson and Venkatraman 1993). The latter one can be split into several sub-dimensions: (1) communication between business and IT executives, (2) connections between business and IT planning processes, (3) shared domain knowledge between business and IT executives, and (4) IT implementation success (Reich and Benbasat 2000). While research in strategic aspects of IT business alignment started very early and the impact of strategic (or: intellectual) alignment on value creation is widely accepted (Sabherwal and Chan 2001; Tallon, Kraemer and Gurbaxani 2000), studies investigating the structural dimension

more recently attracted attention, extending the strategic examinations by including more operational concerns. These have long been under-researched, leaving a gap at the daily business level (Bergeron, Raymond and Rivard 2004).

In our research model, we focus on the structural/operational dimension of IT business alignment, as the independent variable business process documentation primarily is concerned with operational issues on process level and less with strategic decisions, plans and objectives. Therefore, we adopt the social dimension of Reich and Benbasat (1996; 2000), but slightly modify it by adapting it to our research domain excluding the second and the fourth enabler and refer to it as operational IT business alignment. The reason for not taking into account the IT implementation success is that our survey was on the SME credit process and the IS supporting it, namely the credit management system since this is a running and ongoing business process and most of the IT systems are already in use for several years. For the same reason we do not assess the connection dimension as it focuses on connections between IT and business in the development phase. Instead, we add the cognitive dimension of Tiwana, Bharadwaj, and Sambamurthy (2003), addressing mutual acceptance, trust, and respect between IT and business units as part of our analysis regarding operational IT business alignment. In the following, we briefly describe each of the three dimensions of operational IT business alignment as used for the purpose of this paper.

Communication

Communication has been found to be a major aspect of operational IT business alignment (Reich and Benbasat 1996; 2000) and refers to the extent and intensity of interaction between IT unit and business units employees. Thus, we primarily do not address communication patterns between IT and business executives, but interaction amongst the staff involved in daily business and in projects. We measure this construct by examining whether there are regular meetings between the IT unit and the business side in order to identify business process improvements or to ensure an effective and efficient change process. Also, we asked if there is extensive communication between IT unit and business units in general (for an overview on all used indicator items, the reader is referred to table 1 in the appendix). As all interaction activities require a common perspective on the process and as process documentation is expected to offer this transparency (Wüllenweber et. al 2008) and give everybody a common language, we expect documentation to improve communication quality.

> *H1: Business process documentation positively affects communication (as part of IT business alignment).*

Cognition

According to Tiwana, Bharadwaj, and Sambamurthy (2003) the cognitive dimension of alignment deals with mutual understanding and common goals. In this context, the involvement into other units' planning processes can be used as a measure. Moreover, we took into account if IT unit and back office regularly consult each other and if theyperceive themselves to be equal partners when it comes to changes in the credit management software system. As a jointly developed and centrally archived process documentation might facilitate common understanding of key goals regarding the business activities, we come to our second hypothesis:

> *H2: Business process documentation positively affects the cognitive dimension of IT business alignment.*

Shared knowledge

Finally, the shared knowledge dimension (Reich and Benbasat 1996; 2000) of operational IT business alignment is about the extent of cross-domain knowledge, i.e. if IT and business units know what the respective other side is doing and why. For example, do IT employees know the business process and, as a consequence, are they able to understand the business problems and to develop adequate solutions? Furthermore, shared knowledge addresses phenomena like the existence of a general vocabulary on major IT and business issues that is known by both IT and business employees. We state that business process documentation improves shared knowledge by bringing IT and business employees together. The process of developing and maintaining business process documentation may lead to a better shared knowledge in terms of the relevant business process. The hypothesis thus is:

> *H3: Business process documentation positively affects shared knowledge (as part of IT business alignment).*

In the nomological model (figure 1), we have also considered the relationship between operational IT business alignment and IT business value. This has been identified and supported in literature for many times, as argued in the introduction, and thus we do not explicitly investigate it again. Furthermore, the figure shows a strongly simplified relationship about how IT business alignment impacts IT business value. Most studies in the past decade have revealed that the influence of IT business alignment on IT business value is rather indirect and complex (see e.g. Melville, Kramer, and Gurbaxani 2004). As we concentrate on the effect of business process documentation on operational IT business alignment and do not measure the

influence of IT business alignment on consecutive variables, the basic depiction shall merely incorporate the general concept that IT business alignment "somehow" facilitates business value.

METHODOLOGY

This study was conducted in two steps. Focusing on the SME credit process, a questionnaire was mailed to the chief credit officers (CCOs) of the 1,020 largest German banks (according to total assets) in 2005. 13.3% sent back a completed questionnaire. In the US, the CCOs of the largest 1,500 banks were initially called and asked for participation. 1,213 executives agreed to take part in the study and received a questionnaire in 2007. Finally, 149 banks returned it, leading to a response rate of 12.3%, based on the population after excluding the initial declines. Considering the German response rate calculation method, the US sample represents 9.9% of the overall population. With regard to the indicators used in our research model, the respective questions were translated into English, and, where necessary, slightly adjusted for the latter survey. In both surveys only the corporate offices were subject to the investigations, so there were no bank duplicates within the population. To assure that the questionnaire will be directed to the correct person in each bank, every bank was contacted by phone to identify name and address of the chief credit officer and ask for participation. After the initial mailing, two reminders were sent in case of missing response; the first one four weeks after the initial, the second one four to six weeks after the first reminder.

The collected data were captured using a self-developed survey software and double checked before analyzing them.

Operational IT business alignment is represented by three dimensions (cognition, communication, and shared knowledge) as described before, while process documentation is hypothesized as a driver for each dimension. Each of the operational IT business alignment dimensions in our research model as introduced above was measured by three indicators. The independent construct (process documentation) was measured by a set of two indicators in both samples. These sets differ because we found a very high level of process documentation in the first survey (Germany) and, thus, adapted the scale before repeating the study in the US. The banking business – in Europe, in particular – is subject to high regulations and thus is traditionally involved in comparably strong documentation activities, which also are resembled by relatively high process documentation. After collecting the data in Germany, we decided to slightly adapt the process documentation scale in order to achieve data which, due to its distributional characteristics, suits better for SEM and PLS.

Following Eisenhardt (1989), all indicator questions have been derived mainly from validated questionnaires from the literature and as far as possible adapted to our purpose. The PLS model in both the US and the German case was calculated for 300 times by applying the bootstrapping algorithm. For all calculations, SmartPLS, Release 2.0.M3 was used (Ringle et al. 2005).

Unit of Analysis

Recent literature suggests that the role of IT business alignment should be investigated at the process level rather than on the overall firm level (Barua, Kriebel, and Mukhopadhyay 1995; Melville, Kramer, and Gurbaxani 2004). Moreover, in order to assess business process documentation, process-level analysis is reasonable, too. In this case, the business process underlying our surveys is the process of granting and managing credits to SME. We chose this business process for several reasons. First, banking processes in general are highly dependent on IT, making IT the most important resource besides people. Second, credit processes are integral elements of the banks´ value chain and thus attract high management attention. Third, credit processes contain people-intensive process parts where IT only serves as a support service, incorporating the need for business competencies and high alignment. Fourth, this approach reduces possible bias resulting from contextual factors by neglecting other business processes.

RESULTS

Figure 2 presents the results derived using PLS analysis. Data sets containing missing values were skipped from the calculation, leading to a total sample size of exactly 100 in both country sets. These numbers have not been subject to any modification in order to generate a better comparability but just result from the case-wise deletion due to missing values.
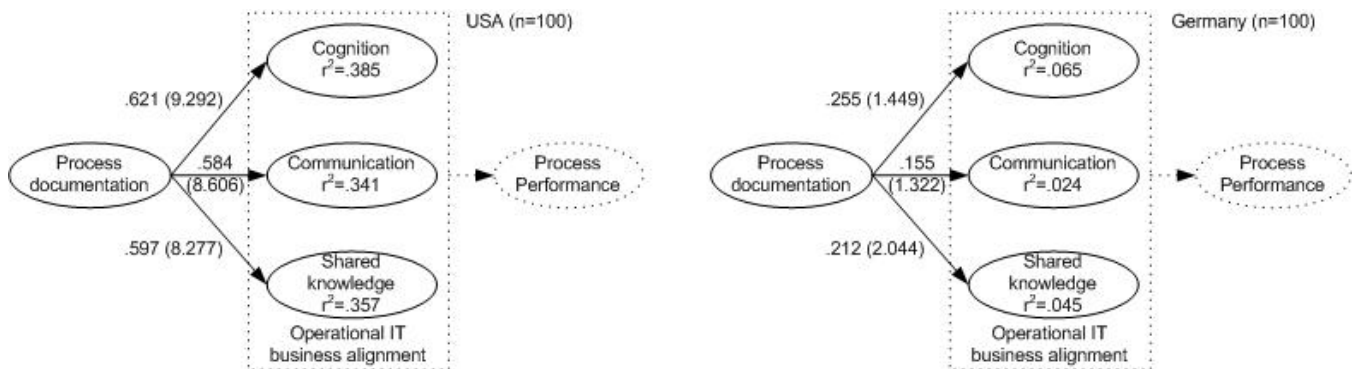
Figure 2. Path coefficients and t-values (in parentheses) from PLS analysis.

Overall, we find an impact of process documentation on alignment as expected. But interestingly the results differ between the US and the German sample. The relationship between process documentation and the three dimensions of operational IT business alignment is striking. While in the US sample, there is, as hypothesized, a strong impact of process documentation on each of these dimensions, especially on the communication dimension, this does not hold for the German sample. For US banks all three hypotheses H1-H3 can be accepted. Business process documentation positively influences the communication dimension (H1), the cognitive dimension (H2), and the shared knowledge dimension (H3). This is different for Germany. Here, we see almost no influence of process documentation on operational IT business alignment, only shared knowledge is significantly affected. By contrast, the path to communication indicates a weak and insignificant result, in particular. However, in both samples the link from business process documentation to the cognitive dimension is the strongest one, followed by the one from business process documentation to the shared knowledge dimension. The weakest link is the one from business process documentation to the communication dimension. Thus, we could find consistent results regarding the relative strength of the path coefficients in both samples. Nevertheless, the differences between them are quite small, so that the main finding indeed is the remarkable discrepancy in the impact of business process documentation on operational IT business alignment when comparing both countries. We can summarize that H1 and H2 are only supported by the US sample while H3 is significantly confirmed by both samples.

DISCUSSION AND LIMITATIONS

Beside a confirmation of the hypotheses theoretically derived above, the results show some interesting issues worthwhile to be discussed. First of all, there are strong differences between the US and the German sample regarding the impact of process documentation on alignment. The analysis above shows weak or even insignificant path coefficients in the German sample while they are quite high in the US sample. A first explanation might be the differing measurement models. While the German questionnaire directly asked for the percentage of SME credit process being documented, the US survey covered the activity of creating and offering it. If we assume no contextual differences between Germany and the US, we can argue that joint creation and maintenance of a process documentation as well as a subsequent accessibility ((1) in terms of physical access: can everybody access the files and look at them, and (2) in terms of mental access: is everybody able to "read" and understand the process documentation) are much more important than the pure existence of the documentation itself. If relaxing our assumption about the contextual similarity, we have to take into account that the German banking industry is more strongly regulated which leads all banks having quite detailed process documentation. But, the kind of process documentation which is required by the regulatory authorities not necessarily fulfills the requirements for acting as a foundation for business process optimization, reengineering, or even business process outsourcing. Hence, this basic and regulatory kind of documentation has no major impact on IT business alignment, as well.

A further interesting aspect can be found in both samples. In the US as well as in the German banks, process documentation shows the least impact on communication although this is the dimension which, in our understanding, would be strongest and most directly affected since structured communication between different departments with differing backgrounds needs some form of knowledge explication as foundation of communication. Here, we can argue the opposite way, as well. The more knowledge has been explicated the less communication is needed in order to transfer (tacit) knowledge from one person to another. Thus, one could even expect a negative relationship between the degree of process documentation and communication. Nevertheless, the results show that this counter-effect is not that strong, but, it still might be an explanation for communication being most weakly affected.

Although we found interesting results, there are some limitations to be mentioned. Since data were collected by conducting empirical surveys, one has to consider typical shortcomings of quantitative research like possible common method bias, limited generalizability and transferability to other contexts (industry sectors, business processes etc.), and the fact that all answers are subject to individual perceptions of the respective chief credit officer – although we intended to measure characteristics on an organizational level. However, regarding the latter concern, recent research indicates that what executive managers perceive pertaining to IT business value often comes close to what really happens (Tallon and Kramer 2007). Nevertheless, there remain several important aspects which have to be noted. First, looking at the dependent construct, no consistent and comprehensive framework on how to measure operational IT business alignment has emerged yet. Thus, mapping indicators to the variables is arguably not definite and may slightly vary for different research contexts. Moreover, the boundaries between the three operational IT business alignment variables are not pungent and highly interrelated. In our future research, the derivation of a more thoroughly developed operational alignment construct, also covering the *connections* dimension from Reich/Benbasat (2000), will be a key issue.

Second, one has to keep in mind the time lag between both surveys (2007 in the US, 2005 in Germany). One characteristic of banking industries is frequent and rapid change through regulatory specifications and considerable competition. Therefore it is possible that some differences result from altered market environments or industry factors. Third, similar to operational alignment, process documentation is not well covered in the literature. While our goal was to propose business process documentation as one possible factor in order to break down strategic IT business alignment to concrete operationalization at an operational level of the organization, the measurement of the independent variable process documentation is not well proven and tested. In addition, the level of business process documentation in the US and Germany might differ due to regulatory factors. For example, in order to finally accept an SME loan, the German regulatory system stipulates a second vote, while in US banks one vote is sufficient. Also, as interviews have revealed, in some banks documentation is used as described above to increase transparency and to offer cross-departmental perspectives while in others documentation is solely a regulatory issue and not seen as relevant besides compliance audit readiness. The joint impact of different regulation and a firm's employees' way of coping with regulation issues could constitute a cultural difference that might be interesting to scrutinize further.

To rule out the latter limitations, we will reconsider the findings of this paper in future research, in particular concerning the country comparison. Of course this will also be interesting when looking at the surprising differences of business process documentation impact on operational IT business alignment between both countries.

CONCLUSION

We suggest considering business process documentation as a antecedent of operational IT business alignment. Although our findings are not consistent throughout the US and German sample, the US results show a remarkable and significant correlation between business process documentation and the three operational IT business alignment dimensions (cognition, communication, and shared domain knowledge). Moreover, in case studies conducted alongside the survey, we found evidence that not only the existence of business process documentation but also its *joint* development and maintenance can be a strong driver of alignment. Further research might look for other straightforward ways to improve alignment and also can try to disclose the role of industry or country characteristics and regulatory issues as that might influence how a strategic plan becomes an operational reality.

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APPENDIX

Indicator	Description[1]	Construct	Loadings		T-values		Composite reliability		AVE	
			US	GER	US	GER	US	GER	US	GER
COG1	IT unit and the back office are equal partners when it comes to changes of the credit management system software.	Cognition	.799	.654	11.595	2.061	.87	.84	.70	.64
COG2	IT unit and the back office regularly consult each other.	Cognition	.858	.726	23.665	2.278				
COG3	The back office is proactively involved into IT planning.	Cognition	.849	.981	24.756	2.718				
COM1	There is extensive communication between IT unit and the back office.	Communication	.910	.837	41.218	3.011	.95	.90	.87	.74
COM2	There are meetings on a regular basis between IT unit and the back office for identifying business process improvements.	Communication	.927	.872	39.488	2.351				
COM3	There are meetings on a regular basis between IT unit and the back office to ensure and effective and efficient change process.	Communication	.956	.871	74.004	2.344				
SDK1	IT employees are able to interpret business related problems and develop solutions.	Shared knowledge	.897	.846	48.292	2.972	.86	.90	.68	.82
SDK2	IT employees know the SME credit process.	Shared knowledge	.777	.965	12.451	3.436				
SDK3	IT employees inform the back office about IT specific issues using a non-technical and business related terminology.	Shared knowledge	.794		15.154					
PD1	The SME credit process is documented.	Process documentation		.931		6.572	.89	.84	.80	.73
PD2	The SME credit process is documented process-oriented.	Process documentation		.774		3.458				
PD3	The process documentation is centrally and consistently archived.	Process documentation	.841		12.971					
PD4	Any process documentation is developed/maintained in close interaction between business departments (sales unit and back office) and IT unit.	Process documentation	.945		97.905					

Table 1. Indicator and construct table including statistical values[2]

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[1] Indicators were measured by a 5-point Likert scale ("1" indicates "strongly agree" and "5" indicates "strongly disagree").

[2] Original questionnaire of German survey was written in German.