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A Social Linkage View on the Business Value of IT

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Keywords: IT Business Alignment, Business-Internal Alignment, Inter-Departmental Social Linkage, Banking Industry

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Our research intends to explore whether a social perspective on IT business alignment can help shed light on the IT value creation process by considering different facets of interpersonal linkage. In this paper, we develop a theoretical model which could be discussed at the JAIS workshop. Further, we use some empirical data from 149 US banks in order to find first empirical evidence whether our research focus represents a promising direction. We find initial support for our main hypotheses that communication, cross-domain knowledge and mutuality among and between IT and business staff significantly impact IT usage and business process outcomes. The final results of our research could contribute to our understanding of how the IT resource should be understood and used to measurably contribute to firm goals. The initial findings support the caveat of recent studies suggesting that informal aspects of alignment might be quite notable (e.g. Chan, 2002) and show that our theoretical understanding of alignment should be extended to better incorporate social aspects of daily work life.

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A SOCIAL LINKAGE VIEW ON THE BUSINESS VALUE OF IT

Introduction

What is the impact of social linkage on a firm's business value of IT? Motivated by a fascinating plethora of studies on interpersonal linkage and interaction we expect exciting insights into the IT value creation process from exploring a social view on IT business alignment. In this paper, we motivate a social interaction perspective derived from the IT business alignment literature to suggest how social alignment arguments, from interaction over knowledge sharing to trust and mutuality, drive Information Technology (IT) usage and ultimately business process performance. Our implicit assumption is that operational level alignment, which is focused on communication, shared knowledge and cognition, largely captures the essence of many disciplines' striving for understanding the role of social interaction for IT usage and success. At the same time, the different facets of alignment are conceptually and empirically increasingly well understood in their role for IT value creation. More precisely, we expect social alignment to represent the linkage between and among the business and IT side of a firm which translates into effective communication and knowledge transfer and ultimately success. With this paper we intend to sketch a first theoretical model which might serve as a foundation for discussing how to research these exciting and important relationships and how to combine alignment research with a social linkage perspective. We are aware that there is some way to go but we are looking forward to fruitful discussions at the JAIS workshop.

To motivate our research aim, our paper is structured twofold: In the first part (i.e. next section), we develop a model based on a social conceptualization of IT business alignment that argues that social coherence in terms of IT and business staff communicating, sharing knowledge and having mutual trust and respect drives both, the degree of IT usage and eventually success. After this theoretical part, we use some data based on traditional measurement models from prior research in order to examine if our basic propositions hold. The motivation for this part is not to test a new theory, but only to give some first hints on the potentials of this research focus. We see the results as the beginning of a promising avenue towards better disclosing the role of IT in value creation by focusing on the human IT resource or more precisely its social interaction topology within. The final results will also be interesting for firms as social patterns like those we analyze are complex and difficult to imitate, thus creating resource position barriers (Reed and DeFillippi, 1990).

Research Model

Theories on Interpersonal Linkage

There are exist different perspectives on the role of interpersonal linkage and communication in both the Information Systems (IS) and other research communities. Prominent examples are social capital theory (Coleman, 1988), relational exchange theory (Dwyer et al., 1987, Macneil, 1980), knowledge based view (Grant, 1996, Kogut and Zander, 1992, Spender, 1994), diffusion of innovations (e.g. Abrahamson and Rosenkopf, 1997), or the social network perspective (Burt, 1992, Granovetter, 1973). A strong commonality, from sociology to diffusion of innovation theory, is that the ways individuals or groups interact are expected to shape the individuals' environment, including design, usage, and success of information systems. If we look at some of

the most exciting IS and related research areas, inter-human linkage is a topic of elemental importance, and yet not always fully understood. In *social network theory*, the linkages between actors can represent a wide array of meanings but they all relate to the relationships, not an individual's attributes (e.g. Barnes, 1954, DeSanctis and Poole, 1982, Granovetter, 1973, Granovetter, 1982). In this context, *social network analysis* (SNA) focuses on relationships among social entities and their patterns and implications (Wasserman and Faust, 1994), thus highlighting the notion of relation that builds on linkages between social entities, e.g. individuals or organizational units (Burt, 1992). *Social capital theory* pinpoints the relations among network nodes and considers, among others, reciprocity and trust (e.g. Coleman, 1988, Wasko and Faraj, 2005). *Relational exchange theory* stems from the marketing science but has been used to explain outsourcing success by focussing on the relationship quality between client and vendor (e.g. Kern and Willcocks, 2000, Lee and Kim, 1999, Wüllenweber et al., 2008). *Diffusion of innovation theory* and its variations posit that innovation is communicated throughout social systems and that adoption might, among others, follow knowledge spill-overs from others or be limited by knowledge burdens (Fichman, 2004, Fichman and Kemerer, 1999, Rogers, 1995). In the *theory of reasoned action* (Ajzen and Fishbein, 1973, Fishbein, 1967, Fishbein and Ajzen, 1975) and the *theory of planned behaviour* (Ajzen, 1985, Ajzen, 1991, Venkatesh et al., 2003), 'subjective norm', i.e. a strong driver of an individual's formation of a behavioural intention, results from implicit and explicit interaction with one's social environment.

Interpersonal linkage has also been found to be an interesting topic when trying to understand how IT can contribute to value creation. The *Resource-based view* has suggested to focus on complementarities between, among others, human resources: IT cannot be expected to provide benefits per se but must be employed together with other factors (Dewett and Jones, 2001,

Peppard and Ward, 2004) and that IT only leads to competitive advantage when it exploits complementary human and business resources (Melville et al., 2004, Powell and Dent-Micallef, 1997). Mastering these enhancing relationships is considered a core IS capability (Feeny and Willcocks, 1998, Tiwana, 2003, Wade and Hulland, 2004). As elaborated in the next section, the literature on *IT business alignment* has long called for synchronizing IT and business resources on a strategic level (Reich and Benbasat, 2000, Wagner, 2007) while more recent contributions also emphasize the role of informal relation and operational alignment. These relationships are built upon processes among human actors that allow exchanging knowledge and forming attitudes (Reich and Kaarst-Brown, 2003). These organizational routines (Nelson and Winter, 1982) are "regular and predictable patterns of activity which are made up of a sequence of coordinated actions by individuals" (Grant, 1991). As these routines develop over time, they might be seen as dynamic capabilities. We see the conceptualization of the social aspects of alignment, as delineated further below, to be appropriate to capture essential parts of the impact of interpersonal linkage on the quality of IT support for business processes. Transcending the pure IT and business fit view as widely found in the alignment literature, we also expect business-internal relations to be relevant for IT value creation for analogous reasons. As all parts and functions of a firm ultimately produce an outcome as a result of their orchestrated interplay, IT business integration is as important as, for example, sales and production integration. The special role of IT is that it also provides the 'glue' between these business functions. Accordingly, some authors find special firm resources which they call relationship assets (Nelson and Winter, 1982, Powell and Dent-Micallef, 1997, Ross et al., 1996).

Model Development

IS usage and IT Business Value

In the post IT productivity paradox era, the debate among both scholars and practitioners shifted from asking whether information technology does pay off in terms of better organizational performance to investigating the *how* in the IT business value creation. The basic motivation for research in IT business value is lying in the "desire to understand how and to what extent the application of IT within firms leads to improved organizational performance" (Melville et al., 2004). While early research found different and inconsistent results in trying to reveal the contribution of IT to the business value (for an overview on findings of IT business value studies see e.g. Ashworth et al., 2004, Kohli and Devaraj, 2003, Melville et al., 2004), more recent studies indicate support for a positive performance impact of IT (Brynjolfsson and Hitt, 2003). However, we still seek to explain the underlying mechanisms that turn IT investments together with other factors like e.g. usage (Devaraj and Kohli, 2003), business skills (Carmeli and Tishler, 2004), and alignment between business and IT (Chan, 2002, Kearns and Lederer, 2003, Reich and Benbasat, 1996, Reich and Benbasat, 2000).

Since the literature has shown that the direct link from IT investments to productivity is not appropriate to explain the IT value creation process (Melville et al., 2004), several researchers have proposed more detailed and complex models in order to reveal the indirect effects and interrelationships with complementary resources through which IT helps to increase organizational or business process performance (Lee, 2001, Peteraf, 1993, Powell and Dent-Micallef, 1997). Prior literature suggests that the extent to which IT investments translate into measurable success depends on whether and how IT is used within and by the organization (Brynjolfsson and Hitt, 2003, Mahmood and Mann, 1993). Additionally, IS usage has been

identified to be the missing link in investigating the performance impacts of IT (Kohli and Devaraj, 2003). The theory behind is that IT investments and owning IT per se do not lead to superior output (Peppard and Ward, 2004), which can only be generated when these IT resources in terms of information systems are effectively employed within business processes. Similarly, a more recent study shows that effective use of IT plays a much bigger role than the pure IT spending (Sircar et al., 2000). Thus, IS usage needs to be incorporated when investigating IT value creation, even more in information-dependent firms and branches like the financial services industry.

Based on these findings we state our first hypothesis:

H1: IS usage positively affects performance.

A Social Linkage Perspective on Alignment

IT Business alignment is an important component in order to achieve business value from IT, both from the academic and the practitioners' perspective (Feurer et al., 2000, Luftman and McLean, 2004). However, most research articles primarily emphasize and examine the alignment from a strategic perspective – although even the Strategic Alignment Model (SAM) (Henderson and Venkatraman, 1993) already contains a structural level. Since "strategies are only effective when they are translated into actions readily" (Feurer et al., 2000), the interaction between the business and the IT domain must not be restricted to the strategic level. Even perfectly aligned business and IT strategies have to be implemented and transformed into daily business in order to lead to the intended results (Gordon and Gordon, 2000). Based on earlier works (Beimborn et al., 2006a, Beimborn et al., 2006b) we focus our research on this *operational IT business alignment*, reflecting the functional integration of business and IT at the operational level.

Wagner (2007) has conceptualized and operationalized *operational alignment* by three different dimensions, drawing on works of Reich and Benbasat (1996, 2000), Tiwana et al. (1998) and others like e.g. (Galbraith, 1977, Nelson and Cooprider, 1996, Zmud, 1988). The first dimension is "communication" and refers to the type, frequency and quality of communication and interaction patterns between the different units on the operational level – both in day-to-day business and in joint projects, e.g. for discussing and conducting changes of the IS infrastructure (Reich and Benbasat, 2000). The second component is "shared domain knowledge" and refers to the knowledge about the other side's domain, which is a necessary criterion for effective collaboration of IT and business side as well as for achieving improved IS performance (Bassellier and Benbasat, 2004, Nelson and Cooprider, 1996, Sambamurthy and Zmud, 1997). For example, the IT side needs a certain level of knowledge about the supported business, its processes and structures, in order to provide effective IT services (Teo and King, 1997). Inversely, business people who have competencies and knowledge about the IT domain are helpful for more effective communication and interaction, e.g. when change requests are specified and IT projects are set up (Bassellier et al., 2003).

As a third component, Wagner uses the "cognitive" dimension of a relationship. Tiwana et al. (2003) and Galunic et al. (1998) show that the "cognitive relationship", embracing concepts like trust, mutual acceptance and respect are critical for a good relationship between business and IT people.

Obviously, there are high interdependencies between these three components. Reich and Benbasat (2000) argue that shared knowledge is an antecedent of communication, while it is also evident that communication increases shared knowledge (Alavi and Leidner, 2001, Bhatt and Grover, 2005, Martin et al., 2008, Tiwana, 2003) and cognition (Tiwana et al., 2003). Moreover,

shared knowledge is an important factor for developing a trustful and respectful partnership (i.e. cognitive dimension) (Broadbent and Weill, 1993, Segars and Grover, 1998) but can also be seen as an outcome of a good partnership, since the transfer of tacit knowledge is more likely when people trust and respect each other (Hansen, 1999, Tiwana et al., 2003). Nahapiet and Ghoshal developed a ground piece of work which theoretically develops the causal relations between different dimensions of social capital and different actions for acquiring knowledge. Thus, they integrate the social capital theory and the knowledge-based vies.

Summarizing these three dimensions, operational IT business alignment represents a linkage between business and IT side of the firm, which allows effective communication and knowledge transfer (Zahra and George, 2002). Operational alignment enables the IT unit to provide services which are oriented towards the business demands and thus can be efficiently and effectively utilized. Wagner (2007) summarizes two primary aspects which support this argument: (1) Alignment leads to more mature and effective IS support processes at the operational level (Avison et al., 2004, Holsapple and Luo, 1996) and (2) alignment increases "the likelihood of developing and changing information systems according to the business requirements by frequent communication between the IT unit and the business unit" (Wagner, 2007), cf. also (Kearns and Lederer, 2004, Teo and Ang, 1999). Since business units are stronger involved in IT planning and, thus, their requirements are more considered during planning new systems or just changes, the resulting information systems are more likely to be used (Avison et al., 2004, Lederer and Mendelow, 1989).

H2: Operational IT business alignment positively affects IT usage (and, thus, process performance).

When Henderson and Venkatraman developed their Strategic Alignment Model (SAM), they adopted a global perspective which did not only consider the actual strategic alignment, but also covered the vertical fit between the strategic level and the structures of the firm, i.e. describing that the strategy, defined at the top level, is actually implemented to the structures and has shaped the routines of the firm. Moreover, the SAM captured the alignment between IT and business on the structural level, later instantiated by works like (Wagner, 2007). Finally, the different boxes of the SAM also express a form of internal alignment in each of the model's corners. In the following, we want to put emphasis on the *business-internal alignment* which means, in a simplified manner, transferring the concept of operational IT business alignment to relationships between different organizational units *within* the business domain. In this work, we want to emphasize that it does not only require a strong linkage between business and IT but also between business and business in order to increase the performance of the firm. Since a general investigation of the impact of business-internal alignment would leave the focus of IS research, we restrict our focus mainly on the relationship between business-internal alignment and IT usage (which in turn may increase business performance, as hypothesized above). According to the concept of operational IT business alignment, business-internal alignment, in this work, is considered as the inter-departmental, operational or social linkage – capturing communication, cognition, and shared knowledge facets – on the business side. It becomes highly relevant in cases where different business units collaborate to create a certain business output. Wagner (2007) draws a relation to Ross et al.'s (1996) relationship asset and argues that business-internal alignment "reflects the ability of the different business groups to understand each other's needs and to create a partnership to collaborate in order to meet needs and exploit opportunities".

Process performance and overall firm performance highly depend on effective collaboration of different organizational units and different people (Chan, 2002, Wagner, 2006).

H3: Business-internal alignment positively and directly affects process performance.

Often, business units that work within the same business context or on the same business process, use the same information system (e.g. an ERP system, a workflow management system, a credit system etc.). Overall process performance depends on the "weakest link of the chain", i.e., the organizational unit that uses IT in the least effective way. Business-internal alignment helps to achieve effective communication and higher mutual understanding between the units. Thus, business units that operate more poorly can and will get a better understanding for the overall business process and the consequences of their activities. In case studies (Beimborn et al., 2007, Wagner et al., 2006), we found strong evidence that high business-internal alignment between business units close to the IT and other business units lead to the latter using their IT more efficiently and effectively. This in turn resulted in a higher overall performance of the overall business process (in terms of processing time), both units were involved in. Often, there is a business unit which shows a particularly high usage degree regarding the system ("power users" or "IT champions") – and thus is particularly highly affected by other units not effectively using the system. Theoretically, this relationship can be drawn on Abrahamson and Rosenkopf (1997) which argue that adoption of innovations (which we transfer to "adoption" of more effective technologies) depends on the structure of the social network, emphasizing the borderlines between the core network and the peripheral network. The peripheral network represents actors which cannot be directly contacted by the IT unit and thus are reached indirectly via the power users.

High mutual understanding about the tasks and their interdependencies between the units leads to spill-over of the IT business alignment, which takes particularly place between IT and the "power users", to the remaining business units (Nelson and Cooprider, 1996, Ray et al., 2005). Our case showed that primarily the mutual understanding, driven by mixed work bios and by temporary job rotation, lead to significant improvements and helped to overcome resistance to use the IT in place. Moreover, the "power users" can provide some kind of first-level support since they have higher experiences with the used system (cf. Ravichandran and Lertwongsatien, 2005). In case they cannot solve the problem of the other business unit, they may act as a "liaison unit" and use their higher experiences and knowledge to intermediate – i.e. to translate, to moderate, or to catalyze – the interaction between the IT and the other business units. By doing so, these power user can help to achieve a more effective IT usage especially in those units that are skeptical regarding IT and therefore show a greater distance to the IT unit. In any case, the three social dimensions of operational alignment – communication, shared knowledge, and cognition – will significantly drive and ease these coordination and support processes, thus serving as predictor for better alignment among business units.

H4: Business-internal alignment positively affects IT usage (and, thus, process performance).

H5: Business-internal alignment is positively related with operational IT business alignment.

Based on the formulated hypotheses, the following overall research model can be drawn:

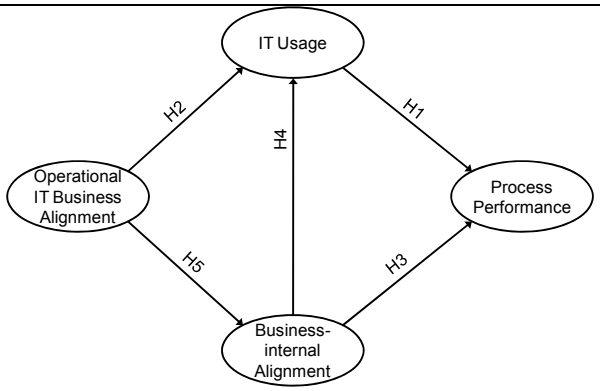

Figure 1. Research Model

Empirical Evidence

After the initial development of our model, the following section reflects it against some data in order to show if there is evidence which makes our research focus a promising one. Consequently, this empirical chapter shows the typical structure, consisting of methodology and results.

Methodology

Unit of Analysis and Approach

For doing statistical analyses, we used quantitative data from surveying the banking industry, or more precisely, the corporate loans business. The focus of the study was to examine the role of IT in the process of granting credits to small and medium sized enterprises (SMEs), which we refer to as SME credit process. Here, we particular focus on how different organizational units collaborate (sales and back office, in particular), use IT, and how IT does support the various process parts.

The data was collected by sending questionnaires to the Chief Credit Officers (CCO) or other executives, who were in charge of the SME credit process, of the 1,500 largest banks in the US according to total assets in 2006. We solely contacted the corporate office of each bank (not several branches of a single bank), leading to the overall population containing no bank duplicates. In order to ensure that the correct person in charge will receive the questionnaire, each bank was called by phone to identify the CCO, to describe the survey basics, and to ask for participation. 1,213 credit process managers agreed and received the questionnaire by their favored channel (e-mail, mail, or fax). Four weeks later, a paper-based reminder was sent to those CCOs who had not answered yet. Another four to six weeks later the banks where a response was still lacking were called again in order to assure they had received the questionnaire and to ask for the reason why they had not filled it. In case of a positive signal indicating ongoing willingness to take part in the survey, the questionnaire was sent again to the CCO. Overall, 149 mainly completed and analyzable questionnaire were returned, leading to a response rate of 12.3% after excluding the initial declines from the overall population.

The received data were entered into a data base and verified by a second person also using the original questionnaires. For analyzing the data and testing our model, we used the Partial Least Squares approach and applied the free software package smartPLS (Ringle et al., 2005). We deleted all cases which had a missing value regarding at least one of the used items (cf. below), we finally got a data set with 90 data sets.

Measurement

In the following, we describe how the different constructs have been operationalized. An overview of all indicators applied in the presented model is shown in table 1.

Operational IT Business Alignment (ITBA): As discussed above, alignment is a complex construct – even when focusing solely on the operational level. Above, we described Wagner's (2007) construct of operational alignment, consisting of the dimensions of *shared knowledge*, *cognitive relationship*, and *communication.* Since our research takes place in a quite similar empirical context, we found it appropriate to consider his conceptualization of operational alignment in our work. But, in contrast to Wagner's work, we do not consider the three dimensions as separate constructs of an overall second-order construct. Above, we argued and brought several sources for empirical evidence that the different factors of operational alignment are highly interrelated and stimulate each other in a bidirectional way. Since we do not want to explore this interplay in detail, we decided to measure operational alignment by a single construct, using Wagner's indicators of all three dimensions. Since we can assume high positive interactions between them, we measure operational alignment in a reflective way.

Business-internal Alignment (BIA): The business-internal alignment as measured in this work focuses on the relationship of the different organizational units collaborating in the credit process. Sales collects the credit application from the customer and then transfers it – either paper-based or by entering it into the joint credit system – to the back office. Therefore, our BIA measures focus on the operational alignment between a bank's sales and credit back office.

IT Usage (ITU): According to (Massetti and Zmud, 1996) the level of IS deployment can be measured in four dimensions: (1) volume, (2) diversity, (3) breadth, and (4) depth. While there exist various conceptualizations of IS usage in literature, the concrete application is context-dependent, meaning that appropriateness of indicators is characterized by the objectives of the study and the organizational context (DeLone and McLean, 2003). In this study we slightly adapt the dimension depth as introduced by (Massetti and Zmud, 1996) and address IT usage as the

extent to which an information system (IS), here the credit management system, is used within the business domain, here the SME credit process. Therefore, we asked the executives to indicate how intensely their employees utilize an IS, i.e. their bank´s credit management system, to get the work done. Aiming at a complete picture of IT usage within the SME credit process, we did not simply ask for IT usage for the process as a whole, but for IT usage within several process parts such as sales, processing/servicing, risk monitoring, dunning etc..

Process Performance (PP): Process performance is the final dependent variable and the overall success measure in our model. Generally, we concentrate on quality as performance measure, assuming that the process performance is positively correlated with the quality level. We assess different facets of process performance to get a result that is as consistent as possible for reflecting the actual SME credit process performance of each bank. Besides questions regarding the current process design in general and compared to the competitors, other items asked for the operational efficiency of the process in general and also compared to the competitors.

As already noted, we used data from the survey described above in order to get first evidence for our research objectives. However, since the survey was designed with a focus on IT business alignment and the IT value creation in banking processes, there are some points that have to be considered. First, the quality aspect in measuring business process performance should be better investigated. Second, the number and type of items explicitly dealing with the social aspects of IT business alignment needs to be increased. This will be part of future research.

Table 1. Indicators used to measure constructs			
ID	Item	Likert scale	References
Business-internal Alignment (BIA)			
BIA1	The sales and the back office work together very closely.	5 steps (Strongly agree … Strongly disagree)	(Luftman, 2003, Powell and Dent-Micallef, 1997, Reich and Benbasat, 1996)
BIA3	The back office is very satisfied with the work of the sales unit.	5 (Strongly agree … Strongly disagree)	(Luftman, 2003)
BIA4	The back office is knowledgeable about the procedures of the front office.	5 (Strongly agree … Strongly disagree)	(Broadbent and Weill, 1993, Reich and Benbasat, 1996)
Operational IT Business Alignment (ITBA)			
IB2	There is mutual trust and respect between IT unit and the back office.	5 (Strongly agree … Strongly disagree)	(Bhatt, 2003, Luftman, 2003, Teo and Ang, 1999)
IB4	IT and the back office regularly consult each other.	5 (Strongly agree … Strongly disagree)	(Bhatt, 2003, Broadbent and Weill, 1993, Carmeli and Tishler, 2004)
IB8	There are meetings on a regular basis between IT and the back office to ensure an effective and efficient change process.	5 (Strongly agree … Strongly disagree)	(Broadbent and Weill, 1993, Chung et al., 2003, Reich and Benbasat, 1996)
IB10	There is extensive communication between IT unit and back office.	5 (Strongly agree … Strongly disagree)	(Boynton et al., 1994, Broadbent and Weill, 1993, Chung et al., 2003)
IB14	The back office is proactively involved into IT planning.	5 (Strongly agree … Strongly disagree)	(Broadbent and Weill, 1993, Chung et al., 2003, Reich and Benbasat, 1996)
IB15	IT employees are able to interpret business related problems and develop solutions.	5 (Strongly agree … Strongly disagree)	(Bhatt, 2003, Segars and Grover, 1998, Teo and Ang, 1999)
IT Usage (ITU)			
IU1	How intensely is IT used in the sub process sales / preparation?	7 (Only IT … No IT)	(Devaraj and Kohli, 2003, Massetti and Zmud, 1996)
IU2	How intensely is IT used in the sub process assessment / decision?	7 (Only IT … No IT)	(Devaraj and Kohli, 2003, Massetti and Zmud, 1996)
IU3	How intensely is IT used in the sub process processing / servicing?	7 (Only IT … No IT)	(Devaraj and Kohli, 2003, Massetti and Zmud, 1996)
IU4	How intensely is IT used in the sub process risk monitoring / risk management?	7 (Only IT … No IT)	(Devaraj and Kohli, 2003, Massetti and Zmud, 1996)
IU5	How intensely is IT used in the sub process workout?	7 (Only IT … No IT)	(Devaraj and Kohli, 2003, Massetti and Zmud, 1996)
Process Performance (PP)			
PP6	Generally, I am satisfied with the current design of the overall small business loans process.	7 (Extremely satisfied … Extremely dissatisfied)	(Chan et al., 1997, Gopal et al., 1993)
PP9	The operational efficiency of our loan process is high.	5 (Strongly agree … Strongly disagree)	
PP10	Compared to our competitors, the operational efficiency of our loans process is higher.	5 (Strongly agree … Strongly disagree)	
PP17	Compared to our competitors, the design of our business loans process is …	5 (much better … much worse)	

Results

Measurement Model: Reliability and Validity

To ensure that non-response bias cannot be assumed, we compared the early with the late respondents (Armstrong and Overton, 1977). This extrapolation method is based on the assumption that late respondents share similarities with non-respondents. We treated the late respondents, who returned the questionnaire after a second reminder, as non-respondents (Kearns and Lederer, 2004). Comparing the questionnaires from the early respondents (N = 59) with these non-respondents (N = 31) using the Mann-Whitney test showed no significant differences for any of the used items.

Common method bias describes the problem that the variance depends on the measurement method rather than on the constructs represented by the measures (Podsakoff et al., 2003). This may happen if the predictor as well as the criterion variables are taken from only one source (Podsakoff et al., 2003). Thus, Podsakoff et al. (2003) suggest procedural and statistical remedies in order to avoid common method bias. Procedural remedies aim at the design of the study in order to reduce the potential influences of common method variance, whereas statistical remedies are tests to control for common method bias. We addressed procedural remedies due to eliminating complex and ambiguous items from the survey by using pre-tests; acquiescence effects were countered due to reverse-coded items; and social desirability effects were offset due to assuring anonymity of respondents. In order to address statistical remedies we applied Harman's one-factor test (Podsakoff and Organ, 1986) which did not extract a single factor accounting for the majority of variance of all used items.

We tested our model based on reflective measures. Therefore, the PLS measurement model was analyzed with respect to content validity, indicator reliability, and construct validity. *Content validity* examines the degree to which the supposed meaning of a construct is reflected by its measures (Boudreau et al., 2001). Content validity was ensured by developing questions for indicators from preceding research as well as by performing pre-tests to check for ambiguities. The findings from the pre-tests were incorporated into the questionnaire through adaptation or elimination of single questions.

Indicator reliability is about the links between an indicator and its corresponding construct. Loadings should be above the suggested threshold of 0.707 and must not be below 0.5 (Hulland, 1999). For testing on significance, we applied the PLS bootstrap resampling with 500 samples (Chin, 1998). All loadings of the indicators with their respective construct are above the recommended 0.707 parameter value and significant at the 0.001 level, revealing indicator reliability of the tested model.

Construct validity refers to the extent to which measurement items describe the constructs. We can distinguish between convergent and discriminant validity (Straub, 1989, Straub et al., 2004). *Convergent validity* deals with the internal consistency if multiple measures are used for a single construct (Hulland, 1999), analyzed by calculation of the composite reliability and the Average Variance Extracted (AVE). An AVE above 0.5 (Chin, 1998) and a composite reliability above 0.7 (Nunnally, 1978) is recommended. All constructs of our model easily fulfill these requirements.

Discriminant validity was tested by two steps. First, all inter-correlations between the latent variables are lower than the square root of the AVE. This demonstrates a good fit between the latent variables and their measurement items (Gefen et al., 2000). In a second step, we further

analyzed the cross-loadings between indicators and the other constructs. If each indicator correlates weakly with all other latent variables except for the one to which it is theoretically associated discriminate validity can be assumed (Gefen and Straub, 2005, Gefen et al., 2000). Our model possesses the demanded loadings of indicators for their associated constructs, while having low loadings for the other constructs.

Structural Model: Test of Hypotheses

The results of our PLS calculation are shown in figure 2. For testing the actual mediating effect of ITBA via ITU on PP, we also added a direct link from ITBA to PP (H6) which is not based on a theoretical argumentation but which is necessary to provide a valid measurement of the mediating effect. As the results show, this hypothesis can be falsified and shows that – as proposed above – IT business alignment affects process performance in an indirect way by driving IT usage and business-internal alignment.

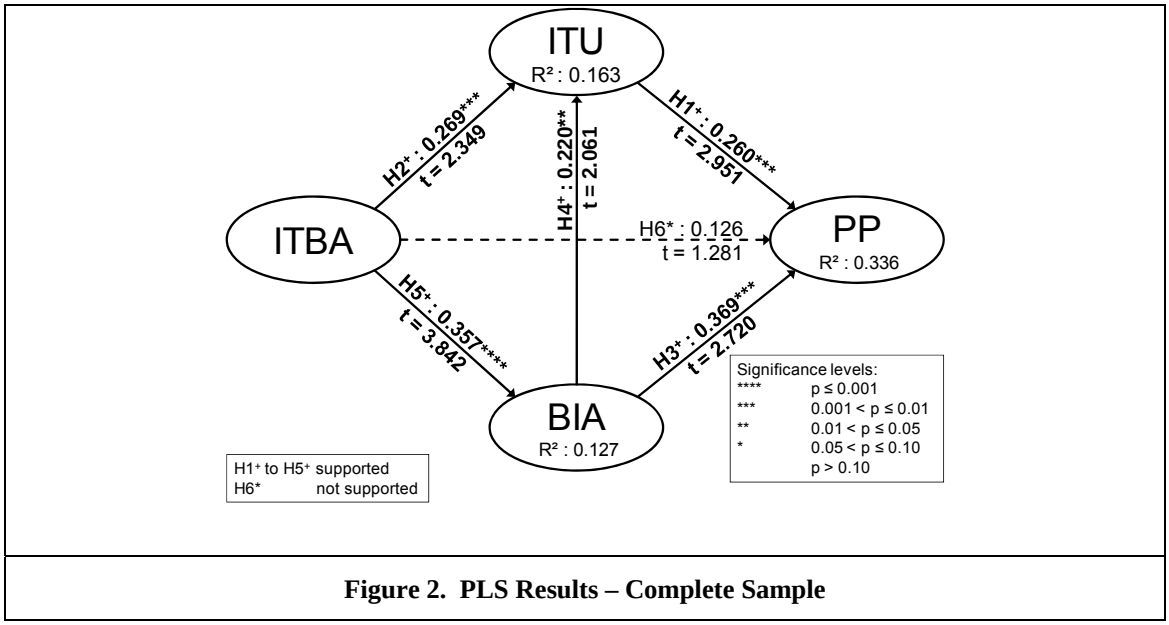

Figure 2. PLS Results – Complete Sample

IT usage and business-internal alignment have a strong and highly significant impact on process performance (H1 and H3 confirmed). Moreover, IT usage is driven by IT business alignment (H2) and business-internal alignment (H4), which in turn is also highly related with ITBA (H5). In order to test the mediating effect of ITBA on process performance (via IT usage and BIA), we also drew a direct link from ITBA to PP (H6*) which nevertheless was found to be insignificant. Thus, we can argue that ITBA has not any direct effect but strong indirect (mediated) effects on process performance. Since the items used for measuring IT usage can also be argued to represent formative indicators, we re-calculated the model by using the same items in a formative way as well, showing that there are no structurally different results.

Discussion, Limitations, and Conclusions

Our main argument is that a social perspective on alignment that focuses on interpersonal linkage is a useful lens to understand IT value creation in firms. Pinpointing human capital resources consisting of, among others, relationships (Barney, 1991) and extending the relationship asset view of a partnership between IT and business management (Ross et al., 1996) by also considering business to business relationships in a dedicated business process, we could empirically show a positive and significant impact from alignment to IS usage and process performance. Particularly, operational IT business alignment turns out to drive IT usage while business-internal operational alignment drives usage and success. The results give evidence that our proposed model might have potential to contribute to our understanding of how social alignment impacts IS usage and business process performance within an organization.

Our findings suggest how social linkages between IT unit and business unit as well as within business units contribute to overall IT value. Considering social capital theory in this context, it

seems promising to draw attention on the ties that represent the linkages between individuals within different organizational units, as in particular the set of social linkages can be seen as an important factor for e.g. leveraging a firm´s IT usage. First, operational IT business alignment, consisting of communication, cross-domain knowledge and mutuality among and between IT and business units, leverages the appropriate usage of IT applications leading to increased process performance. Second, operational IT business alignment positively affects business-internal alignment as for example "power users" of one business unit can help users of other business users with their problems. Due to the increased business-internal alignment, sales and back office work closer together, share their knowledge and synchronize their tasks improving the performance of the business process. The knowledge transfer between business units also explains the positive effect from business-internal alignment on IS usage, as business units closer to the IT guide other business units to use the IT more intensively to increase process performance. The results indicate that it might be useful to put an even stronger emphasis on the interaction topology in and between teams and organizational units. We expect to find typical patterns of interaction (e.g. patterns of strong and weak ties in and between units as in (anonymous) to correlate with performance indicators in certain situations. Eventually, the results hint at complex social structures driving IT value. From a resource-based perspective, this thus establishes a serious barrier to imitation, making imitation of a "good IT" quite difficult. By the same token, this points to accepting that there is no one best solution for how to establish an IT capability. Also, looking at the literature on IT business alignment, there is still a lot to learn on how to achieve good alignment. Clearly, increasing the number of cross-unit meetings will rarely be enough. Given the prominent role of alignment as a persistent key CIO issue (Luftman

et al., 2006, Luftman and McLean, 2004) we consider this one of the most challenging research tasks in the future.

When interpreting the results the following limitations should be considered: Since the presented model is research in progress and the data we used were collected for a different aim, there is need to extend and adjust the measurement model in order to capture the full context of the research model. Also, it has to be clarified how the concepts on social linkage and social network theory derived in the literature section have to be clarified and integrated more deeply into this work both on the theoretical layer and on the empirical/measurement layer.

There is some work to be done in regard to taking over and integrating concepts of the social linkage literature into the IT business value and IT business alignment research to strengthen our understanding of how these concepts fit to and can be used for enhancing the explanation of IT value creation.

Summarizing, this piece of research provides a first step of integrating social linkage into the debate on business value of IT. The test-wise analysis of empirical data showed that the operational dimension of IT business alignment is positively related with inner-business alignment and both drives IT usage and eventually process performance. Hence, our future research will try to deepen the understanding on how social linkages strengthen alignment and thus form a valuable and sustainable resource from the resource-based view.

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