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2009

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Daniel Beimborn
University of Bamberg, daniel.beimborn@uni-bamberg.de

Frank Schlosser
University of Bamberg, frank.schlosser@uni-bamberg.de

Tim Weitzel
University of Bamberg, tim.weitzel@uni-bamberg.de

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EXAMINING THE RELATIONSHIP BETWEEN TRUST AND CONTROL IN IT OUTSOURCING RELATIONSHIPS

Beimborn, Daniel, Department of Information Systems and Services, University of Bamberg, Feldkirchenstr. 21, 96045 Bamberg, Germany, daniel.beimborn@uni-bamberg.de

Schlosser, Frank, Department of Information Systems and Services, University of Bamberg, Feldkirchenstr. 21, 96045 Bamberg, Germany, frank.schlosser@uni-bamberg.de

Weitzel, Tim, Department of Information Systems and Services, University of Bamberg, Feldkirchenstr. 21, 96045 Bamberg, Germany, tim.weitzel@uni-bamberg.de

Abstract

What is the role of control in maintaining trust in outsourcing relationships? Although the literature is quite rich on conceptualizing the relationship between control and trust in inter-organizational relationships, there exist quite sparse quantitative works which help to evaluate the models developed. In this paper, we analyze data from 156 IT outsourcing relationships of German banks in order to get insights into the actual relationships between different modes of control and the level of relational trust in these relationships. Additionally, we examine the role of service quality (measured in terms of reliability and responsiveness) in this context. The results show that trust is positively related with most modes of control, and that there is indicative evidence that control supports trust in high-service quality situations while it leads to a reduction of trust in relationships suffering from bad service quality (cycle of trust vs. distrust).

Keywords: Trust, Control, IT Outsourcing, Relationship Management, PLS, Survey

1 MOTIVATION

Although there exists a quite mature strand of research on how to manage an IT outsourcing relationship, only a few works have actually empirically studied the field of relational governance in this context. Among them are both quite early and fundamental works like (Grover et al. 1996; Lee and Kim 1999), which evaluate the role of relationship determinants on outsourcing success, and younger works, such as (Goles and Chin 2005) which develops a measurement model for relationship quality in IT outsourcing. Nevertheless, works have seldom trickled down the outsourcing governance determinants to a level on which direct and usable implications for the management of outsourcing relationships can be identified. For example, what are the control mechanisms and items that actually impact relationship quality dimensions like commitment and trust? By focusing on a particular aspect of this research strand, this paper wants to contribute both to a deeper and more managerial understanding of the relationship between control and trust in outsourcing relationships. There is a quite rich literature on conceptualizing the relationships between control and trust in inter-organizational relationships (IOR); nevertheless, there is not much quantitative research found that empirically evaluates these concepts and theories in IOR, in general, and in IT outsourcing relationships, in particular. One of these works is (Langfield-Smith and Smith 2003) which investigates the impact of control mechanisms from a transaction cost economics perspective by conducting a single case study. Further, the existing literature that has investigated the interrelationship between control and trust has derived contradicting findings, up to now. While some researchers found control to be positively related with trust, others suggest negative interrelations (Das and Teng 2001; Langfield-Smith and Smith 2003).

In order to contribute to this important strand of research, we want to answer the following research question: *What is the relationship between trust and different managerial control mechanisms in outsourcing relationships? How does the level of service quality, in terms of reliability and responsiveness, affect this relationship?*

The remainder of this paper is structured as follows: section 2 introduces related work and develops our research hypotheses. Section 3 outlines the chosen approach and gives an overview about our sample while section 4 empirically evaluates the proposed hypotheses. Section 5 discusses the results and derives implications for research and management before section 6 concludes the paper.

2 RESEARCH MODEL

Previous literature has highlighted the shortcomings of solely considering contractual issues for assessing the quality of IT outsourcing arrangements, as those contracts concluded at the beginning of an outsourcing relationship do not comprise all future eventualities and thus are inherently incomplete (Hart 1988; Macneil 1980). Consequently, researchers have shed light on the importance of a good cooperative relationship being another relevant facet of outsourcing management (Klepper 1995; Lacity and Willcocks 1995; McFarlan and Nolan 1995). In a first empirical investigation, Grover et al. (1996) have addressed this extended view of an outsourcing relationship by factors like trust and commitment which reduce threats from opportunistic behavior, help to better integrate partners and to reduce formal contracting. Other authors suggested incorporating additional aspects or dimensions aiming at a better and more comprehensive understanding of outsourcing relationship quality. For a good overview and summary on this as well as an empirical validation, see (Goles and Chin 2005).

Although it is difficult to capture and to measure, inter-firm trust has shown to be a fundamental dimension of relationship quality (Kanter 1994; Ring and Van de Ven 1994). Trust has been defined as "the firm´s belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm" (Anderson and Narus 1990). Since the early 1990s, there have been numerous works which defined trust as a multi-dimensional concept (Das and Teng 2001). One of the most popular conceptualizations distinguishes between competence trust and relational trust (Anderson and Narus 1990; Das and Teng

2001) – or "concern a partner's *ability* to perform according to agreements (competence trust), or his *intentions* to do so (goodwill trust)" (Nooteboom 1996, 990, p. 990). Others have proposed a distinction between the need for trust and the actual level of trust (Gallivan and Depledge 2003). In this work we focus on the latter one.

The outsourcing literature moreover has shown the importance of trust for maintaining and managing an ongoing outsourcing relationship and tested its contribution to outsourcing success in numerous qualitative and quantitative works (Goo and Nam 2007; Grover et al. 1996; Kern 1997; Langfield-Smith and Smith 2003; Sabherwal 1999; Willcocks and Kern 1998). In this study, we investigate the relationship, and thus trust, between client and vendor from the client´s perspective.

One of the antecedents of low outsourcing risk, high service quality, and success in IT outsourcing is monitoring the provider ("control"). In general, control is related to comparing as-is and to-be in order to reach the goals set by the firm through corrective actions, where deviations appear. However, since esp. in the area of IS, outcomes and corrective actions are not always clear ex ante, a broader view on control has been discussed (Kirsch 1997; Lee et al. 2008). Osterloh and Weibel (2006) differ between the control object, the point in time, and the control direction. The control object itself can then be examined in several ways. First, process control or behavioral control involves controlling process execution and also monitoring the employees´ behavior (Ouchi and Maguire 1975). Second, result control or outcome control traditionally is the comparison of as-is and to-be (Das and Teng 2001). Both behavioral and outcome control represent formal modes of control and thus can be characterized as a performance evaluation strategy (Eisenhardt 1985). Third, social control adheres to the compliance of codes and values (Ouchi 1979), is known as an informal mode of control, and can e.g. be assessed at different levels like group (clan control) and individual (self control) level (Kirsch 1997). Control can be conducted in an ongoing manner during an arrangement (feed forward controls) or at its end (feed-back control). In both cases, directed controls implemented to check for determined behaviors and performance standards, and undirected controls like e.g. early warning systems are possible. In general, the mode of control that is appropriate and therefore should be implemented is dependent on the context and the available information, e.g. it makes sense to implement outcome control when outcomes are measurable (Kirsch 1997).

In short term, it might be attractive from an outsourcing firm's point of view to achieve a high level of control. This helps to identify variations and to initiate retaliatory action as early as possible, thus avoiding escalations (Zaheer and Venkatraman 1995). When viable controls are agreed upon in the outsourcing contract, this can have positive effects in a twofold way. While the service receiver can monitor the quantity and quality of the service, the service provider can substantiate that the delivered services meet the standards as determined in the contract (Langfield-Smith and Smith 2003). Thus, control can also be viewed positively from a vendor´s perspective.

However, accounting for elements like trust as described above when intending to build a long-term relationship, too much of control can result in undesired effects within a work relationship and destroy trust (Lorange and Roos 1992). The occurrence of such effects does not reflect the original goals of the controlling party and reasons can be found in an employee's strive for relative independence. This can lead to a vicious circle as described by Argyris (1952) in a way that more control causes a decrease of satisfaction, causes less willingness to perform, causes less efficiency, causes more control, and so on. This is confirmed by Das and Teng (2001) who argue that formal control will undermine trust since it takes autonomy and independence away from the controlled partner firm. Considering this, one central issue for managers of outsourcing relationships would be to choose the right or optimal level of control, both from an organizational point of view (control mechanisms and systems) and a social point of view. In doing so, the benefits (reduced incentives for opportunistic behavior) and the costs (e.g. reduction of trust level) of control have to be balanced carefully.

Nevertheless, as already outlined, control can also have positive impacts in building and sustaining trust because specifying performance goals and controlling that they are achieved helps to motivate people who do their job well (Sitkin 1995) and because control reduces relational risks and thus facili-

tates trust and collaboration (Coletti et al. 2005). More control and certainty can lead to greater satisfaction, better conflict avoiding, cost reduction, and the development of trust in buyer/seller relationships (Marcolin and McLellan 1998). Moreover, Das and Teng propose a positive relationship by reversing the causality: "goodwill trust and competence trust will enhance the effectiveness of all control modes (behaviour, output, and social) in an alliance" (Das and Teng 2001, 265, p. 265). In their conceptual work on strategic B2B alliances, they argue that result controls will have a negative effect on trust while social controls lead to a higher level of trust. This is in line with findings that people who aim at building trustful relationships tend to avoid formal controls (McEvily et al. 2003).

Summarizing the different lines of argumentation, we hypothesize the different modes of control to be either positively, negatively, or concavely (reverse-U shaped) associated with the level of trust.

H1a: Control will be negatively related with the client´s trust in the vendor.
H1b: Control will be positively related with the client´s trust in the vendor.
H1c: There will be a concave relationship between control and the client´s trust in the vendor.

Furthermore, literature has discussed the existence of cycles of trust and distrust (Ring 1996) or spiralling effects (Marcolin 2002) when considering positive and negative impacts of control. A cycle of trust does appear if control is used to credit the provider for high performance. Good results from controlling the provider lead to increasing trust. By contrast, if the provider does not deliver high service quality, the reverse effect will appear: trust is destroyed by the cycle of distrust, since the client firm increases the control level and may find more deficiencies. Correspondingly, Sabherwal (1999) showed in a case study that good performance in an outsourcing relationship arises from a balance between trust and structural control, while the opposite will occur when an inappropriate structure comes together with a specific type of trust (over or under control).

This high interdependence between trust, control, and service quality as contingency variable leads to our second hypothesis.

H2: High service quality will lead to a cycle of the client's trust in the vendor, while low service quality will lead to a cycle of distrust.

3 METHODOLOGY

3.1 Unit of Analysis and Approach

In our study, we surveyed the relationship of the 1,000 largest German banks to their IT service provider who is responsible for providing the primary loans system (i.e. operating and maintaining the IS used to grant and manage private construction loans and mortgages). The data were collected between April and October 2008.

In Germany, all banks belong to one of three sectors: while *commercial banks* are mostly independent when selecting an IT service provider, *public savings banks* and *cooperatives* both have joint IT service firm subsidiaries within their sectors. Moreover, particularly banks that belong to one of the latter two sectors show very ancient IT outsourcing relationships (cf. Table 1).

Bank type	Population	Sample	Duration of relationship to IT service provider				
			0-5 years	6-10 years	>10 years	Don´t know	N/A
Commercial banks	136 (13.6%)	23 (13.6%)	3	6	11	1	2
Savings banks	422 (42.2%)	55 (32.5%)	6	7	37	1	4
Cooperatives	442 (44.2%)	91 (53.9%)	3	4	81	0	3
	1,000 (100.0%)	169 (100.0%)	12	17	129	2	9

Table 1.   Distribution of bank types in the overall population and in the sample

All banks have been initially contacted via phone in order to identify the appropriate person (Chief Information Officer or other IT manager, responsible for managing the relationship to the IT provider) and to ensure that the relevant IT system is not provided by an in-house unit. If it turned out that the bank was not engaged in outsourcing, it was dropped from the list of addressees and been replaced by the next largest one. Only 52 banks out of the initially largest 1,000 stated to have the operations of the loans system provided in-house. All other managers received the questionnaire (via mail, fax, or e-mail, depending on their preferences). After two reminders (paper-based and call-based) we eventually received 169 usable questionnaires (response rate = 16.9%).

For testing the basic relationship between trust and control (H1) we will provide both a regression analysis and a group comparison which allows us for a very simple but robust identification of a change in the relationship (such as concave relation which turns from an increasing relationship to an decreasing relationship at a certain degree of control). The second hypothesis is tested by hierarchical regression-based moderator tests and group comparisons.

3.2 Measurement

All of our constructs were measured by multi-item scales in order to increase reliability. The particularities are explained in the following and the indicators are listed in**Error! Reference source not found.** Table 7 in the appendix.

Control: To better understand the impact of *control*, we distinguish two of the three dimensions as discussed in the literature review above but more strongly dedicate them to the application domain in order to test for control action items: First, performance reports delivered from the IT service provider to the bank (CONTROL_REP) represent formal result control mechanisms (output control). Second, actions conducted by the provider firm itself (CONTROL_PROV) are examined, such as employee satisfaction surveys on the client side (output control). Third, detailed activity monitoring done by the client itself (CONTROL_BANK) represent the third dimension (behavioral control).

Trust (TRUST): We focus on the concept of relational trust. This construct was measured by reflective indicators derived from (Goles and Chin 2005; Kettinger and Lee 1995; Parasuraman et al. 1988).

Service quality: For capturing service quality, SERVQUAL (Parasuraman et al. 1988) has become one of the most commonly used measurement instruments both in Marketing Sciences but also in Information Systems (e.g., IS-SERVQUAL (Kettinger and Lee 1994)). From this instrument, we take *reliability* (i.e., ability to perform service dependably and accurately; SQ_reliability) (Grover et al. 1996; Lee and Kim 1999) and *responsiveness* (flexible reaction to problems and changing demands from client side; SQ_responsiveness). Especially, responsiveness often shows to be a critical facet of service quality when asking vendor managers.

To be able to conduct group comparisons and hierarchical regression analyses, we applied confirmatory factor analysis (CFA; principal component analysis, in particular) to achieve construct scores from the multi-item measures.

4 RESULTS

In this section, the proposed hypotheses are empirically tested, as described above. However, first of all we evaluate the measurement model in order to ensure reliability and validity of the scales used.

4.1 Validation of the Measurement Models

All of our tests are based on reflectively measured constructs. We deleted all cases which showed a missing value in any of the items used. This resulted in a reduced sample of 156 data sets.

Measurement instruments have to be analyzed regarding 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 after adaptation or elimination of single questions. For ensuring *indicator reliability*, loadings should be significant and above 0.7 (Hulland 1999) which is fulfilled by all our indicators (cf. Table 8 in the Appendix).

For ensuring c*onvergent validity* as an aspect of *construct validity*, composite reliability has to be above .7 (Nunnally 1978) and the Average Variance Extracted (AVE) should be above .5 (Chin 1998). Table 9 in the Appendix shows that all of our constructs fulfill this requirement. Finally, *discriminant validity* represents the extent to which the items of a latent variable differ from items of other latent variables in the same model (Hulland 1999). As Table 10 in the Appendix shows all inter-correlations between the latent variables are lower than the square root of the AVE (shown in the shaded cells).

The presence of *common method bias* was tested both by Harman's single factor test and by integrating a common method factor into a PLS model consisting of all constructs only being related to their items and to the common method factor, as suggested by (Podsakoff et al. 2003) and e.g. executed by (Liang et al. 2007). The largest component of a CFA, capturing *all* indicators, explained 30.7% of the overall variance. Since we have only three basic constructs, this is acceptably low. Moreover, the common method factor did not count for substantial explanations of the theoretical constructs (most paths in the PLS model even showed to be completely insignificant). Finally, we added two theoretically unrelated marker variables which showed no significant correlation with any indicator used.

4.2 Examining the Relationship between Trust and Control (H1)

We tested hypotheses 1a-c, representing the interrelationship between control and trust within IT outsourcing arrangements, both by a multivariate regression analysis (TRUST = β_1 * CONTROL_REP + β_2 * CONTROL_BANK + β_3 * CONTROL_PROV) and a group comparison approach.

	CONTROL_REP	CONTROL _BANK	CONTROL _PROV	R2 (R2 adjusted)
standardized β	.502*	-.127	.207*	.280 (.265)

Table 2.   Regression results (= significant at p<.01)*

While the linear regression test showed a significantly positive relationship between output control (by reports and provider-initiated control) and trust, and no significant (linear) relationship between behavioral control and trust (Table 2), we chose a group comparison approach in order to test for a concave relationship (H1c) or at least a tendency towards it. For each control measure, we ordered the banks by the respective level of the *control* measure and split the sample into three groups (with the split being at the terciles, leading to sub-groups consisting of 52 data sets each). For each of the three control measures, we compared the level of trust between the three sub-groups specified on the level of control (Mann-Whitney test). A comparison of the mean values of trust based on the control values separated into three groups may help to uncover a concave relationship (i.e., moderate controls lead to a high trust level, while less or (too) much control leads to a lower trust level).

	Mean value of TRUST			Difference of mean values	
	Low control group (n=52)	Medium control group (n=52)	High control group (n=52)	Level of sig. low control group – medium control group	Level of sig. medium control group - high control group
control = CONTROL_REP	2.01	2.44	2.89	**.026**	**.002**
control = CONTROL_BANK	2.21	2.51	2.61	.168	.484
control = CONTROL_PROV	2.29	2.28	2.77	.902	**.026**

Table 3.   Mean values of control dimensions related to level of trust and significance of difference (based on Mann-Whitney test)

As the data in Table 3 show, the mean values in all dimensions and for the overall control construct (combining all seven control indicators) increase with the level of control. Although not all differences between the control subgroups in each control dimension are significant, a concave relationship can be screened out. A more detailed analysis within the control subgroups by again dividing the high-control group into three equally large sub-groups (again based on the level of control) did not reveal any additional insights.

Thus, we can partially accept H1b and will discard H1a+c. Moreover, detailed results show that (1) the more detailed and customer-comprehensible the performance reports generated by the IT service provider, the higher is the level of trust by the bank; (2) the provider's activities in conducting employee satisfaction surveys at the client as well as in providing evidence for IT trainings of its own employees at least partly increase the level of trust reported by the bank; (3) behavioral control by the bank is slightly positively but insignificantly related with the level of trust.

4.3 Testing the Role of Service Quality as a Differentiator (H2)

Hypothesis 2 proposes the role of service quality to affect the relationship between control and trust. The higher the service quality, the more complementary rather than substitutive would the relationship between control and trust be. Since the described cycle of trust or distrust represents a temporal and furthermore reciprocal phenomenon, we cannot sufficiently validate it by cross-sectional data. Nevertheless, we tried different approaches in order to get at least indicative evidence for its existence.

First, we did a simple group comparison between outsourcing relationships showing high vs. low service quality. Since we measured service quality along two dimensions, we formed different groups based on both measures, as well. In order to achieve discriminant validity, we defined the two groups based on the lowest and highest third, omitting the mid-level third. Following our hypothesis, we would expect a negative relationship between trust and control in the low-SQ third while a positive relationship should appear in the high-SQ third. The following table shows the regression results for $trust = \beta_0 + \beta_1 * CONTROL\_REP + \beta_2 * CONTROL\_PROV + \beta_3 * CONTROL\_BANK + residual.$

	SQ-reliability		SQ-responsiveness	
Standardized regression coeff .	Low level	High level	Low level	High level
CONTROL_REP (β_1)	.616***	.141	.442***	.429***
CONTROL _PROV (β_2)	.103	.173	.170	.251*
CONTROL _BANK (β_3)	-.255*	.019	-.157	-.312**

Table 4. *Relationship between control and trust in low vs. high SQ groups (levels of significance: ***: p<.01, **: p<.05, *: p<.1)*

The proposed situation appears only in one case (CONTROL_BANK, SQ-reliability). In two other cases (CONTROL_PROV), at least the impact shows an insignificant trend in the expected direction, thus being higher in the high-SQ group than in the low-SQ group. However, in half of the combinations, a reverse result is detected.

Second, we apply a moderator test based on hierarchical regression consisting of the three CONTROL variables, the two SQ variables, and the six resulting interaction terms. Confirming the hypothesis would require positive interaction effects. The results are presented in Table 5.

Again, the analysis uncovers some contra-intuitive results: some of the interaction effects are significantly or insignificantly negative instead of being positive. Moreover, graphical data analyses showed that at high levels of SQ, the relationship between control and trust becomes actually negative (not displayed).

Standardized regression coefficients	Model 1 (only CONTROL)	Model 2 (only SQ)	Model 3 (all main effects)	Model 4 (including interaction terms)
CONTROL_REP	.502***		.337***	.366***
CONTROL_BANK	-.127		-.166**	-.214***
CONTROL_PROV	.206***		.190***	.162**
SQ_reliability		.278***	.189**	.191**
SQ_responsiveness		.353***	.296***	.230***
CONTROL_REP * SQ_reliability				-.470***
CONTROL_BANK * SQ_reliability				.158*
CONTROL_PROV * SQ_reliability				.090
CONTROL_REP * SQ_responsiveness				.210**
CONTROL_BANK * SQ_responsiveness				-.032
CONTROL_PROV * SQ_responsiveness				-.136
R^2 (R^2 adjusted)	.279 (.265)	.318 (.309)	.433 (.414)	.513 (.475)
F	19.628***	35.696***	22.924***	13.769***

Table 5.   Moderator tests for service quality moderating the impact of control on trust (levels of significance: ***: p<.01, **: p<.05, *: p<.1)

Finally, we combined the first and the second approach. We did a similar moderator test with a reversed regression function, now using SQ as dependent variable and the interaction of control and trust as determinant. These regression tests were conducted within the low and the high SQ groups instead of on the overall sample[1]. Confirming H2 would be reflected by a complementary relationship (i.e. a positive interaction effect) in the high-SQ sub-sample, and a substitutive relationship (negative interaction effect) in the low-SQ sub-sample.

Because we found multicollinearity problems during this analysis (VIFs up to 50), we followed the regression approach proposed by (Lance 1988) and successfully applied in other studies (e.g. (Prabhu et al. 2005; Tiwana et al. 2007)): we tested the following regression function: $SQ = \beta_0 + \beta_1 * CONTROL + \beta_2 * TRUST + \beta_3 * dXX + residual$ with dXX as the regression residual from the following regression function: $CONTROL * TRUST = \beta_0 + \beta_1 * CONTROL + \beta_2 * TRUST + residual$. This approach prevents inflation of the regression coefficients resulting from multicollinearity. We did this procedure for all combinations of *CONTROL = {rep, prov, bank}* and *SQ = {reliability, responsiveness}* within the low and high service quality sub groups. The following table shows the results.

Standardized regression coeff. and sig. level of interaction term	SQ-reliability		SQ-responsiveness	
	Low level	High level	Low level	High level
CONTROL_prov * TRUST	-.007, .946	.189, .089	-.072, .482	.112, .289
CONTROL_rep * TRUST	-.242, .019	-.143, .190	-.151, .131	.170, .104
CONTROL_bank * TRUST	-.202, .052	.082, .734	-.180, .073	.101, .328
N (sample size)	76	80	78	80

Table 6.   Interaction tests for control and trust showing different effects on SQ at different levels of SQ

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[1] In order to increase reliability during the regression analyses, we did not choose the terciles with low and with high service quality as group separators but used the lower and the higher half in order to have larger sub-samples for the regression calculations. Nevertheless, using the terciles does not lead to structural differences in the results displayed by Table 6; path coefficient differences show to be even larger, but the smaller samples do not enable successful tests of significance.

Interestingly, now a major proportion of the results supports our proposition. Although the path coefficients are mainly insignificant, due to the small data samples, the differences between both groups are significant in all cases (based on a bootstrapping with 500 samples). Comparing the groups, there is usually a negative relationship in the group with low SQ, while it is positive or at least less negative in the high SQ group.

5   DISCUSSION AND LIMITATIONS

While many of the conceptual and few of the empirical works (Das and Teng 1998; Das and Teng 2001; Grundei 2006; Kale et al. 2000; Langfield-Smith and Smith 2003) argue for a negative relationship between control and trust, our work found mainly a positive relationship. This can at least partially be ascribed to the characteristics of our control items. Particularly, the provider-based control items, such as employee surveys or proving IT training certificates, are more or less directly reasoned in promoting a good relationship. Thus, this dimension is very likely to lead to a positive relationship. Further, the control reports construct was measured in a more qualitative way, which also will contribute to a positive relationship. By contrast, the bank-driven control showed no correlation with the level of trust in the relationship and rather turned into a negative path when service quality was introduced as a moderator. A reason that can be directly extracted from the different service quality dimensions is that bank-driven control does not necessarily drive reliability (that would be the most obvious relation) but rather the responsiveness by the provider, which usually indicates commitment and in turn significantly drives trust in the relationship. The negative residual direct relationship then can be explained by reversing the link. Above, we discussed the reciprocal relation between trust and control, which can be uncovered here. The negative residual path simply indicates the reverse argument that a less trustful relationship will lead to more control actions by the bank itself. Nevertheless, most of our results quite strongly and impressively showed that there are no significantly negative relations between control and trust. This indicates that there is no over-control in our sample and that the finance industry and their IT providers are used to high levels of control being a natural and "healthy" part of their business.

Interestingly, there is no correlation between bank-driven control and service reliability, and moreover, provider-driven control in both models has a significant positive effect on trust, but is not related to higher service quality. This again underlines that the primary reasoning may lie in maintaining the relationship by these issues, rather than actually increasing operational service quality.

Contra-intuitively, the basic tests of service quality moderating the relationship between control and trust showed to be negative instead of being positive, as proposed. This represents a substitutive relationship between service quality and control regarding the achievement of a trustful relationship. In case of high service quality, the need and impact of control is less than otherwise. Nevertheless, in case of high service quality, control, at least as measured by the control action items in this paper, can even better interact with the creation of trust in order to achieve a successful outsourcing partnership (cycle of trust, as indicatively confirmed at the end of section 4.3).

This leads to our implications for management: our results clearly showed the positive impact of several control action items, both the provider and the client firm can apply. Providers that set up mechanisms that fulfill social control (such as surveying satisfaction of client employees or proving training certificates for own personnel) will increase and maintain trust. Nevertheless, the client should be aware that these measures will eventually turn into an increase in service quality and not only in relationship quality (*dazzling effect*). Further, the client has to be aware of the cycle of distrust. Good relationship quality which is oriented towards a long-term partnership requires sensitivity and sometimes forbearance in order to support the provider during difficult situations. Otherwise, control will just worsen and maybe destroy the outsourcing relationship with high costs on both sides.

Of course, there are a number of limitations that have to be considered when interpreting the results: (1) we investigated IT outsourcing relationships restricted to the German Banking Industry; (2) our findings are based on data from only one point in time, and collected from one person in each bank,

thus inhibiting the assessment of time effects (and, the cycle of trust/distrust, in particular) and incorporating subjectivity; (3) we are aware that parts of our measurement model may be subject to being too tightly bound to the application domain. Although this might be a weakness for rigorously testing theory on the relationship of trust and control, it will improve the trade-off between the results providing valid findings while being directly applicable by managers who maintain outsourcing relationships. Also, through adopting indictors from prior research and in-depth case studies, we can assume our measurement model to be appropriate; (4) we have not tested for any contingency factors, yet. Besides e.g. firm size or strategy, in particular the duration of the relationship could have an impact. Although we suppose the relationship age not to have an effect in our data since, as shown above, most arrangements have lasted more than ten years, further investigations will include such tests. Also, we concentrated on one specific information system to avoid noteworthy contingency effects, which could e.g. result when different outsourcing scenarios (e.g. characterized by various degrees of complexity) are examined and thus trust is more or less important with respect to distinct scenarios; (5) trust has only been measured as relational trust, neglecting other dimensions such as competence trust, in particular.

6 CONCLUSION

Based on data of IT outsourcing relationships between 156 German banks and their IT service providers, and on the literature that has dealt with the coherence of control and trust in inter-organizational collaboration, this paper investigated the relationship between control and trust, and also included service quality as a moderator. We could show that different types of control do differently affect the level of trust in IT outsourcing arrangements. While control reports and provider-driven controls proved to have a positive effect, bank-driven controls did not correlate with trust and furthermore showed a negative effect when considering the level of service quality. Quite surprisingly, the interaction effects of service quality and control turned out to be negatively related with trust. However, comparing high-service quality situations with those showing low service quality, we could indicatively validate the hypothesis that there may exist cycles of trust/distrust. Finally, by splitting control into different dimensions, we did a first step to generating more concrete implications for provider managers that can help determining the right level of control.

In a next step, we will incorporate different contingency variables and a richer concept of trust, as noted in the limitations, in order to take the true complexity of outsourcing relationships better into account. Moreover, we intend to collect periodical data from selected firms in order to get longitudinal data for more adequately testing the proposed inter-temporal effects. Ultimately, we hope to contribute both to a better scientific understanding of the complexities between control and trust and to a statistically validated managerial set of control action items which helps outsourcing relationship managers to achieve and maintain sustainable and successful IT outsourcing partnerships.

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Appendix

ID	Item (measured by either a five-point or a seven-point Likert Scale ranging from "fully disagree" to "fully agree")	References
CONTROL_REP1	The granularity of the service reports meets our demands.	Development of own indicators, derived from case studies (Beimborn et al. 2008) and chosen to better meet the practitioner requirements.
CONTROL_REP2	The provider's service reports offer an accurate picture of the provider's services.	
CONTROL_BANK1	We can directly access service evaluation measurements to avoid sugarcoated reports.	
CONTROL_BANK2	We use our own system to obtain detailed information on service quality.	
CONTROL_BANK3	We regularly conduct service satisfaction surveys among users.	
CONTROL_PROV1	The service provider regularly conducts service satisfaction surveys among our users.	
CONTROL_PROV2	The service provider regularly shows IT training results of their employees.	
SQ_reliability1	Problems are resolved reliably.	(Grover et al. 1996; Kettinger and Lee 1995; Lee and Kim 1999; Parasuraman et al. 1988)
SQ_reliability2	Applications and services are provided as promised.	
SQ_reliability3	There are never any critical system failures.	
SQ_responsiveness1	The service provider reacts quickly if there are problems.	(Kettinger and Lee 1995; Parasuraman et al. 1988)
SQ_responsiveness2	The service provider shows adequate readiness to respond to our requests.	
SQ_responsiveness3	Provider staff has a service-oriented attitude.	
TRUST1	Both parties in the relationship can be trusted to do business fairly.	(Goles and Chin 2005; Kettinger and Lee 1995; Parasuraman et al. 1988)
TRUST2	We trust that the reports of the service provider are correct.	
TRUST3	We trust that the cost estimates of the service provider are correct.	
TRUST4	Our service provider acts in our best interests.	

Table 7.   Used indicators

Construct	Indicator	Loading from PLS	Loading from CFA
CONTROL_REP	CONTROL_REP1	0.915	0.916
	CONTROL_REP2	0.921	0.916
CONTROL_BANK	CONTROL_BANK1	0.829	0.790
	CONTROL_BANK2	0.641	0.807
	CONTROL_BANK3	0.812	0.749
CONTROL_PROV	CONTROL_PROV1	0.636	0.775
	CONTROL_PROV2	0.885	0.775
SQ_reliability	SQ_reliability1	0.817	0.807
	SQ_reliability2	0.763	0.784
	SQ_reliability3	0.774	0.781
SQ_responsiveness	SQ_responsiveness1	0.818	0.823
	SQ_responsiveness2	0.782	0.802
	SQ_responsiveness3	0.800	0.774
TRUST	TRUST1	0.837	0.841
	TRUST2	0.814	0.820
	TRUST3	0.816	0.828
	TRUST4	0.781	0.765

Table 8.   Indicator loadings from PLS and Confirmatory Factor Analysis (note: all loadings were significant at a .001 level)

Construct	Composite Reliability	AVE
CONTROL_REP	0.915	0.843
CONTROL_BANK	0.807	0.856
CONTROL_PROV	0.740	0.594
SQ_reliability	0.828	0.617
SQ_responsiveness	0.842	0.640
TRUST	0.886	0.660

Table 9:   Quality measures for latent variables

Construct	CTL_REP	CTL_BANK	CTL_PROV	SQ_REL	SQ_RES	TRUST
CONTROL_REP	0.918					
CONTROL_BANK	0.429	0.925				
CONTROL_PROV	0.214	0.383	0.771			
SQ_reliability	0.383	0.213	0.135	0.785		
SQ_responsiveness	0.379	0.283	0.139	0.594	0.800	
TRUST	0.494	0.188	0.267	0.490	0.524	0.812

Table 10:   Square root of AVE (shaded cells) and correlations of latent variable scores

Construct	CTL_REP	CTL_BANK	CTL_PROV	SQ_REL	SQ_RES	TRUST
CONTROL_REP1	0.915	0.371	0.224	0.357	0.336	0.441
CONTROL_REP2	0.921	0.416	0.170	0.346	0.359	0.465
CONTROL_BANK1	0.465	0.829	0.275	0.181	0.261	0.163
CONTROL_BANK2	0.294	0.641	0.284	0.044	0.100	0.030
CONTROL_BANK3	0.231	0.812	0.344	0.199	0.228	0.173
CONTROL_PROV1	0.085	0.194	0.636	0.096	0.052	0.153
CONTROL_PROV2	0.220	0.369	0.885	0.113	0.144	0.246
SQ_reliability1	0.258	0.120	0.142	0.817	0.621	0.465
SQ_reliability2	0.313	0.127	0.078	0.763	0.418	0.335
SQ_reliability3	0.337	0.258	0.093	0.774	0.346	0.345
SQ_responsiveness1	0.327	0.197	0.070	0.517	0.818	0.444
SQ_responsiveness2	0.311	0.273	0.147	0.402	0.782	0.341
SQ_responsiveness3	0.274	0.216	0.120	0.500	0.800	0.464
TRUST1	0.347	0.131	0.197	0.358	0.469	0.837
TRUST2	0.406	0.054	0.185	0.451	0.395	0.814
TRUST3	0.418	0.156	0.222	0.376	0.326	0.816
TRUST4	0.428	0.264	0.260	0.399	0.499	0.781

Table 11:   Correlations of indicator scores