

12-14-2009

The Role of Boundary Spanning in Public-Private IT Megaprojects

Roman Beck

Johann Wolfgang Goethe Universitat Frankfurt am Main, beck@itu.dk

Oliver Marschollek

Johann Wolfgang Goethe Universitat Frankfurt am Main, marschollek@wiwi.uni-frankfurt.de

Robert Gregory

Johann Wolfgang Goethe Universitat Frankfurt am Main, RWGregory@iese.edu

Follow this and additional works at: <http://aisel.aisnet.org/irwitpm2009>

Recommended Citation

Beck, Roman; Marschollek, Oliver; and Gregory, Robert, "The Role of Boundary Spanning in Public-Private IT Megaprojects" (2009). *International Research Workshop on IT Project Management 2009*. 1.
<http://aisel.aisnet.org/irwitpm2009/1>

This material is brought to you by the International Research Workshop on IT Project Management (IRWITPM) at AIS Electronic Library (AISeL). It has been accepted for inclusion in International Research Workshop on IT Project Management 2009 by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

The Role of Boundary Spanning in Public-Private IT Megaprojects

Roman Beck

Institute of Information Systems
Johann Wolfgang Goethe University
Frankfurt, Germany
rbeck@wiwi.uni-frankfurt.de

Oliver Marschollek

Institute of Information Systems
Johann Wolfgang Goethe University
Frankfurt, Germany
marschollek@wiwi.uni-frankfurt.de

Robert Gregory

Institute of Information Systems
Johann Wolfgang Goethe University
Frankfurt, Germany
gregory@wiwi.uni-frankfurt.de

ABSTRACT

Prior research in the context of PPPs has mainly focused on organizational and risk management aspects. While there is a growing number of IT megaprojects in the context of PPPs, we still have a lack of understanding on the role of boundary spanning between public and private parties for successfully bridging expectation gaps among the partners during the realization of IT-PPP-megaprojects. In this exploratory, qualitative single-case study from the German TollCollect IT megaproject we draw on findings from boundary spanning literature to explain boundary spanning activities contributing to trust formation in IT-PPP-megaprojects. Our developed grounded model suggests that the deployment of boundary spanning activities and their specific antecedent conditions, moderated by external stakeholder support of a public-private environment, affects the formation of mutual trust and therefore the success of an IT megaproject in the context of PPPs.

Keywords

Boundary Spanning, IT Megaprojects, Public Private Partnerships

INTRODUCTION

Public organizations are continuously under pressure to deliver innovative IT-based services to citizens which increasingly requires exchange and collaboration with private companies to acquire the necessary IT resources. These interorganizational alliances between public and private parties, also called public private partnership (PPP), are often the only possible solution for sourcing the required know-how (Hodge and Greve 2007). PPPs are also gaining importance in IT megaprojects since increasingly public infrastructure projects are large IT projects rather than brick and mortar infrastructure projects as in the past (Brooks 1987; Venugopal 2005). IT megaprojects are unique, innovative multibillion-dollar investments which are affected by political and public stakeholders (Davies, Gann and Douglas 2009; Flyvbjerg, Bruzelius and Rothengatter 2005). IT megaprojects in the context of PPPs often do not meet the desired goals (Flyvbjerg et al. 2005; Nelson 2007). Despite a growing amount of research on IT project management (Cule, Schmidt, Lyytinen and Keil 2000; Kappelman, McKeeman and Zhang 2006) and success factors of PPPs (Jacobsen and Choi 2008; Jost, Dawson and Shaw 2005; Trafford and Proctor 2006), we still have a lack of understanding of how IT-PPP-megaprojects are successfully turned around in case of a failing course of action.

We conducted an exploratory, qualitative single-case study of the German TollCollect case to analyze how this IT-PPP-megaproject which was on the verge of failure finally succeeded. Preliminary research results and the initial setting of the project were already discussed in Beck and Möbs (2006). TollCollect is the German satellite-based toll collecting system for heavy trucks. With more than €3 billion of revenue streams per year and €2 billion costs for development and installation of the system, the TollCollect project is not only the single-largest PPP project ever carried out in Germany, but also the largest IT development project in Europe in the years from 2002 to 2005. Public and private partners in this project had to cope with challenges that gradually led to an initial breakdown of cooperation. However, this downturn was stopped by spanning the boundaries and renewal of trust between public and private parties leading to a successful implementation of the TollCollect

system. Hence, this case offered an interesting opportunity to answer the following research question: “How can boundary spanning activities facilitate collaboration and trust among heterogeneous parties in IT-PPP-megaprojects?”

Multiparty collaborations in a PPP context require the alignment of different fields of practice for a successful cooperation. Organizational research so far has focused on spanning the boundaries within organizations, between organizations, and between organizations and their environment (Leifer and Delbecq 1978; Santos and Eisenhardt 2005). Prior information systems (IS) research has mainly concentrated on evaluating the effects of the use of IT for boundary spanning in organizations and collaborations in offshoring projects (Levina and Vaast 2006, 2008). In contrast, prior research on public administration has primarily focused on the managerial challenges concerning boundary spanning during the phase of establishing a PPP (Noble and Jones 2006). However, we still have a lack of understanding on the role of boundary spanning during the realization of IT-PPP-megaprojects. In addition, concerning the use of boundary spanning activities, there is little research on the necessary preconditions for the effective installation of boundary spanners. Therefore, we also studied the necessary preconditions to contribute to boundary spanning literature in general.

The remainder of this paper is structured as follows. The following section discusses boundary spanning as theoretical foundation. The next section presents our selected research methodology, employing grounded theory method (GTM). After a brief introduction to the case, we explain the results from our theory-building case analysis and present the emerged model of boundary spanning in the context of IT-PPP-megaprojects. The final section of the paper presents the theoretical and practical contributions and provides directions for future research.

THEORETICAL BACKGROUND

As we started searching for theoretical support during the data analysis, we found insights in literature on antecedents of boundary spanning, boundary spanning activities and trust formation, as well as the role of management during this process. Public sector organizations are dependent on specialized private companies for achieving operational efficiency and effectiveness, reducing financial deficits, and acquiring the necessary technological resources (Robertson 1995). Collaboration between public and private partners is often used to realize IT megaprojects (Clegg, Pitsis, Rura-Polley and Marosszeky 2002; Flyvbjerg et al. 2005) while their success strongly depend on the management ability how to deal with conflicting interests (Flyvbjerg et al. 2005). Conflicting interests in a PPP are anchored in different socio-cultural environments (van Marrewijk 2007). Bridging different interests, managers in a PPP need to understand their motivation which is the foundation for an unbiased relationship (Williams 2002). Besides, boundary spanning activities depend on the expertise about different socio-cultural backgrounds (Lindgren, Andersson and Henfridsson 2008). Finally, the sufficient precondition for enacting changes between public and private parties is formal power (Bloomfield and Coombs 1992).

Overcoming organizational boundaries can be achieved by boundary spanners who are individuals mediating between groups separated by location, hierarchy or function and sharing their expert knowledge (Pawlowski and Robey 2004; Wenger 1998). In order to create an environment of trust and understanding, boundary spanners need to protect the parties from external pressure and have to foster information exchange within and across teams (Leifer et al. 1978). Open communication about group-specific knowledge supports a learning environment and enables the possibility of aligning different interests (Lindgren et al. 2008).

Shared goals and a mutual understanding level the way for the development of trust and furthermore in the belief the PPP success (Williams 2002). Trust is the psychological state in which an individual accepts the vulnerability relying on positive expectations of the intentions of others concerning their behavior (Rousseau, Sitkin, Burt and Camerer 1998). Important obstacles for the establishment of a trust-based partnership are diverging interests and cultural differences (Rosenau 1999). The reestablishment of the initial trusted relationship can only be achieved by resolving discrepancies in mutual understanding, meeting the expected outcome conditions of the project and reinforcing trust (Kim, Dirks and Cooper 2009; Williams 2002). Hence, the necessary precondition for successfully managing IT-PPP-megaprojects is the creation of a joint group of practice in which the partners cooperate with a single vision of project outcomes (Levina and Vaast 2005). Building upon prior IS research, we analyze boundary spanning phenomena at the interorganizational level integrating the views of both, the private and public side. Our core category, trust formation, emerged from our analysis following GTM which we explain in more detail in the following section.

METHODS

When entering the field, we focused on understanding failure in IT-PPP-megaprojects and how these projects can be successfully turned around. By invitation of one of the leading corporations responsible for the development of TollCollect,

we gained access to primary data, consisting of 12 qualitative expert interviews with leading managers of the TollCollect project, and secondary data, including, e.g., an extensive documentation of the historical development of toll collection on German highways. The interviews were the primary basis for our interpretative, qualitative case study (Walsham 1995a, b; Yin 2003) of the German TollCollect case. On average, the interviews lasted from 52 minutes to 3 hours and 45 minutes each. The interviewees were carefully selected according to their role in the project, their position in the hierarchy, and affiliation to the project's stakeholders. All interviews were tape-recorded and transcribed which resulted in 1003 recorded audio minutes and 246 pages of transcriptions. Secondary material was analyzed to enable further comparisons and triangulation of findings. In addition, an analysis of press articles that appeared during the time period of the project was conducted for triangulation purposes. The first semi-structured interviews were held in an open-ended fashion and were conducted in May 2006. Following the GTM technique 'theoretical sampling', these initial interviews were first coded and analyzed to guide subsequent data collection and analysis efforts. For coding purposes, the software Atlas.ti (Muhr 2008) was used. Over time, the core categories started to emerge from the data and our analytical efforts became more focused. The last semi-structured interviews with a more specific focus on the core themes were conducted in June 2007. Besides, emphasis was also given to investigator triangulation, meaning that we conducted the analysis in a group of multiple researchers. The first analysis phase of open coding generated a list of approximately 330 descriptive and partly overlapping codes. Triangulation and conceptualization efforts (following the constant comparative method) led to the consolidation of the codes.

Following GTM (Glaser 1978; Glaser and Strauss 1967), the extant literature served as sensitizing device for constant comparisons to support the conceptualization process. Our initial data collection and analysis steps focused on generating concepts and categories. Over time, we reached a point of theoretical saturation (Eisenhardt 1989) and started to integrate our findings (Glaser 1978). Our data collection and analysis efforts were deeply intertwined with each other. Initial analysis results were already generated in the second half of 2007. As the analysis was intensified especially during the first half of 2009, the core categories emerged from the data. For example, 'bridging public-private differences' was conceptualized from thereon as 'trust formation' as the researchers identified a good fit between the emerging themes from the data and the boundary spanning perspective. As the extant literature only served as sensitizing device and additional slices of data to be compared with the empirical data, new concepts also emerged (i.e., external stakeholder support). In our final data analysis steps, we concentrated on analyzing the relationships between the identified categories and concepts. The result of our research is a model of trust formation during the realization of IT-PPP-megaprojects for successfully bridging public-private differences.

THE GERMAN TOLLCOLLECT CASE

As often when 'innovation on demand' is ordered, the German TollCollect IT megaproject (www.tollcollect.de) which had the ambitious goal to design and develop the first satellite-based toll collecting system was prone to high risks and potential project failure from the very beginning. After a long and problematic tendering procedure beginning in December 1999, the German Federal Ministry of Transport engaged the private companies Deutsche Telekom, DaimlerChrysler Financial Services and the French freeway operator Cofiroute as the executing syndicate 'TollCollect' in September 2002. The service contract included the development of a modern, innovative toll collecting system using the global system for mobile communications (GSM) standard and the satellite global positioning system (GPS). The system's infrastructure is formed by over 600,000 on-board-units installed into European trucks (which had to be updatable via GSM) and 300 enforcement bridges overarching the autobahn for an effective controlling. The on-board-unit (OBU) is a fat client for collecting traffic data records as well as sending the mileage data accumulated to the central TollCollect accounting system. The enforcement bridges are equipped with cameras and scales embedded into the autobahn for a visual control of the trucks, weight control, and for counting the number of axles. If a truck is not logged into the TollCollect system then an automatic check against the German license plate register (or registers from other European countries) is made to identify the owner and send a ticket. The TollCollect system was designed to automatically detect and charge the use of a defined roadway system depending on the emission class, weight, and number of axles of a truck. An automatic, satellite-based as well as a manual, terminal-based booking functionality was required. Although the completion was delayed several times, finally the implementation of the toll collecting system succeeded on January 1st, 2005 (Rehring 2006).

The initial problems resulted from mismatching divergent understanding and expectations between public and private parties which eventually caused the termination of the formal contract between TollCollect and the German Federal Ministry of Transport. Although TollCollect was officially disengaged, the chief executive officers of Deutsche Telekom and DaimlerChrysler were still trying to achieve a mutual consent directly with the German chancellor. Overcoming the initial divergent understanding and expectations of the different fields of practice contributed to reestablishing mutual trust.

However, before boundary spanning and a renewal of trust was possible, TollCollect had to make a radical change in its leadership and management style as we will illustrate in the following section.

CASE ANALYSIS

Antecedent Conditions for Boundary Spanning

Since the project faced tremendous difficulties due to grown distrust and miscommunication, before any boundary spanning activity could have been applied successfully the right antecedents had to be in place. In the case of TollCollect, that meant establishing an unbiased relation between the new TollCollect management and the public stakeholders, acquiring expertise in public administration areas of practice, as well as the power to enforce changes. These preconditions played an important role for successfully bridging the divide between the parties.

The change in leadership became ultimately necessary because of the deterioration of mutual trust. The relation between the parties needed to be renewed due to divergent understandings and expectations. Consequently, reestablishing the relationship was only possible by a radical change which was stated by a leading manager of the public side:

“TollCollect had started a complete reengineering of project structures which included a drastic replacement of human resources. This was the basic precondition for a project restart because we still believed that the old management had not communicated every emerging problem.”

Establishing an unbiased relationship by changing the management showed the public authorities TollCollect’s willingness to complete the project successfully. The formation of the management team was related to different governance issue such as the mediation of a basis for mutual trust, representing the interests of both parties, and finally having access to the informal network of all stakeholders (Cross and Prusak 2002; Friedman and Podolny 1992). Hence according to our analysis, it was necessary from both sides of the PPP to establish a management team without a tainted relationship. Consider the following remark of a leading manager from the public side which illustrates the atmosphere in the project at that point of time:

“The change in management was inevitable for achieving project’s goals because mutual trust was deteriorated. Replacing people who had not communicated the ongoing problems openly had a signaling effect for the renewal of the relation.”

The new managers were chosen due to their experience and qualification as successful crisis managers in other projects. Changing communication style to open and timely exchanges, they were able to align the formerly divergent expectations and take into account political constraints articulated by public stakeholders. Soon after installation of the new management, mutual understanding and respect for the achievements were bridging the divide between the public and private party, as a leading manager from TollCollect remarked:

“The new management carefully avoided further confrontations with public authorities, intensified open communication, solved the technical complexity of the project, and finally fostered the emergence of team spirit between the parties.”

The familiarity of the new management with decision-making processes within public authorities, as well as their open communication style, enabled them to bridge the initial divide between the parties as crucial precondition for a relationship renewal which is confirmed by IS literature (Pawlowski et al. 2004; Wenger 1998). The integration of knowledge about both participating fields of practice allowed for the establishment of a collaborative environment and the foundation for information exchange (Lindgren et al. 2008). Furthermore, the TollCollect management introduced and cultivated a new participatory leadership model to strengthen a common understanding among the project team members. Enforcing a shift in the relation between management and employees as well as to all stakeholders was necessary for finally delivering the toll collecting system. Formal power supported that employees within TollCollect now were identifying with the project. This concept has already been identified as an important factor for the change of behavior in management and IS literature (Bloomfield et al. 1992; Jaspersen, Carte, Saunders, Butler, Croes and Zheng 2002). However, in our analysis ‘formal power’ plays an important role for establishing boundary spanning activities. Aligning different interests underlined the importance of every employee, component supplier as well as the public authorities for the success of the project. In doing so, a mentality change took place that fostered also the emergence of a cooperative culture with stakeholders outside TollCollect, as remarked by a leading manager from the private side:

“The expertise and experience as well as the formal position enabled the new management team to change the way of collaborating within the syndicate, with component suppliers, and public authorities.”

Boundary Spanning Activities

After setting the preconditions for the renewal of mutual trust, the new management had to shield their employees from the enormous public pressure. It was important to allow for an open, even critical discussion of problems while guaranteeing that nobody will be fired or even be blamed publically. In doing so, the TollCollect team was able to work on problem solutions in spite of the constant external pressure. Resolving difficulties in the realization of TollCollect, as well as managing the alignment of interests can be regarded as the central boundary spanning activity, as the following statement illustrates:

“Due to the project status and the situation between the parties, political influence had to be shielded away. In order to relieve the blockades of talking openly about technical problems, political discussions as well as media cover stories had been kept away from developers and engineers.”

After creating a safe environment, openly talking about technical, managerial, and legal problems was enforced by the new managers. Protecting the cooperating parties from external pressure as well as fostering mutual exchange of information facilitated the collaboration. Comparing organizational and IS research results from an interorganizational, purely private context with our findings, we identified similar boundary spanning activities in a public-private environment (Leifer et al. 1978). Furthermore, we found great fit in the data that “shielding from external influences” was the primary boundary spanning activity that had to be conducted to mediate between the parties. In addition, open communication to all stakeholders created a situation of total transparency concerning project status. Only a common approach could avoid another breakdown of cooperation which was confirmed by a leading manager from TollCollect:

“Total transparency and engaging every single person working for the project was the only solution for project success. Furthermore, explaining that everyone was important for achieving the overall goal gave further motivation to the participants.”

Fostering open communication was also important for the public side. Openness about the current status of project realization and additional open discussions with further stakeholders from all kinds of public administrations reinforced the reestablishment of trust. This was stated by a leading manager on the public side:

“In-time project realization was only possible if the relationship was based on openness. Technical problems as well as obstacles in negotiations with the different stakeholders had to be communicated internally before the media publicly announced it.”

Openly communicating group-specific knowledge caused a learning atmosphere and was the basis for the start of negotiations which can be confirmed by IS literature concerning the use of IT for boundary spanning (Lindgren et al. 2008). Divergent understanding and expectations which initially led to frustrations culminating into massive trust decline could have been prevented in this newly instantiated environment. Bridging the gap between the parties by openly sharing expectations and understanding improved the formation of trust and created the basis for the alignment of interests, team building and admitting compromises. Our findings aggregate prior research results from an individual perspective on boundary spanning capabilities to a task-oriented view on boundary spanning activities (Williams 2002). Aligning divergent interests ultimately enabled TollCollect to realize the project successfully, as a manager from TollCollect mentioned:

“The new shared understanding between the parties was driven by open communication and common motivation concerning project realization. Finally, political constraints concerning technical requirements were not carved in stone anymore. Both parties had realized that only mutual compromises would lead to project success.”

The Moderating Role of External Stakeholder Support

Boundary spanning activities had a positive impact on the formation of trust. The support of the top management of the industry syndicate partners, the main leaders from politics as well as other external stakeholders (e.g., transport associations) strengthened the influence of these activities. Therefore, external stakeholder support had a positive moderating effect on the relation between boundary spanning activities and the formation of trust within the project team. The importance of the effect of top management support has already been shown in other studies (Ragu-Nathan, Apigian, Ragu-Nathan and Tu 2004). Not only that TollCollect now had unlimited financial and human resources but also the top management attention from the German Minister of Transport as well as the chief executive officers of Deutsche Telekom and DaimlerChrysler positively influenced the collaboration. For example, the German Federal Ministry of Transport operatively accompanied negotiations with local police and border patrols responsible to enforce the autobahn toll together with TollCollect. The external support

facilitated the cooperation between the parties because negotiations became easier which was stated by leading managers of TollCollect:

“The German Minister of Transport was the first one to draw a toll ticket which underlined his belief and trust in the successful realization of the project. This caused positive media cover stories which developed even more belief as well as efforts inside the syndicate and trust in the general public.”

Moreover, transport associations also strengthened the effect of boundary spanning activities on trust formation. Mutual trust had not only deteriorated between TollCollect and the public authorities but also towards the general public. Fostering open communication and revealing the technical complexity as well as spending high amounts of efforts on solving these problems, the transport associations were convinced of the seriousness of TollCollect’s top management. Therefore, they intensified the implementation of OBUs in their trucks and publicly announced that the system now really worked. Announcements like the aforementioned once helped to reestablish trust, as a manager from TollCollect commented:

“Third party communication and the public announcement of the transport associations that the IT solution was working without interruptions initiated a breakthrough in mutual belief of project success.”

Trust Formation

Setting the antecedent conditions for boundary spanning and enacting boundary spanning activities between the parties positively contributed to the formation of mutual trust. Bridging the gap by open communication in a shielded environment and aligning divergent interests gradually rehabilitated the credibility of TollCollect. In addition, several public tests proved the stability of the IT solution and fostered the belief in project success which was corroborated by a leading manager of TollCollect:

“TollCollect delivered several public tests with users from various transport companies to reassure the internal as well as the external stakeholders of project success. The communication of test results and the public demonstration finally contributed to reestablish the credibility of TollCollect.”

Communicating not only problems but also capabilities of the different employees working for TollCollect initiated a growing network for knowledge exchange. The participants recognized that besides managerial and technical capabilities inside TollCollect also the support of the public partner was crucial for project realization. Joining the different fields of practice into a shared understanding of this IT-PPP-megaproject strengthened trust formation which was stated by a leading manager of TollCollect:

“Identifying the key people inside TollCollect which had the knowledge for integrating the different parts of the IT solution and developing a shared understanding with the public authorities supported rebuilding mutual trust between all parties involved.”

Emerged Model of Boundary Spanning in PPPs

As a result of the analysis, we present the emerged model of boundary spanning between public and private parties for trust formation in IT megaprojects in Figure 1.

The formation of trust in the analyzed TollCollect case was highly influenced by boundary spanning activities which have been adapted to the PPP context and were not directly applicable. First, the necessary antecedents had to be created in order to exercise boundary spanning activities effectively. This is an important yet under-researched relation in literature. Especially in already troubled projects with a failing course of action it is necessary to level the setting for boundary spanners. In the case of IT-PPP-megaprojects, this includes knowledge from the business as well as politics and public administration world, apart from an unbiased relationship for a restart and assertiveness to exercise power, e.g., to introduce a cultural shift in the working behavior.

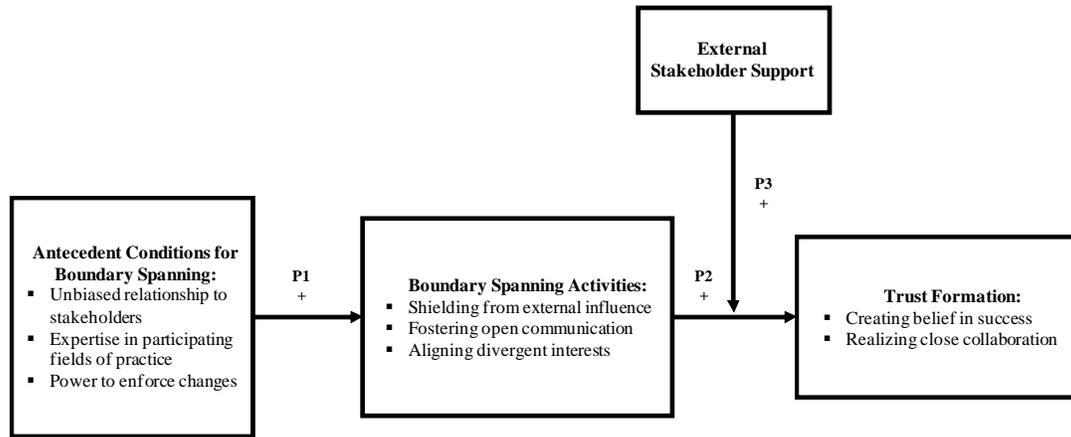


Figure 1. Boundary Spanning in Public-Private IT Megaprojects

While boundary spanning outcomes are characterized by mutual understanding, open communication, and the formation of a cooperative culture, boundary spanning activities are purposefully applied capabilities that enable the boundary spanners to bridge the divide between contrary parties. As illustrated in our case analysis, these antecedent conditions for boundary spanning were ultimately crucial for the execution of boundary spanning activities. Hence, we propose:

Proposition 1: Effective boundary spanning activities in public-private IT megaprojects depend on the establishment of preconditions, including unbiased relationships, relevant expertise, and formal power.

Subsequently, we explained in our case analysis how boundary spanning activities contributed to the formation of mutual trust. Here again, the IT-PPP-megaproject setting has to be taken into account. Besides establishing an open discussion culture with the public client (e.g., allowing for total transparency by the exchange of information), all kinds of communication channels to other stakeholders need to be orchestrated while protecting the project team from too much external influence. Therefore, we propose:

Proposition 2: Boundary spanning activities in public-private IT megaprojects, including shielding from external influence, fostering open communication, and aligning divergent interests, have a positive effect on trust formation, expressed through belief in success and close collaboration.

In addition, our analysis illustrates the moderating effect of external stakeholder support on the relationship between boundary spanning activities and trust formation. The support of the German Federal Minister of Transport as well as top management attention of the private parties and exemplarily transport associations strengthened the effect of boundary spanning activities on trust formation. This caused the recreation of belief in project success and initiated even closer collaboration between all parties involved which supported trust formation. Hence, we propose:

Proposition 3: External stakeholders support in public-private IT megaprojects strengthens the effect of boundary spanning activities on trust formation.

DISCUSSION AND CONCLUSION

Boundary spanning during the realization of IT-PPP-megaprojects is rather unexplored. Through our analysis of the TollCollect case we were able to show how boundary spanning activities facilitated collaboration in IT-PPP-megaprojects and supported the development of mutual trust. In our case study, task-oriented procedures emerged from the data and were evaluated by constant comparison with individual boundary spanning capabilities from literature (Williams 2002). Comparing our results with findings from IS literature, we concentrated on exploring management capabilities instead of the use of IT for boundary spanning (Lindgren et al. 2008). Trust formation manifested itself through the creation of belief in project success as well as the realization of close collaboration. Analyzing boundary spanning activities in a PPP environment allowed us to identify antecedent conditions for establishing boundary spanning activities during a failing course of action in IT megaprojects. In addition to formal power and expertise in different fields of practice which have been explored in

management and IS literature before (Bloomfield et al. 1992; Pawlowski et al. 2004), we identified a third necessary precondition (“unbiased relationship to stakeholders”) for turning around a failing course of action within a PPP.

The model we developed provides a substantial theoretical contribution to the area of boundary spanning in IT-PPP-megaprojects, especially in the area of enabling boundary spanning activities. The generalizability of our findings is restricted to the PPP domain. However, megaprojects also occur in the private sector and are equally prone to failure, as e.g., the Channel Tunnel project taught us (Flyvbjerg et al. 2005). Although our case study was conducted in a PPP environment, the Channel Tunnel example indicate that our findings can probably be applied to the realm of non-PPP IT projects (Nelson 2007).

Prior research so far has focused on spanning the boundaries within an organizational context (Leifer et al. 1978; Santos et al. 2005), the effects of the use of IT for boundary spanning (Levina et al. 2006, 2008), or on the managerial challenges concerning boundary spanning in the phase of establishing a PPP (Noble et al. 2006). In contrast, we focused on boundary spanning activities and their antecedents that lead to trust formation during the realization of IT-PPP-megaprojects. Besides this theoretical contribution, we also offer practical advice. The challenge for practitioners in an IT-PPP-megaproject is to establish and maintain mutual trust as well as shielding an established relationship from external influences. In prior literature, spanning the boundaries between different cultural and organizational fields has been referred as the necessary precondition for successfully managing IT projects (Levina et al. 2005). Our analysis shows how important boundary spanning activities are for the establishment of mutual understanding and the successful management of expectations for succeeding in IT-PPP-megaprojects. Taking the aforementioned into account, an initial failing course of action, expectations’ violation, and termination of contracts in IT-PPP-megaprojects could be avoided by constant relationship management. Future research may investigate which governance structures IT megaprojects should have to succeed in implementing IT solutions in cooperation with public authorities.

REFERENCES

- Beck, R., and Möbs, A. (2006) The Public Hand and IT Mega-Projects: Lessons from the German TollCollect Case, *Proceedings of the Inaugural (First) International Research Workshop on IT Project Management (IRWITPM 2006)* Milwaukee, USA.
- Bloomfield, B.P., and Coombs, R. (1992) Information Technology, Control, and Power: The Centralization and Decentralization Debate Revisited, *Journal of Management Studies*, 29, 4, pp 459-484.
- Brooks, F.P. (1987) No Silver Bullet: Essence and Accidents of Software Engineering, *Computer*, 20, 4, pp 10-19.
- Clegg, S.R., Pitsis, T.S., Rura-Polley, T., and Marosszeky, M. (2002) Governmentality Matters: Designing an Alliance Culture of Inter-Organizational Collaboration for Managing Projects, *Organization Studies*, 23, 3, pp 317-337.
- Cross, R., and Prusak, L. (2002) The People Who Make Organizations Go - or Stop, *Harvard Business Review*, 80, 6, pp 104-112.
- Cule, P., Schmidt, R., Lyytinen, K., and Keil, M. (2000) Strategies for Heading off IS Project Failure, *Information Systems Management*, 17, 2, pp 65-73.
- Davies, A., Gann, D., and Douglas, T. (2009) Innovation in Megaprojects: Systems Integration at London Heathrow Terminal 5, *California Management Review*, 51, 2, pp 101-125.
- Eisenhardt, K.M. (1989) Building Theories from Case Study Research, *Academy of Management Review*, 14, 4, pp 532-550.
- Flyvbjerg, B., Bruzelius, N., and Rothengatter, W. (2005) *Megaprojects and Risk, An Anatomy of Ambition*, (Third Edition ed.), University Press, Cambridge, 2005.
- Friedman, R.A., and Podolny, J. (1992) Differentiation of Boundary Spanning Roles: Labor Negotiations and Implications for Role Conflict, *Administrative Science Quarterly*, 37, 1, pp 28-47.
- Glaser, B.G. (1978) *Theoretical Sensitivity*, The Sociology Press, Mill Valley, 1978.
- Glaser, B.G., and Strauss, A.L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Aldine Publishing Company, Chicago, USA, 1967.
- Hodge, G.A., and Greve, C. (2007) Public-Private Partnerships: An International Performance Review, *Public Administration Review*, 67, 3, pp 545-558.
- Jacobsen, C., and Choi, S.O. (2008) Success factors: public works and public-private partnerships, *International Journal of Public Sector Management*, 21, 6, pp 637-657.
- Jaspersen, J.S., Carte, T.A., Saunders, C.S., Butler, B.S., Croes, H.J.P., and Zheng, W. (2002) Review: Power and Information Technology Research: A Metatriangulation Review, *MIS Quarterly*, 26, 4, pp 397-459.
- Jost, G., Dawson, M., and Shaw, D. (2005) Private Sector Consortia Working for a Public Sector Client - Factors that Build Successful Relationship: Lessons from the UK, *European Management Journal*, 23, 3, pp 336-350.

- Kappelman, L.A., McKeeman, R., and Zhang, L. (2006) Early Warning Signs of IT Project Failure: The Dominant Dozen, *Information Systems Management*, 23, 4, pp 31-36.
- Kim, P.H., Dirks, K.T., and Cooper, C.D. (2009) The Repair of Trust: A Dynamic Bilateral Perspective and Multilevel Conceptualization, *Academy of Management Review*, 34, 3, pp 401-422.
- Leifer, R., and Delbecq, A. (1978) Organizational/Environmental Interchange: A Model of Boundary Spanning Activity, *Academy of Management Review*, 3, 1, pp 40-50.
- Levina, N., and Vaast, E. (2005) The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems, *MIS Quarterly*, 29, 2, pp 335-363.
- Levina, N., and Vaast, E. (2006) Turning a Community into a Market: A Practice Perspective on Information Technology Use in Boundary Spanning, *Journal of Management Information Systems*, 22, 4, pp 13-37.
- Levina, N., and Vaast, E. (2008) Innovating or Doing as Told? Status Differences and Overlapping Boundaries in Offshore Collaboration, *MIS Quarterly*, 32, 2, pp 307-332.
- Lindgren, R., Andersson, M., and Henfridsson, O. (2008) Multi-contextuality in boundary-spanning practices, *Information Systems Journal*, 18, 6, pp 641-661.
- Muhr, T. (2008) ATLAS.ti - The Knowledge Workbench, Scientific Software Development, Berlin, 2008.
- Nelson, R.R. (2007) IT Project Management: Infamous Failures, Classic Mistakes, and Best Practices, *MIS Quarterly Executive*, 6, 2, pp 67-78.
- Noble, G., and Jones, R. (2006) The Role of Boundary-Spanning Managers in the Establishment of Public-Private Partnerships, *Public Administration*, 84, 4, pp 891-917.
- Pawlowski, S.D., and Robey, D. (2004) Bridging User Organizations: Knowledge Brokering and the Work of Information Technology Professionals, *MIS Quarterly*, 28, 4, pp 645-672.
- Ragu-Nathan, B.S., Apigian, C.H., Ragu-Nathan, T.S., and Tu, Q. (2004) A path analytic study of the effect of top management support for information systems performance, *Omega*, 32, 6, pp 459-471.
- Rehring, E. (2006) Germany's Tolling Success, *Traffic World*, 270, 6, p 14.
- Robertson, P.J. (1995) Involvement in Boundary-Spanning Activity: Mitigating the Relationship between Work Setting and Behavior, *Journal of Public Administration and Research Theory*, 5, 1, pp 73-98.
- Rosenau, P.V. (1999) Introduction: The Strengths and Weaknesses of Public-Private Policy Partnerships, *American Behavioral Scientist*, 43, 1, pp 10-34.
- Rousseau, D.M., Sitkin, S.B., Burt, R.S., and Camerer, C. (1998) Not so different after all: A Cross-Discipline View of Trust, *Academy of Management Review*, 23, 3, pp 393-404.
- Santos, F.M., and Eisenhardt, K.M. (2005) Organizational Boundaries and Theories of Organization, *Organization Science*, 16, 5, pp 491-508.
- Trafford, S., and Proctor, T. (2006) Successful joint venture partnerships: public-private partnerships, *International Journal of Public Sector Management*, 19, 2, pp 117-129.
- van Marrewijk, A. (2007) Managing project culture: The case of the Environ Megaproject, *International Journal of Project Management*, 25, 3, pp 290-299.
- Venugopal, C. (2005) Single Goal Set: A New Paradigm for IT Megaproject Success, *IEEE Software*, 22, 5, pp 48-53.
- Walsham, G. (1995a) The Emergence of Interpretivism in IS Research, *Information Systems Research*, 6, 4, pp 376-394.
- Walsham, G. (1995b) Interpretive case studies in IS research: nature and method, *European Journal of Information Systems*, 4, 2, pp 74-81.
- Wenger, E. (1998) *Communities of Practice: Learning, Meaning, and Identity*, Cambridge University Press, Cambridge, England, 1998.
- Williams, P. (2002) The Competent Boundary Spanner, *Public Administration*, 80, 1, pp 103-124.
- Yin, R. (2003) *Case Study Research - Design and Methods*, Sage Publications, Thousand Oaks, California, USA, 2003.