Breaching the Knowledge Transfer Blockade in IT Offshore Outsourcing Projects – A Case from the Financial Services Industry

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Abstract

In this paper the authors present the results of a research project that strives to fill a literature gap in IT offshore outsourcing research by analyzing client-side managerial mechanisms for the effective knowledge transfer from client to vendor organization. 31 qualitative interviews were conducted and analyzed using the grounded theory development methodology. A key finding is that client firms cannot rely solely on the capabilities of IT service providers and must actively involve themselves in the transfer, accumulation, and use of business knowledge, process knowledge, and functional knowledge in the client-vendor relationship.

1. Introduction

With continuing growth of the knowledge economy and globalization of knowledge-intensive work, offshore outsourced information technology (IT) development projects and the effective management and use of knowledge are receiving more and more attention. Carrying out IT development projects in cooperation with an offshore vendor bears some imponderability such as risks resulting from cultural distance between client and vendor [28]. These cultural risks make offshore projects especially susceptible to failure, or, as it has been commented by some scholars, can "make or break and offshore project" [17, 28, 31]. Examples for such cultural risks are communication barriers between client and vendor personnel and blocked knowledge transfer [7]. Further challenges of offshore outsourcing projects that can lead to knowledge transfer blockades include language barriers, geographic distance, and the high rate of personnel turnover at Indian service providers [7, 29, 30]. While the impact of all of these offshore-specific risk factors on the client-vendor relationship and offshore outsourcing success have been analyzed in depth, there is little research focusing on the managerial factors helping to overcome problems due to these offshore-specific risks [18].

Research on knowledge transfer in IT outsourcing has emphasized the importance of vendor capabilities such as absorptive capacity, which refers to the set of prior knowledge or the ability to absorb and acquire the relevant business knowledge [4, 7, 21]. According to these studies, the higher the absorptive capacity of the vendor, the lower the knowledge transfer costs in offshore outsourcing [7]. Another factor mentioned frequently in the literature is the CMMI level-5 certification of the majority of large IT service providers from India [16]. Accordingly, client firms should leverage their own level of CMMI certification to be able to collaborate with vendors at eye level, with the vendor firm supporting the client with its process methodologies and management capabilities [12, 31, 32]. However, these findings are inconsistent with recent studies indicating that despite CMMI level-5 certification of Indian vendors, frequently hidden costs in offshore outsourcing offset the benefits [6, 7], and offshore vendors fail to deliver the promised service quality and fulfill the client's expectations according to their CMMI certification [25]. Thus, more research is needed analyzing what knowledge and expertise can be really expected from vendor firms, with what client knowledge it has to be complemented, and how to manage effectively the transfer of this knowledge from client to vendor.

While there are numerous studies focusing on vendor-side issues concerning the management of knowledge or expertise and the role of vendor capabilities [12, 23, 29], there are few studies examining the client-side factors affecting the knowledge transfer process from client to vendor organization in IT offshore outsourcing projects [7]. Therefore, this study aims at filling this gap and asks the following research question: *How can the knowledge transfer from the client organization to the vendor organization be managed more effectively?*

This question is explored by interpreting the results of 31 qualitative interviews from a single-case study. It comprises a large IT offshore outsourcing

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project involving the activities of a large international bank (the client) in Germany and one of the largest Indian IT service providers (the vendor). The technical objective of the reengineering project was to integrate a 30 year-old legacy system with a newer, more flexible system. Roughly 200 individuals participated in this 5-year undertaking and the contract was signed on a fixed price basis, with a volume of roughly 25 million Euros.

This paper is structured as follows. The following section gives an overview over client-vendor communication and knowledge sharing in IT offshore outsourcing. This literature was used for comparative analysis purposes as described in the next section about the research methodology. There, we explain how we employed the grounded theory method in this research to build, rather than test theory. After a short case description, we then focus on the analysis of the data where we present the core categories and their relationships that emerged in this exploratory and theory-building study. The final section presents the key findings and the implications for research and practice.

2. Theoretical Background

Knowledge transfer in offshore outsourcing can be defined as the communication of knowledge from the client organization so that it is learned and applied by the offshore vendor [7, 20]. It includes both explicit knowledge (e.g. about the business domain) and implicit knowledge of how to do things (e.g. client-specific working procedures), which are more difficult to codify and have to be transferred via frequent interaction and face-to-face contact [34]. The risk of blocked knowledge transfer increases with the amount of client-specific knowledge that is required by the vendor [7]. The amount of client-specific knowledge is higher in projects that are conceptually novel to the vendor, as is the case for example with the reengineering of homegrown legacy applications [35]. The vendor needs to understand in-depth the business requirements and possess or acquire knowledge about the application domain of the client organization [35]. He also needs to understand the client's systems and IT landscape [29], as well as collaborate with the client concerning implementation methodologies [25]. In sum, mutual exchange of information and knowledge, also called procedural coordination, is especially important in offshore outsourcing projects which are typically labor intensive and frequent client-vendor interaction is the rule, not the exception [27].

To enable procedural coordination and the effective communication and transfer of client-specific knowledge, 'boundary spanning capabilities' are important. In the context of IT outsourcing, this refers to the capability of individual project members to broker and intermediate the relationship between client and vendor by assuring the effective information and knowledge sharing between team members [22, 24, 25, 30, 31]. Such boundary spanners – also called 'offshore middlemen' – can help to overcome problems due to cultural differences and knowledge gaps between client and vendor concerning problem solution methodologies, working procedures and other kinds of offshore-related expertise [26]. Another important role of boundary spanners is to create social capital (e.g. trust) in the outsourcing relationship to enable joint problem solving and effective information and knowledge transfer [30].

Research on boundary spanners between client and vendor firms has emphasized the importance of overcoming problems due to cultural distance [26]. For effective knowledge transfer at and across different levels, this capability needs to be developed by all project members involved in close client-vendor interaction. Specifically, project staff needs to learn about cross-cultural differences (content knowledge) and how these differences affect client-vendor interaction (process knowledge). This knowledge (cognitive dimension) is needed alongside motivation for cross-cultural adaptation (motivational dimension) in order to develop the necessary skills and abilities for successful cross-cultural interaction (behavioral dimension) [9]. Together, the cognitive, motivational, and behavioral dimensions form the project participant's cultural intelligence or competence [8].

A further important issue in knowledge transfer behavior is the motivation and the attitude of the involved participants [10]. A major barrier to knowledge transfer can exist because the knowledge source may fear the loss of control or ownership, may not be adequately rewarded for sharing hard-won success, or may be reluctant to devote time and resources to the transfer of knowledge [34]. Project managers desiring to facilitate the sharing of knowledge between client and vendor personnel need to create work contexts and an organizational climate in which positive intrinsic and extrinsic motivational forces can evolve and negative forces (such as fear and resistance) are controlled [3].

3. Research Methodology

Our epistemological stance for this research is broadly interpretive, meaning among other issues that we acknowledge the subjective nature of the world

and interpret reality from the viewpoints of our interview partners [2, 36]. Hence, we did not predefine any hypothesis in a deductive manner from existing theories. Rather, we conducted this qualitative single-case study in an exploratory and inductive fashion, focusing on theory-building as opposed to theory-testing. The end goal is to enhance our understanding of how the transfer of knowledge from client to vendor in IT offshore outsourcing projects can be managed more effectively. By analyzing a revelatory case and having the opportunity to conduct 31 in-depth qualitative interviews, we make a substantial contribution to the theory-building process of knowledge transfer in IT offshore outsourcing.

We conducted 31 unstructured interviews, each one lasting from 1 to 2.5 hours, resulting in 50 hours of interview time and more than 260 pages of interview transcriptions. This sample size was chosen according to the criterion of "theoretical saturation", meaning that the last interviews we conducted only marginally contributed new insights to our inquiry [15]. Furthermore, we selected our interview partners according to several dimensions to enable an interpretation from different perspectives. Interview partners were involved from both client company (19 interviews) and vendor company (12 interviews); business and IT departments (4 out of 19 with business personnel); top-level (4), project-level (8), subproject-level (9), and team-member level (10); lastly, interview partners involved during a particular phase of the project and those involved during the whole course of the project (9 interview partners were not involved during the entire lifetime of the project). To prepare for the data analysis phase, we took notes at the data collection sites during and after each interview and transcribed the interviews immediately after each interview session [11, 37]. In addition, we constantly documented our thoughts on the analysis of the collected data. All generated notes and collected data served for the analytical process of generating theoretical concepts [14].

In an interpretive and inductive fashion, our goal was to develop grounded theory, following the recommendations of Glaser and Strauss [15]. The collected data was interpreted by the three researchers (enabling investigator triangulation) and from the viewpoints of our interview partners. Emerging concepts were identified by constantly comparing the findings from our data with possible theoretical conceptualizations. During this inductive theory-building process, we identified many concepts and core categories in the data which we sorted into four main categories regarding the management of the client-to-vendor knowledge transfer process.

4. Case Description

The case-study comprises a large IT offshore outsourcing project involving the German operations of a large international bank (the client) and one of the largest Indian IT service providers (the vendor). The goal of the project was to technically reengineer two core banking systems on which millions of financial transactions run on a daily basis. The task was to integrate the older IT system, a 30 year-old legacy system, into the newer, more flexible and modular system from the 1990ies. The reasoning was to reduce maintenance costs, data redundancies, and other inefficiencies, meet changing business needs, and reduce the dependency on key human resources in the organization that were about to retire.

In order to achieve the specified goals, the choice was made to contract a large service provider as it was clear that internal resources would not suffice and external resources were necessary to tackle the huge amount of workload. The client perceived that contracting an Indian vendor who was CMMI level-5 certified had the advantage of combining the benefit of low labor costs with high-quality service quality. However, a number of hurdles to knowledge transfer existed or emerged in the process that challenged the effective collaboration between client and vendor. The following statement illustrates exemplarily what has been commented by multiple interview partners from the client:

> *Originally I thought we would have a workload distribution of 35-65 percent…but in reality it wasn't even 50-50, by no means…we ended up putting in much more resources than we wanted to.*

The comment shows that the original expectations of the client firm were not met by the vendor firm and that the client had to invest a large amount of effort to transfer knowledge and manage the vendor relationship. The following themes in table 1 resulted inductively from the analysis of our interview data.

Table 1: Reasons for knowledge transfer blockade

Challenge #1 lack of client member motivation to share knowledge due to fear of job loss and resistance to change
Challenge #2 frustration on behalf of client project members due to vendor failure in delivering the expected service quality according to CMMI level-5 certification
Challenge #3 cultural differences hindered client-vendor interaction due to inexperience of the

majority of project members to work with the Indian/German culture
Challenge #4 language barriers due to German language software code comments as well as project documentations
Challenge #5 geographic distance between onshore and offshore teams with limited face-to-face interaction
Challenge #6 high rate of personnel turnover at the vendor company which led to disruptions in the knowledge transfer processes

Our case analysis in the following section illustrates how the challenges were tackled and the risks mitigated, thereby facilitating client-vendor communication and knowledge transfer. To provide detailed insight, the specific types of knowledge are depicted that were relevant for transfer. The following analysis of the management factors shows that instead of relying on the expertise and capabilities of the IT service provider, the client firm leveraged project success by actively managing the accumulation and effective use of knowledge in the client-vendor relationship.

5. Case Analysis

Three types of knowledge emerged from our data to be transferred from client to vendor in the IT offshore outsourcing project. The first type of knowledge that has to be transferred is knowledge about the client's business processes, business goals and objectives, and the client's business domain. This type of knowledge can be called business application domain knowledge, in this case referring to **business knowledge** about the financial services industry [25, 33]. The following two statements illustrate the importance of this knowledge transfer and the knowledge gap of the vendor organization:

> *They don't have the necessary business understanding…25 millions of daily transactions …we do not feel that they realize the business criticality.* [project manager, client firm]

> *I totally underestimated how 12 Indian project workers can occupy 3 client workers. […] We had to invest a lot of time and effort to enable them to understand our business and grasp the complexity of this reengineering task.* [project leader, client firm]

The second type of knowledge that has to be transferred is knowledge about client-specific working procedures and standard software development methodologies. This type of **process knowledge** includes issues such as the handling of documentations where the client expects from the vendor to adapt himself to his way of doing things. On the other hand it includes more general practices and methodological issues from the business software development domain [5] where the client would usually expect the vendor to bring in its experiences and knowledge [25]. However, as our case analysis shows, the performance of Indian service providers does not always fulfill the expectations of client firms which is why this type of knowledge has to be transferred from client to vendor or generated collaboratively in the client-vendor relationship. The following citation from an Indian project manager illustrates this point:

> *Typically the biggest conflicts arose with respect to methodology: How to do certain things.*

This comment shows that conflicts occurred in the project with respect to software development methodology. Obviously the client was not satisfied with the methodological approach pursued and offered by the vendor firm despite its CMMI-level 5 certification. Another statement made by an Indian project manager illustrates the lack of methodological process knowledge as well as functional knowledge:

> *Reengineering projects are very rare. [vendor name] has done few reengineering projects. So this is a very good knowledge base for us.*

Accordingly, the third type of knowledge that has to be transferred refers to client-specific **functional knowledge** about the client's systems, IT infrastructure, and the functional requirements [29]. This knowledge is needed to 'map' between business, technical, and process knowledge, which is important for the vendor to be able to deliver the required services [1, 38]. An Indian project manager noted:

> *It was a really challenging project…and only few people really have the in-depth knowledge about the system…very tough to get the information we needed. […] initially understanding the functional requirements was difficult. We were not getting all the necessary information.*

The statement shows that due to the conceptual novelty for the vendor in dealing with the reengineering of large and complex legacy systems in the financial services industry, and due to the relevant functional knowledge residing with few people at the

client firm who were not even keen about working together with an Indian vendor, the transfer of this type of knowledge was both highly relevant and extremely difficult.

After having discussed the three different types of knowledge that had to be transferred from client to vendor, we dedicate the further analysis to the management factors that were employed in the project to overcome the hurdles and obstacles to knowledge transfer.

5.1 Stimulate Individual Motivation

One of the core categories that emerged from our analysis was the importance of stimulating motivation of client members to share knowledge and collaborate with the Indian vendor. Obviously, the fear of client project members to be replaced and lose their jobs had to be solved to let positive motivational factors evolve. The program manager explained the role of human resource (HR) decisions for motivation:

> *We organized a 'smooth restructuring'. There was no firing and the only way to reduce the size of our workforce was to avoid replacements of retiring employees and release some early into retirement while receiving a one-time financial bonus. The remaining employees were most often relocated to different departments or they conducted their own search for a new position within the restructured organization.*

The effect of this smooth restructuring, which was carried out effectively with the help of top management support, developed over time. Initially, project workers were skeptical but as they found out about their new opportunities within the reorganized department, they started to overcome their resistance and fear. A project manager noted that at some point in time curiosity to work together with a foreign culture prevailed over fear and resistance.

A further important factor for stimulating motivation was the fact that clear roles and responsibilities were transferred to individual project managers, something that was new to them. Whereas in the past the team as a whole was made responsible for eventual project failures, the program manager in this case decided to assign responsibilities directly and monitor performance on an individual basis. The program manager noted:

> *When the project started I communicated clearly to all project members that I would assign clear responsibilities to each project leader and set milestones as well as deliverables in order to control for project performance. […] A detailed matrix list was developed to document and track the project workers to fulfill their responsibilities.*

The effect was that even if individual project managers were not keen about the whole offshoring strategy and were reluctant to collaborate with the Indian vendor, they changed their attitude because they realized that for their future career they would have to make this project a success. They knew that their performance was being monitored by the program manager and that they would be remembered in the organization according to what they had done or not done in this project. The positive change in attitude was further strengthened when the vendor delivered the first results and it was demonstrated to the critics that the project was not a 'mission impossible', as they had bemoaned over and over again in the beginning of the project. This issue is reflected in the following statement made by a client project member illustrating the role of perceived social pressure or subjective norm [13]:

> *When the project eventually becomes a success story, you cannot defy your personal support for moving forward and collaborating with the Indian vendor.*

In summary, the employed mechanisms to stimulate motivation in the project helped to overcome the challenge that many client project members were initially not motivated to share knowledge with the Indian vendor due to the fear of job loss and general resistance to change. Enhanced motivation helped to transfer business, process, and functional knowledge, although the most important effect was to transfer functional knowledge about the systems and IT landscape, client-specific knowledge which key client members had build up through years and decades of hard work and initially were reluctant to share with the Indian vendor because they feared giving away influence, control, and ultimately their own job.

5.2 Establish Formalized Communication Structures

Several project design and structural mechanisms helped to facilitate the knowledge transfer from client to vendor. One issue was that the vendor organization adapted its project organization to the client, something called the 'mirror structure'. As a senior project manager from the Indian vendor explained:

What we did: basically try and mirror the customer organization…makes it easier for day-to-day transactions. […] align ourselves to our client on the project level. […] for each person from the client we have a counterpart from our organization. Communication and reporting occurred across horizontal and vertical levels, but not dynamically across levels.

At its core, this structure consists of clearly defined hierarchical and cross-organizational communication and reporting structures. It was made clear to everybody from both organizations to whom they had to report within their own organization (hierarchical coordination). Similarly, cross-organizational communication was specified by assigned a communication 'counterpart' to every project leader or manager on both sides (cross-border coordination). According to our interview partners, this structure helped in the way that everybody knew about his or her contact person in case that ad hoc information or knowledge transfer was needed. That way, there was no room for misunderstandings concerning responsibilities for delivering or requesting information.

Another mechanism that proved effective was the weekly meeting of all project managers and other project stakeholders to discuss the relevant issues and challenges. Given the name 'project reviews' or 'status meetings' these meetings helped to identify early any needs for more intensive client-vendor communication and knowledge transfer to tackle any relevant risks or problems that emerged during the course of the project. An important issue was making communication and knowledge transfer revolving around these reviews explicit and controllable as shown by the following statement made by a client project manager:

From my experiences in this project, status protocols have to be written explicitly and shared between client and vendor personnel. We tried exchanging status information via telephone meetings before…but later it simply wasn't there anymore.

These review sessions were quite formal in nature as they were usually prepared by the means of written documents and presentation slides. Also, the results were documented for further reference and in order to control for the delivery of agreed upon targets.

In summary, the establishment of formalized communication structures helped to dissolve knowledge transfer barriers by clarifying responsibilities and controlling for successful knowledge exchange. Multiple interview partners emphasized the importance of formal knowledge transfer by making communication explicit and documenting achieving knowledge transfer results. Our data indicates that this finding is specific to the offshore context, where risks such as those resulting from cultural distance result in more frequent misunderstandings and knowledge transfer barriers. Formalized communication structures helped for the exchange of functional knowledge which could be made explicit and transferred formally. Also, the mirror structure design with clearly defined communication counterparts and roles helped to transfer business and process knowledge as vendor client members knew whom to ask when in need of more information on critical business issues or with whom to talk about methodological discrepancies.

5.3 Develop Cultural Competence

A further important factor for successful knowledge transfer on the individual level was the cultural characteristics or cultural competence of the involved project managers and members. Whereas the success of cross-cultural learning and adaptation depends highly on individual project members, our analysis also shows that there are several possibilities to stimulate this process. One is to conduct cross-cultural training workshops. A project manager explained:

Our experience has shown that knowing about cross-cultural differences and the implications of these for cross-border collaboration is important for working successfully with Indian vendors. Even though we only had cross-cultural workshops once during the initial phase of the project, I would repeat these workshops several times during the course of the project to offer the possibility for regular reflection and learning.

Another more active training method that proved to be very effective was to send project members for some time to the home country of the vendor, called site visits, as explained by the following statement:

We sent all our project managers for one week to India. Even though it was a very expensive trip, we really benefited from this site visit. When they came back from India, during the weeks that followed all status lights of our project jumped from orange to green.

A further cross-cultural management technique was the use of so-called 'replay sessions'. The idea

was to overcome the problem that Indian project members tended not to communicate clearly any misunderstandings or ask questions in case of not understanding the requirements or expectations concerning a particular task. Thus, the goal of the replay sessions was to make sure that they had understood the functional and business requirements and expectations of the German client. They further stimulated cross-cultural learning and interaction. The following statement made by a German project manager illustrates how these replay sessions were carried out:

> *We organized joint meetings with our Indian colleagues. […] In the first session, the involved members from our organization [the client] transferred their knowledge concerning the application. The Indian colleagues would listen and take notes. In the second session, which would take place one or two days later, the Indian colleagues explained how they had understood the involved issues and eventual misunderstandings were clarified directly.*

In summary, active and passive training methods as well as replay sessions helped to develop cultural competence and stimulate knowledge transfer. That way the challenges due to cultural differences could be overcome. This was an important prerequisite for enabling effective client-vendor communication, on which we elaborate in more detail in the following section.

5.4 Facilitate Informal Client-Vendor Communication

A further management technique is worth mentioning that helped to avoid knowledge loss in particular subprojects and provide continuity in established working relationships between client and vendor personnel. The client firm in our case actively involved itself in the project member selection process of the vendor and exerted pressure that key vendor project members stayed with a given subproject for its lifetime before changing to another. As a senior project manager commented:

> *It was an important success factor that we had some key people from [name of vendor] who were experienced and competent. […] Absolutely key is the selection of the people…we conducted many interviews via video conferencing with vendor personnel to decide which people we wanted on the project. If I were to repeat this project I would even fly to India and interview them directly.*

It was a key cornerstone of the bank's vendor management strategy not only to actively involve itself in the project member selection process but also to contractually bind key vendor personnel to the lifetime of subprojects to provide for continuity in client-vendor communication and collaboration:

> *We included in our contract that those project managers who were presented to us in the sales talks would actually have to continue working on the assigned projects. [name of vendor] was not allowed to pull off key personnel without prior negotiation.*

By actively involving itself in the vendor's human resources decisions, the client achieved its goal to establish continuous working relationships which was seen as a critical success factor for effective client-vendor communication and knowledge transfer.

A further issue that was recognized very early by senior project stakeholders was the importance of frequent face-to-face contact and client-vendor meetings, for overcoming problems due to language barriers, geographic distance, and cultural differences. As the program manager commented:

> *When they [client and vendor personnel] are together in one place everything works just fine. […] My objective was to get the people together physically as often as possible, for example by sending project managers to India if the budget would allow it.*

Besides these offshore site visits, informal project manager meetings between client and vendor members served to facilitate open communication about important issues in the project and delivered a platform for joint reflection, thereby enhancing cross-cultural learning on the project manager's level. A client project manager noted:

> *I had regular meetings with my counterpart from the vendor organization. We discussed different perceptions, misunderstandings, cultural and communication issues, and reflected jointly on the experiences (positive and negative) we gained from working together in the project.*

These meetings helped to facilitate client-vendor communication and knowledge transfer by enabling the discussion about any problems or obstacles that had emerged to the surface in day-to-day project work. The onshore project managers from the vendor involved in these meetings were a key feature of the

offshore project configuration. The vendor firm dedicated experienced project managers to onshore teams that were located at two different locations at the bank in Germany. Technical staff responsible for the programming of the software code was mainly situated in offshore teams in India. The onshore project managers served as 'boundary spanners' or 'intermediaries', brokering between client workers and vendor offshore workers. Communication and knowledge transfer from client workers to vendor offshore workers was intermediated by the boundary spanners who were mostly located directly at the client sites to assure frequent face-to-face contact. As one of the key client project managers noted:

> *What happens offshore is difficult to control. You don't notice if after two weeks someone completely different works on the project. […] That is why the onshore vendor personnel is so important to us, especially because they are knowledgeable and experienced, and because they help to control the offshore teams.*

The advantage of this offshore configuration was that client project members mostly had a competent conversation partner to discuss critical business and functional issues. Knowledge transfer to these boundary spanners was easier due to their prior experience and frequent interpersonal contact. However, the disadvantage was that apart from some exceptions there existed no direct communication from client to offshore vendor personnel and the client had to trust in the boundary spanners to effectively filter and transfer the relevant knowledge to their offshore colleagues, as this knowledge was important for correct implementation.

In summary, the client's active involvement in the vendor's human resource decisions helped to overcome the challenge of high personnel turnover and made the transfer of knowledge more effective as it would not have to be transferred multiple times to repeatedly changing vendor personnel. Furthermore, face-to-face meetings, offshore site visits, and the mediating role of so-called boundary spanners helped to overcome challenges due to geographic distance, language barriers, and cultural differences.

6. Discussion

The interpretation of the case study data has led us to a differentiated view on the sharing of knowledge in IT offshore outsourcing client-vendor relationships. In particular, business knowledge (i.e. financial services industry domain knowledge), process knowledge (i.e. software development methodology and working procedures), and functional knowledge (i.e. client's systems, IT infrastructure, and functional requirements) had to be transferred from client to vendor. Furthermore, our analysis has shown how motivational mechanisms (i.e. HR decisions, roles and responsibilities, and subjective norm), formal mechanisms (i.e. mirror structure, communication counterparts, project reviews, and making knowledge transfer explicit), and informal mechanisms (i.e. cultural competence, replay sessions, client-vendor face-to-face meetings, offshore site visits, and boundary spanners) helped in different ways to transfer the three types of knowledge. The former elements were characterized as informal as they were not documented and made explicit as is the case with formal control mechanisms [19].

Prior research in IT offshore outsourcing on the vendor's point of view has stated that the knowledge transfer from client to vendor primarily depends on the vendor's capabilities, including CMMI certification and absorptive capacity [e.g., 12]. However, as our case demonstrates, client firms cannot simply rely on the vendor's capability for bringing in, or absorbing the necessary knowledge. Our analysis shows that the knowledge transfer must be actively managed on behalf of the client firm, which is why our case analysis delivers unique insight and makes a contribution to the IS domain.

7. Conclusions

This paper is one of the first attempts to analyze in detail managerial mechanisms and techniques to make the knowledge transfer from client to vendor in IT offshore outsourcing relationships more effective. By distinguishing between business, process, and functional knowledge, we offer a more precise picture about the most salient types of knowledge to be transferred from client to vendor in this context. Furthermore, we deliver unique insights into different types of management mechanisms pertaining to motivational, formal, and informal factors, that give managers precise recommendations how to manage the knowledge transfer processes more effectively.

Our data indicates that facilitating motivation for knowledge transfer at the individual level is an important prerequisite for effective knowledge transfer. Once a positive attitude towards knowledge sharing and collaboration is present, formal and informal management mechanisms can further facilitate the knowledge transfer processes. Thereby, formal and informal mechanisms reinforce each other and the adequate use of both types of mechanisms in combination leads to the greatest outcomes. For

example, we found that explicit documentation and control of knowledge transfer plays an important role in IT offshore outsourcing relationships. However, informal mechanisms such as cultural competence (i.e. cross-cultural learning and adaptation) have an equal impact of successful client-vendor knowledge sharing. Thus, managers need to find the right balance between informal and formal techniques.

A further important insight is that contrary to findings from other studies, that emphasize vendor capabilities (e.g., absorptive capacity) and CMMI level-5 certification of Indian vendors as a good predictor for effective knowledge absorption and use in IT services projects [7, 12, 26, 29, 30, 31], our results show that eventually client firms possess more knowledge and expertise in certain areas (e.g., project management capabilities) and therefore need to actively involve themselves in the accumulation and use of knowledge in the client-vendor relationship and assure a successful transfer of critical knowledge to the vendor organization.

Lastly, firms deciding for contracting CMMI level-5 certified providers from India must be aware of the 'hidden' knowledge transfer costs and must invest resources in structured organizational procedures for coping with offshore-specific challenges. The importance of transferring business, process, and functional knowledge is frequently underestimated. Client firms must actively enable their vendors and enter into close collaboration and knowledge sharing already during the requirements analysis and design phase of the project.

8. Limitations and Future Research

The results of this study are particular to large and complex IT reengineering projects. Thus, further research is needed to study the posed research question in other contexts and settings.

Last but not least, we wish to encourage quantitative researchers to explore the relative importance of each identified mechanism for the transfer of each type of knowledge. For example, our data indicates that informal mechanisms might be especially important for the transfer of process and business knowledge, because this type of knowledge is frequently difficult to document explicitly and thus intensive informal communication and face-to-face contact might be more necessary than under different circumstances.

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