2009

Critical Issues of Offshore Software Development Project Failures

Tom Philip
University of Zurich, philip@ifi.uzh.ch

Gerhard Schwabe
University of Zurich, schwabe@ifi.uzh.ch

Kweku Ewusi-Mensah
Loyola Marymount University, kewusi@lmu.edu

CRITICAL ISSUES OF OFFSHORE SOFTWARE DEVELOPMENT PROJECT FAILURES

Research-in-Progress

Tom Philip
University of Zurich
philip@ifi.uzh.ch

Gerhard Schwabe
University of Zurich
schwabe@ifi.uzh.ch

Kweku Ewusi-Mensah
Loyola Marymount University
kewusi@lmu.edu

Abstract

Increased globalization and the consequent dispersion of IT activities around the world have driven the growth of offshore outsourcing. The share of offshore software development (OSD) in the high-cost countries has grown tremendously since the 1990s and this trend will continue in the coming years. Software development projects continue to experience poor performance problems because of their inherent complexities. Despite the cost advantages of OSD projects, the underlying risks such as cultural and geographic distances, communication and coordination challenges, and knowledge transfer complexities make OSD projects more vulnerable to failure than domestically outsourced projects. We attempt to identify the critical issues specific to OSD project failures, their underlying causes and their interrelationships using the grounded theory approach. We have conducted exploratory interviews with offshore experts from Indian and Swiss client and vendor companies. We developed a preliminary empirical model to explain the OSD project failures using offshore-specific and offshore-indispensable issues.

Keywords: Offshoring, global software development, project failure, critical issues, project management, grounded theory

Introduction

The increased globalization and interconnectedness of the world have resulted in the emergence of a global market that has driven the growth of IT offshoring (Hirschheim 2006; Sahay et al. 2003). This dispersion of global work and the global competition made possible by information technology (Apte and Mason 1995) have opened up a global market for IT services. Consequently, the share of IT offshoring in rich industralized countries has been steadily increasing. A study by Forrester in 2007 reported that 65% of the US and European organizations having 1,000 or more employees currently develop software in offshore countries (McCarthy 2007). However, only 45% of the organizations developed software in offshore countries two years ago. This growth of IT offshoring will continue in the next five years and it will largely come from applications development and maintenance (Optaros 2007). The reduction of IT costs remains the prime motivation for companies in the high-cost countries to enagage in IT offshore outsourcing deals.

Software development project failures cost billions of dollars to organizations every year and software projects experience more failures than successes when they are assessed in terms of the originally estimated time, budget and requirements (Standish Group 1994, 2002; McManus and Wood-Harper 2007). Success remains rare for software projects as they are difficult to manage even in conditions of co-location and proximity (Sahay et al. 2003). Several research works have reported cases of offshore project failures (e.g.: Aron and Singh 2005; Rottman and Lacity 2008) and a practitioner-oriented work (Vashistha and Vashistha 2006) has claimed that 50% of the offshore projects fail as they do not reduce costs as originally intended. Recent surveys (Carter 2006; Hatch 2005) among executives have revealed that offshore outsourced projects resulted in lower cost savings and poor quality of software development than expected.

The concept of project failure is a vague one as very few people agree on its exact definition (Pinto and Mantel 1990). IT projects are generally judged from the implementation and operations perspective as well as from the project development perspective in IS failure literature. The implementation and operations perspective primarily analyzes information systems that have gone through development phases and became operational (Flowers 1996; Lucas 1997; McManus and Wood-Harper 2007; Sauer 1993). The project development research perspective, on the other hand, focuses on information system projects that have experienced major troubles during their development or that have had to be abandoned during the development phases (Brooks 1986; Ewusi-Mensah and Przasnyski 1991, 1994; Standish Group 1994, 2002). These failures can happen during any phase of the IS development project.

As we focus on software development processes in offshore projects in this research, we will adopt the project development perspective. We define *offshore software development project failure* as the cancellation of the offshore software development (OSD) project before the information system becomes operational. From the major works in the project development failure research, this definition of offshore project failure corresponds to 'total abandonment' (Ewusi-Mensah and Przasnyski 1991) and 'impaired' projects (Standish Group 1994). The offshore development project failures can result from external and internal issues that affect the project team in OSD projects.

Increased academic interest in the outsourcing phenomenon since the 1990s has resulted in numerous studies in the area of IT outsourcing. However, a review of IT outsourcing literature shows that most research works focus on the IT outsourcing decision processes and the management of IT outsourcing operations (Barthelemy and Geyer 2001; Dibbern et al. 2004; Gonzalez et al. 2006;). Furthermore, little or hardly any research has been carried out about the IT outsourcing project failures (Sparrow 2003) and software development project failures (Ewusi-Mensah 2003). Our research will contribute to fill this gap in the failure research, especially in IT offshoring. One major reason behind the lack of research into outsourcing failures is the sensitivity regarding the failures for the clients as well as vendors. This has resulted in a code of silence (Ewusi-Mensah 1997) in the IT industry that has also resulted in less research about failures. The knowledge of critical issues that lead to OSD project failures, which could help to minimize project failures in the offshore/onshore project environment to a great extent, is still largely an underexplored research area.

Our overall goal is to contribute to a better theoretical and managerial understanding of OSD project failures from a global team perspective comprising onshore and offshore project stakeholders from the client and vendor sides. The knowledge gained from this research will offer academics and practitioners better insights in relation to better management of offshore IT projects. The main research objective of this research is thus to study the critical issues that lead to OSD project failures. Further, we aim to study the interrelations between these issues in the IT offshore

project environment that will help the development of a model to explain OSD project failures. In order to achieve the objectives of this ongoing research work, we aim to answer the following research questions:

1. What are the critical issues specific to OSD projects that lead to failed projects? What are their underlying causes?
2. How are the critical issues interrelated to cause failures in OSD projects?

Theoretical Background

Research works from the project failure perspective have concentrated on domestic outsourced projects, which have different project environments. Ewusi-Mensah and Przasnyski's (1991) seminal work in the area of IS project abandonments found that "IS project abandonment is indeed a complex, multidimensional issue that defies simple explanations" (p. 83). Standish Group's (1994, 2002) project failure analyses primarily found that organizational and project management (PM) related issues led to undesired results. Ewusi-Mensah's (2003) work about software development failures notes that failures are "multifaceted and multidimensional" and any single contributing factor can cause the project to fail, which could be technical, cultural, organizational, political, managerial, sociological, and economic factors.

Offshore-outsourced projects are more prone to failure than the in-house and domestically outsourced projects (Iacovou and Nakatsu 2008). This failure susceptibility results from offshore-related risks such as, cultural differences (Dibbern et al. 2008; Hofstede 1984; Krishna et al. 2004), language differences (Dibbern et al. 2008), geographic distances (Carmel and Agarwal 2001; Dibbern et al. 2008; Ebert and De Neve 2001), communication and coordination challenges (Heeks et al. 2001; Narayanaswamy and Henry 2005), and knowledge transfer complexities (Heeks et al. 2001; Sahay et al. 2003).

Software development with its high information intensity, low customer need and low physical presense appears to be ideal for global dispersion (Apte and Mason 1995). However, the complex nature of software development makes it vulnerable to failure (Brooks 1986) as it requires intensive coordination and control throughout the development stages. Kraut and Streeler (1995) discussed the project uncertainty and the factors influencing successful coordination of software development projects. The coordination techniques discussed in their work include several formal and informal procedures that are highly relevant in offshore projects.

Lacity and Rottman (2008) provided insights about offshore learning curve framework from the client's organizational perspective. This framework explained why the initial offshore engagements were not successful for many organizations as expected. The gradual offshore learning of clients was found as creating more value and thus resulting in successful offshore outsourcing in the above work. Iacovou and Nakatsu's (2008) study of risk factors specific to offshore development projects found 9 out of 25 risks unique to offshore projects. However, their project risks were also studied from the organizational perspective and not from the project team perspective, which is the perspective of this research work. Although several aspects related to OSD project issues have been discussed in IS outsourcing literature, there is a paucity of research to explain the failures from the project team perspective.

Research Methodology

We have chosen the grounded theory approach as the research method to answer our research questions as it is the most appropriate method considering the exploratory nature of the study. This method allows the researcher to build theories through systematic collection and analysis of qualitative data. The extension of the original grounded theory approach (Glaser and Strauss 1967) by Strauss and Corbin (1990) subsequently led to two different schools of grounded theory development – Glaserian and Straussian approaches. We have followed the Straussian approach (Corbin and Strauss 2008) to develop our theory to explain the critical issues that lead to failures in OSD projects. After reviewing the relevant literature in IS offshoring, we have collected the qualitative data through exploratory interviews, which is an ongoing process. These data are then interpreted to provide theoretical explanations for OSD project failures.

The semi-structured expert interviews, which varied from 45 minutes to 2 hours and took 1 hour on average, were transcribed and coded. We used open, axial and selective coding methods (Corbin and Strauss 2008) to elicit the critical issues of failures in OSD projects and to understand the relationships between them in order to develop a model. The coded interviews were then analyzed for categories and concepts.

The interviews primarily focused on senior IT executives and project managers (offshore experts) with years of experience in OSD projects. They were all based in Switzerland and India and worked for companies involved in OSD projects when they were interviewed. So far, we have interviewed 16 offshore experts in Switzerland and India. The interviews concentrated on the offshore career experience of the experts. Because of the sensitivity of the topic, we avoided company or case-specific questions, unless the interview partners voluntarily responded with case details. We have assured anonymity of the interview partners during this research and so we cannot reveal the details of the participants in this paper. Although it cannot be predicted when the theoretical saturation of categories, concepts and properties will be reached as required by the grounded theory approach, we plan to interview another 15 offshore experts by December 2009.

As we analyze failures from the project team perspective, we have included offshore experts from the client and vendor sides in our research. This is also important since both stakeholders are equally important for the outcome of offshore projects. Client and vendor offshore experts can leverage their years of experience in OSD projects and provide their inputs to better understand the failures. Table 1 provides an overview of the average experiences of the offshore experts that were interviewed. Seven experts from the client side and nine experts from the vendor side had average OSD project experiences of 7.9 and 9.2 years respectively. The client and vendor experts experienced on average 3.6 and 1.2 OSD project failures in their careers respectively. On average, vendors had longer OSD project experiences than clients; however, clients tend to have experienced more failures.

Table 1: Client and vendor offshore expert experiences

Offshore Experts	Clients	Vendors	Clients & Vendors
No. of offshore experts	7	9	16
IT-related (years)	16.6	17.4	17.1
Project management (years)	10.7	7.7	8.6
OSD projects (years)	7.9	9.2	8.6
No. of OSD project failures	3.6	1.2	2.3

Preliminary Findings

The critical issues of OSD project failures identified by clients and vendors have shown distinct patterns between them, which facilitated their categorization. Four categorized groups of critical issues were found by subsuming particulars into more general categories (Miles and Huberman 1984). These groups are the following (see table 2): communication issues, competency issues, formal PM process issues and formal PM output issues.

Twenty critical issues identified from the interview responses were found to be caused by four OSD project-specific factors – cultural difference, geographical distance, language difference, and organizational onshore/offshore PM immaturity. These underlying factors that were identified by the offshore experts affected the management of projects from the requirements and analysis phase until the implementation phase in the unique onshore/offshore OSD project context.

Communication issues

The informal PM measures become particularly important in the OSD project context as not every team member may meet all the dispered team members during the offshore project lifecycle. The informal PM measures like informal 'corridor talks' and spontaneous conversations are missing in the globally distributed software development scenario. They influence the process of trust building and mutual understanding among team members.

Communication issues include a lack of transparency and openness among team members in dealing with problems associated with the project. Part of the common difficulties may stem from distance-related problems as well as from different cultural orientations in dealing with the problems arising in connection with the project. For instance,

the Indian vendor team members may not ask questions openly in the presence of superiors because of the importance of maintaining Indian team hierarchies. This has the potential of causing misunderstandings among project team members. The lack of respect and understanding regarding cultural orientations may hinder the integration of team members into the project team. Project managers and onsite coordinators must possess the requisite communication skills to lead the team in OSD projects. For instance, a promoted vendor programmer who lacks these skills and works as a project manager will turn out to be a weak manager. The lack of adequate feedback and effective communication capabilities are risks that can contribute to OSD project failure.

Competency issues

A lack of competency in terms of business knowledge, technical skills and cultural understanding were found to be critical issues that contribute to OSD project failures. Reich (2007) discusses the necessity of managing process, domain, instituitional and cultural knowledge for successful project outcome. Offshore vendors' high percentages of junior programmers who lack most of the requisite knowledge and skills above were found to be concerns by clients in the interviews. Further, awareness of cultural differences and the social competencies needed to work with partners that are different from themselves form the prerequistes to work in OSD projects. The movement of key project members (to other companies or projects) will further affect the project planning. However, if the vendors could codify the knowledge of their employees, the clients may not notice the effect of high attrition rates among offshore vendors. Attrition among vendor team members, which was raised as a concern by several clients, was discussed in several recent works (Bapna et al. 2009; Lacity et al. 2008). Lack of these critical competencies will result in poor software quality, which will prolong the project duration eventually leading to cancellation.

Formal project management process issues

Formal PM processes will be indispensable to prevent OSD project failures, as they will compensate the possibilities of informal PM measures among clients and vendors. Formal PM measures are formally documented and prespecified, whereas informal ones are less prespecified and unwritten (Kirsch 2004). Both these control measures in the team and individual levels will influence the outcome of projects (Beck et al. 2008). Formal PM measures include the explicit PM processes, roles, responsibilities, and documentation etc. Informal PM measures include the implicit and unwritten group norms, values and expectations (Kirsch 2004).

Critical issues related to formal PM typically result from process issues such as unfrozen project scopes and ineffective schedule planning and management. Tight offshore project schedule and the deliverables that are not well defined cause troubles for vendors and clients. Further, unclear roles and responsibilities, and lack of quality assurance procedures in place result in critical issues that lead to OSD project failures. Effective coordination of onshore and offshore activities, which optimizes the project resources in terms of costs and people as well as ensures the transition of knowledge transfer, is another critical issue.

Formal project management output issues

The critical issues related to the documentation or outputs of the formal PM processes (Applegate et al. 2003) are vital for the OSD project outcome. The failure to document the formal project proceesses explicitly will leave room for wrong interpretations by clients and vendors during the course of the project. Incomplete requirements and business specifications without proper sign-off from those who are responsible may lead to project delays and confusions. Unclear objectives and goals may result in wrong expectations for both sides, which can endanger the project's outcome. This can result when the business case and prospects are not known to the outsourcing company, which may eventually result in cancellation. Lack of standard processes and guidelines show the lack of offshore PM maturity. This will further affect the common understanding of processes among team members in OSD projects and thus the further progress of the project.

Table 2: Critical issues of OSD project failures

Communication issues
1. Lack of transparency and openness to discuss about problems among vendors
2. Communication difficulties between onsite and offshore team members
3. Onsite coordinator cannot communicate effectively with offshore team members
4. Project manager cannot effectively lead the offshore team and communicate with clients
5. Misunderstanding of requirements by the offshore team
6. Lack of adequate communication between offshore and onshore teams
Competency issues
7. Vendor team members' lack of business knowledge
8. Project team members' lack of technical skills
9. Project team members' lack of cultural understanding
10. High attrition rates among vendor team members
Formal project management process issues
11. Project scope changes constantly
12. Ineffective schedule planning
13. No change control process in the project
14. No quality assurance procedures in place
15. Lack of effective coordination of onshore/offshore activities
16. Roles and responsibilities of onshore/offshore project team members not well-defined
Formal project management output issues
17. Lack of written documentation for project requirements
18. Unclear and ambiguous business specifications
19. Unclear objectives and goals of the project
20. Lack of standard processes and guidelines

Discussion

The underlying causes of critical issues that contribute to OSD project failures include cultural difference, geographical distance, language difference, and organizational onshore/offshore PM immaturity. The approaches and attitudes of team members from different countries, who lack "cultural intelligence" (Beck et al. 2008) lead to misunderstandings, especially when the opportunities for open and informal communication are less in OSD projects (Dibbern et al. 2008; Hofstede 1984; Krishna et al. 2004). The geographical distances between the onshore and offshore project team members cause a lot of communication and coordination problems in OSD projects (Carmel and Agarwal 2001; Ebert and De Neve 2001; Dibbern et al. 2008). Further, interacting in a non-native and common link language (Dibbern et al. 2008), which is primarily English for our interview partners, affects the project communication. The different levels of language proficiency and the different styles of English in many countries affect the communication process and thus the knowledge transfer in projects. We came across a leading Swiss financial company that had to cancel an offshore project because of poor English skills of their employees. The Indian offshore vendor also could not keep up their promise of sending German-speaking team members to coordinate the project activities.

The organizational onshore/offshore PM immaturity among clients and vendors is another important underlying factor that contributes to failure. Higher PM maturity was found to be attained with several years of experiences in the unique onshore/offshore context. There exists a maturity gap between most vendors and clients to manage OSD projects. This factor will remain relevant as hardly all organizations have the same PM maturity levels, especially in the onshore/offshore environment. Iacovou and Nakatsu (2008) identified the lack of offshore PM know-how by clients as a risk factor for OSD projects and Lacity and Rottman's (2008) offshore learning curve framework discussed the maturity of client organizations in terms of offshore engagements. The above two works discussed the offshore readiness of clients from the organizational perspective. Our research has shown that the maturity levels of both clients and vendors play significant roles in project failures.

We do not discuss the relevance of each critical issue for clients and vendors in this work because of space limitations. The preliminary findings of the critical issues that lead to OSD project failures reveal the importance of formal PM issues from the project team perspective. We have aimed to identify the issues that are specific to OSD projects, as opposed to domestically outsourced software development projects. PM issues gain importance in the

absence of informal interaction possibilities among onshore and offshore team members. The bigger and complex the OSD projects, the greater the need for such interactions will be. Consequently, more formal process definitions are required to compensate the informal PM measures in order to minimize schedule and cost overruns.

Out of the 20 identified critical issues that contribute to failures, 10 were found not to be specific to OSD projects (issues 7, 8, 11-14, 17-20 in table 2). We refer to them as *offshore-indispensable issues*, which are non-offshore specific issues and require at least as much attention for offshore projects as domestic projects. Although these issues are critical to the outcome of domestic projects, more formal PM measures and better competencies are required in offshore projects to offset the underlying or inherent causes of OSD project failures. As many as 10 out of 20 critical issues that lead to project failures were found to be specific to OSD projects. These issues unique to offshore projects are referred to as *offshore-specific issues*, which require special attention of OSD project responsibles (issues 1-6, 9, 10, 15, 16). These issues are mostly related to communication, competency and formal PM aspects. They result because of the underlying causes discussed above, as well as the unique project environment involving client and vendor stakeholders that have almost equal roles to prevent project failures.
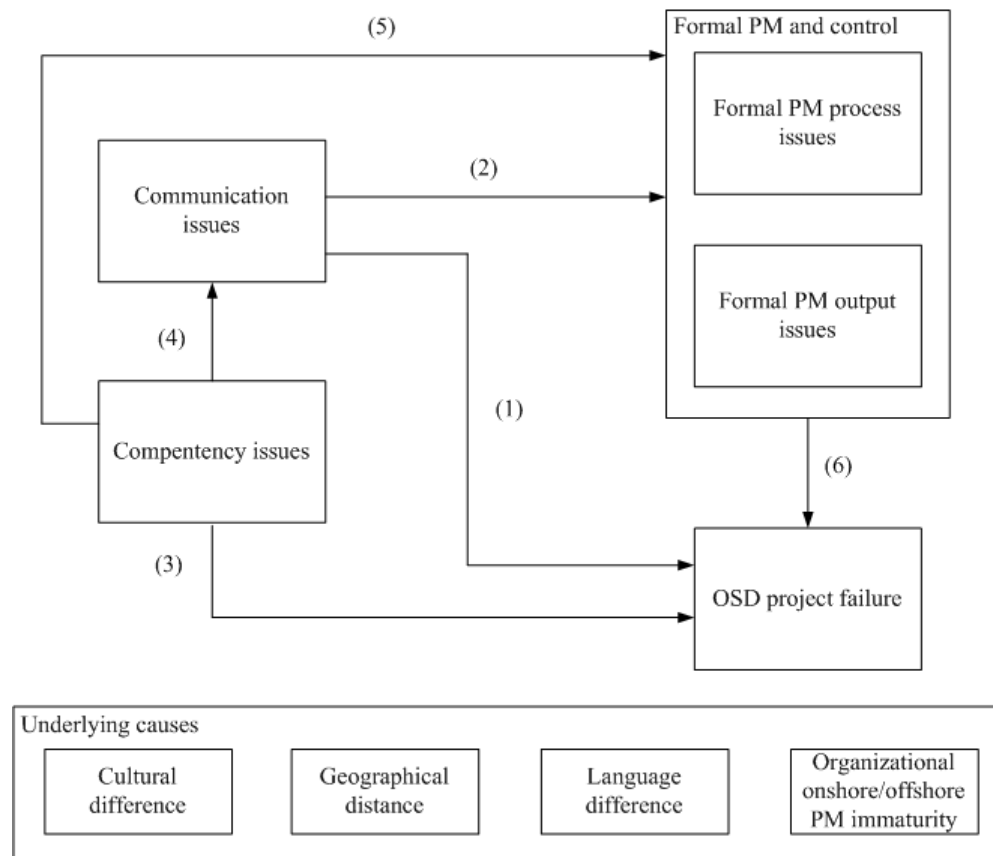

Figure 1: Issues contributing to OSD project failures

The analysis of the interrelations between the critical issues revealed a preliminary model to explain the OSD project failures. This model (figure 1) recognizes the existence of both offshore-specific and offshore-indispensable issues to explain the failures, which are accumulating processes rather than overnight events. Because of space limitation in this paper and the ongoing nature of this research, we will briefly present the causal relations of critical issues that lead to OSD project failures. We present our empirical model with its direct and indirect relations that could lead to project failures.

Communication issues can result in project teams that do not function well and may contribute to failures (#1 in figure 1). The organizational onshore/offshore PM immaturity, and cultural and language differences are the factors that cause these offshore-specific issues. The different cultural orientations (Hofstede 1984) of client and vendor project team members and the geographical distances necessitate different coordination and control strategies in offshore projects (Gefen and Carmel 2008; Krishna et al. 2004; Narayanaswamy and Henry 2005) to improve communication problems. The communication issues, which affect the informal PM measures can also affect the formal PM and control measures (#2). Beck et al.'s (2008) model about cultural intelligence and formal as well as informal PM explain the relationship between communication and formal PM and control measures. Lacity and Rottman's (2008) offshore learning curve model from the client's organizational perspective provides the theoretical foundation to explain the organizational onshore/offshore PM immaturity among clients and vendors and the consequent relation between communication and formal PM and control issues.

Competency issues, which include both offshore-specific and offshore-indispensable issues, can directly contribute to OSD project failures (#3). Reich's (2007) knowledge management framework discusses the various competencies required for successful IT projects and their absence that could lead to project failures. Competency issues could further exacerbate the communication problems of the project by causing misunderstandings (#4). Apart from the competencies in relevant areas, the cultural and language proficiency differences could lead to misunderstandings. High attrition rates among vendors can further lead to formal PM process issues (#5).

Formal PM process and output issues result from organizational onshore/offshore PM immaturity and can cause project failures (#6). These issues are mostly offshore-indispensable issues that require more attention in offshore projects. The lack of informal measures that results because of the geographical distances, and language and cultural differences should be compensated through formal PM measures. This is because these factors affect the communication, control and supervision, coordination, creation of social bonds and trust building in OSD projects (Carmel and Abbott 2006). Studies from Narayanaswamy and Henry (2005) and Beck et al. (2008) have shown the relevance of differentiated formal and informal control mechanisms on the outcome of OSD projects. Kraut and Streeler (1995) also discussed the necessity of formal and informal coordination measures for the succesful outcome of software development projects.

Conclusions

In this ongoing research, we have aimed to identify the critical issues specific to OSD projects, their underlying causes and their interrelations that lead to failures. We have limited our discussion about the critical issues to the ones that were found in our exploratory interviews, as there is a paucity of failure research in offshore outsourcing. Our preliminary results show that the failures are caused by a combination of offshore-specific and offshore-indispensable issues. The offshore-indispensable issues, which are non-offshore specific issues, gain more importance in the unique offshore project context and they require at least as much attention as in domestic projects. The equal presence of offshore-indispensable issues as offshore-specific issues in our results emphasizes the need for more structure and better planning to avoid OSD project failures. The underlying causes of critical issues in OSD projects include cultural difference, geographical distance, language difference, and organizational onshore/offshore PM immaturity among clients and vendors. Among the causes, the first three are discussed extensively in the literature; however, the organizational immaturity in onshore/offshore PM from the client and vendor team perspective has emerged from this research as a major factor that contributes to OSD project failures.

Our preliminary model shows the relevance of communication and competency issues, which could directly and indirectly lead to OSD project failures. This model explains the interrelations between the critical issues that the offshore program and project managers should pay special attention to in OSD projects. Earlier research by Ewusi-Mensah and Przasnyski (1995) into domestic software development projects found that the failures are caused by complex and multidimensional issues. The relations between the offshore-specific and offshore-indispensable issues in our work further underline their findings. Our model will be expanded with the results of around 15 upcoming interviews to develop a substantive theory to explain the OSD project failures. This theoretical sampling will provide the missing critical issues and their interrelations. Hypotheses will be formulated explicitly from the causal relationships that have emerged from our grounded theory research approach. They will then be further tested using a survey questionnaire involving around 100 senior executives and project managers from the client and vendor sides.

References

Applegate, L., Austin, R. & McFarlan, F. *Corporate information strategy and management*, 3rd edn, McGraw Hill. 2003.

Apte, U. & Mason, R. "Global disaggregation of information-intensive services", *Management science* (41:7)*, July 1995, pp. 1250-1262.

Aron, R. & Singh, J. "Getting offshoring right", *Harvard business review,* December 2005, pp. 135-143.

Bapna, R., Gupta, A. & Sambamurthy, V. "Attrition of workers in the context of offshore outsourcing: the economic impact of training", in *Proceedings of the third Global Sourcing Workshop*, Keystone, March 2009.

Beck, R., Gregory, R. & Prifling, M. "Cultural intelligence and project management interplay in IT offshore outsourcing projects", in *Proceedings of the International Conference on Information Systems,* Paris, France, December 2008.

Brooks, F. "No silver bullet", in *The mythical man-month,* 2nd edn, Addison-Wesley, 1986.

Carmel, E. & Abbott, P. "Configurations of global software development: offshore versus nearshore", in *Proceedings of the 2006 international workshop on Global software development for the practitioner*, International Conference on Software Engineering, Shanghai, China, May 2006.

Carter, T. "Cheaper's not always better". Dr.Dobb's Portal, viewed 2 May 2009, <http://www.ddj.com/architect/184415486;jsessionid=MJHSAOYYPW4VQQSNDLOSKHSCJUNN2JVN?_r equestid=1234833>.

Corbin, J. & Strauss, A. *Basics of qualitative research: techniques and procedures for developing grounded theory*, 3rd edn, Sage Publications, 2008.

Dibbern, J., Goles, T., Hirschheim, R. & Jayatilaka, B. "Information systems outsourcing: a survey and analysis of the literature", *The DATA BASE for advances in information systems* (35:4), Fall 2004, pp. 6-102.

Dibbern, J., Winkler, J. & Heinzl, A. "Explaining variations in client extra costs between software projects offshored to India", *MIS Quarterly* (32:2)*, June 2008, pp. 333-366.

Ebert, C. & De Neve, P. "Surviving global software development", *IEEE Software* (18:2)*, March/April 2001, pp. 62-69.

Ewusi-Mensah, K. & Przasnyski, Z. "On Information Systems Project Abandonment: An Exploratory Study of Organizational Practices", *MIS Quarterly* (15: 1), March 1991, pp. 67-86.

Ewusi-Mensah, K. & Przasnyski, Z. "Learning from abandoned information systems development projects", Journal *of information technology* (10:11), 1995, pp. 3-14.

Ewusi-Mensah, K. "Critical issues in abandoned information systems development projects", *Communication of the ACM* (40:9), September 1997, pp. 74-80.

Ewusi-Mensah, K. *Software development failures*, MIT Press, Cambridge, 2003.

Flowers, S. *Software failure: management failure*, John Wiley & Sons, Chichester, 1996.

Gefen, D. & Carmel, E. "Is the world really flat? A look at offshoring at an online programming marketplace", *MIS Quarterly* (32:2), June 2008, pp. 367-384.

Glaser, B. & Strauss, A. *The discovery of grounded theory – strategies for qualitative research*, Aldine de Gruyter, New York, 1967.

Gonzalez, R., Gasco, J. & Llopis, J. "Information systems outsourcing: a literature analysis", *Information & Management* (43:77), October 2006, pp. 821-834.

Hatch, P. "Preliminary findings and conclusions", *Ventoro,* viewed 2 May 2009, < http://www.ventoro.com/Offshore2005ResearchFindings.pdf>, 2005.

Heeks, R., Krisha, S., Nicholson, B. & Sahay, S. "Synching or sinking: global software outsourcing relationships", *IEEE software* (18:2), March/April 2001, pp. 54-60.

Hirschheim, D. "Offshore outsourcing: challenge to the information systems discipline", in *Information systems outsourcing – enduring themes, new perspectives and global challenges,* Hirschheim, D., Heinzl, A. & Dibbern, J. (Eds.), Springer, Berlin, 2006.

Hoch, D., Roeding, C., Purkert, G., Linder, S. & Müller, R. *Secrets of software success*, Harvard business press, Boston, 2000.

Hofstede, G. 1984, *Culture's consequences*, Abridged edition, SAGE Publications, 1984.

Iacovou, C. & Nakatsu, R. "A risk profile of offshore-outsourced development projects", *Communications of the ACM* (51:6), June 2008, pp. 89-94.

Kirsch, L. "Deploying common systems globally: the dynamics of control", *Information systems research* (15:4), December 2004, pp. 374-395.

Kraut, R. & Streeler, L. "Coordination in software development", *Communication of the ACM (*38:3), March 1995, pp. 69-81.

Krishna, S., Sahay, S. & Walsham, G. "Managing cross-cultural issues in global software outsourcing", *Communications of the ACM* (47:4), April 2004, pp.62-66.

Lacity, M. & Rottman, J. "Offshore outsocuring of IT work", in *Offshore outsourcing of IT work – Client and supplier perspectives*, Lacity, M. & Rottman (Eds.), Palgrave, 2008.

Lucas, H. *Why information systems fail,* Columbia University Press, 1975.

Lacity, M., Iyer, V. & Rudramuniyaiah, P. "Turnover intentions of Indian IS professionals", *Information Systems Frontiers* (10:2), April 2008, pp. 225-241.

McCarthy, J. *The state of development of the IT services global delivery model,* Forrester Research Inc., Cambridge, 2007.

McManus, J. & Wood-Harper, T. "Understanding the sources of information systems project failure", *Management services*, Autumn 2007, pp. 38-43.

Miles, M. & Huberman, M. *Qualitative data analysis,* Sage Publications, 1984.

Optaros. *IT Development Offshoring in Switzerland: Myth versus reality*, Optaros white paper, 2007.

Narayanaswamy, R. & Henry, R. "Effects of culture on control mechanisms in offshore outsourced IT projects", in *Proceedings of the 2005 ACM SIGMIS CPR conference on Computer personnel research*, Atlanta, Georgia, 2005.

Pinto, K. & Mantel, S. "The causes of project failure", *IEEE transactions on engineering management* (37:4)*,* 1990, pp. 269-276.

Reich, B. "Managing knowledge and learning in IT projects: a conceptual framework and guidelines for practice", *Project management journal* (38:2), June 2007, pp.5-17.

Rottman, J. & Lacity, M. "Proven practices for effectively offshoring IT work", *Sloan Management Review* (47:3), Spring 2006, pp. 56-63.

Rottman, J. & Lacity, M. "A US Client's learning from outsourcing IT work offshore", *Information Systems Frontiers* (10:2), April 2008, pp. 259-275.

Sahay, S., Nicholson, B. & Krishna, S. *Global IT outsourcing*, Cambridge university press, Cambridge, 2003.

Sauer, C. *Why information systems fail: a case study approach,* Blackwell scientific publications, 1993.

Sparrow, E. *Successful outsourcing: From choosing a provider to managing the project*, Springer, London, 2003.

Standish Group. *CHAOS Report*, The Standish Group International Inc, 1994.

Standish Group. *CHAOS Report*, The Standish Group International Inc, 2002.

Strauss, A. & Corbin, J. *Basics of qualitative research: techniques and procedures for developing grounded theory,* 1st edn, Sage Publications, 1990.

Vashistha, A. & Vashistha, A. *The offshore nation*. McGraw Hill*,* 2006.