Critical Success Factors for Managing Offshore Software Development Projects

Ulrich Remus, University of Canterbury, New Zealand,
ulrich.remus@canterbury.ac.nz
Martin Wiener, Boardeleven Management Consultants, Germany,
mail@martin-wiener.de

ABSTRACT

Early experiences with offshore software development (OSD) have not been consistently positive. There have been abundant media reports of various companies whose offshore projects were not able to live up to expectations. It would appear that this can be traced back to insufficient project management by the offshore project partners. In this context, some research has been carried out on the critical success factors of offshore software development projects from the perspective of U.S. clients as well as Indian and European providers. However, there is little research on these critical success factors that examines their relevance and management. This paper identifies and structures the critical success factors of offshore software development projects, and more importantly, it analyzes the relevance of the identified factors from several perspectives, such as type of company, company size, geographical location, project type, size and experience. Our findings are in particular relevant for companies in countries where English is not the first language and where OSD is still an emerging field.

KEYWORDS

Offshore software development, global outsourcing, critical success factors, management activities

INTRODUCTION

In the United States and the UK, IT offshoring can be considered an established business practice (King 2005). At present, 70 to 80 percent of all IT offshoring projects worldwide are commissioned by U.S. companies. In this context, approximately 20 percent of the IT budgets of U.S. companies is spent in low-wage countries, more than 80 percent of this in India (Buchta et al. 2004).

One aspect of IT offshoring is the relocation of software services abroad (Krishna et al. 2004), so-called offshore software development (OSD). This service form of IT offshoring is relatively new (Delmonte and McCarthy 2003) and was particularly

driven by the Y2K problem (Amoribieta et al. 2001). Currently, the high demand for e-business and web-based solutions (Adelakun and Jennex 2003), as well as the maintenance and redevelopment of legacy systems are continuing the drive for OSD. In consequence, approximately 40% of Fortune 500 companies outsource software development services to foreign countries (Amoribieta et al. 2001). In addition, the implementation of OSD projects ranks high in many organizations' to-do-lists in the coming years (Jacobson and Lidman 2004).

However, despite the manifold benefits of OSD, e.g. cost reduction, access to highly skilled professionals and time-to-market reduction (e.g. Khan et al. 2003; Rao et al. 2006), companies' experiences have not been consistently positive. Far too often, companies sent software project specifications to offshore providers on the vague presumption that they would save costs (Cliff 2004). As a result, while potential cost savings may have been close to 50 percent, actual savings were frequently lower than 20 percent. In the worst case, no cost savings at all were realized (Jacobson and Lidman 2004). Among other reasons, these negative results can be traced back to changes in the type of OSD projects being undertaken (Adelakun and Jennex 2003). Traditional OSD projects dealt with application development, which tends to be highly structured, requiring little or no changes to the requirement specifications. Nowadays, OSD projects are more complex, including e-business and web application development, frequently using a "follow the sun" approach. These projects tend to be less structured in general, requiring more client contact and project management than traditional OSD projects.

It is especially non-English-speaking companies and relative newcomers to offshoring (such as Germany) that are likely to face negative experiences. There have been abundant media reports of companies whose OSD projects could not live up to expectations in terms of costs, time, and/or quality (BITKOM 2005). A number of factors contributed to the situations behind these negative headlines, e.g. structural issues of the German IT market (e.g. high vertical integration, small number of strong relationships with local IT service providers) as well as cultural and linguistic issues (Buchta et al. 2004). However, as in other countries one of the major reasons for these negative experiences is found in poor project management (Moczadlo 2002).

In order to assist companies in successful OSD project management, the concept of critical success factors (CSFs) is gaining in importance. Rockart (1979) defines these as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization". The investigation of CSFs for offshoring is seen as one of the most important issues for the future (King and Torkzadeh 2008). Nevertheless, it is surprising that most CSF research for OSD focuses solely on the identification of the most important critical success factors, neglecting the analysis and management of these factors. In addition, most of the

extant literature in this area is opinion-based, prescriptive and/or anecdotal (King and Torkzadeh 2008), leaving a large gap for further rigorous research.

The goal of this paper is to extend previous CSF research agendas by taking into account not only the identification of CSFs, but also the relevance and management of the identified CSFs. In particular, we want to identify which CSFs are relevant in which offshore software development project contexts. Furthermore, we want to discuss our findings in light of current literature on OSD.

STATE-OF-THE-ART OF CSF RESEARCH IN OSD

In an effort to analyze the state-of-the-art of CSF research in the field of OSD, we carried out a comprehensive literature review. Here, due to the limited number of publications in the field of OSD, we scanned key IS conferences, top tier journals within the 1997 to 2004 time frame as well as books on the subject of IT outsourcing. Based on a key word search, we were able to identify more than 600 articles and conference papers related to IT outsourcing in general. We then narrowed this down to 156 publications dealing solely with IT outsourcing in particular and another 15 papers, which explicitly concentrate on success factors of relevant projects in the IT outsourcing context (Adelakun and Jennex 2003; Berger et al. 2004; BITKOM 2005; Brown and Wilson 2005; Cullen and Willcocks 2003; Delmonte and McCarthy 2003; Gupta and Raval 1999; Kobayashi-Hillary 2004; Laabs 2004; Oecking and Westerhoff 2005; Rajkumar and Mani 2001; Rao 2004; Sparrow 2003; Stephan 2005).

The success factors mentioned in these studies are varied and not well defined, allowing for a range of interpretations. For this reason, we decided to compare the areas of content covered by the individual factors in the respective studies, rather than to compare the actual factors given in the studies. We refer to six primary research areas in the field of IT outsourcing identified by Chi-wai (2000): Contract; decision; environment; organization; performance; and relationship; adding to this the two categories culture and strategy (Fjermestad and Saitta 2005):

The majority of the identified studies contain success factors in the areas of performance (ten studies), cultural differences (nine studies), as well as the relationship between the project partners (eight studies). In contrast, critical success factors relating to the outsourcing agreement are only mentioned sporadically within the studies (three studies). Concerning the number of success factors mentioned in the eight content categories, the category "organization" clearly leads the way (77 factors). The categories "decision" and "performance" rank second with 15 factors apiece, while the category "contract" is only addressed by four of the 148 success factors mentioned within the identified studies.

We found only a few CSF studies which focus explicitly on OSD, one from a small-to medium-sized European provider (Adelakun and Jennex 2003), one from an Indian provider (Rajkumar and Mani 2001), and two from a U.S. client perspective (Delmonte and McCarthy 2003; Raval 1999). The major findings of these studies are summarized below.

Adelakun & Jennex (2003) present a survey examining the CSFs of small and medium-sized service providers that offer OSD services. After an evaluation of 31 initial factors, six CSFs were identified. Two of these factors – technical skills and general knowledge skills – can be directly influenced by OSD clients, whereas the CSFs knowledgeable client contact and trust are mutually controlled by client and provider, and the last two factors (intellectual property right protection and telecommunication infrastructure), are mostly out of the control of both, the client and the provider. It is interesting to see that cost is not one of the most important CSFs. They also found significant differences in how CSFs are ranked according to the type of provider (clients, US and Non-US providers).

Gupta & Raval (1999) assume that the first offshoring project implemented by a company proves to be successful only in very few cases. In line with their experience and case studies in the field of IT offshoring, the authors propose key factors for the success of such a project. These are: to have an offshore strategy, considering risks, be aware of cultural and language issues, knowing the offshore countries and management factors like delegating offshore administration to local expertise and prepare staff of both clients and providers to cooperate.

Rajkumar & Mani (2001) list a total of 21 key success factors for OSD projects. These factors can be divided into four categories: management, project, client, and personal factors. Most interesting are the project-relevant CSFs, which have a strong impact on the OSD supplier, such as: single point of contact at the customer site, define project clearly, accept well-defined projects and estimate correctly. Offshore providers are thus particularly aware of CSFs that reflect the need to control the scope of the project.

Delmonte & McCarthy (2003) identified several CSFs. These factors were: solid management commitment; clearly stated objectives and considerable preparation; the evaluation of risks versus benefits; the conducting of pilot projects; and the assessment of offshore readiness i.e. having a clearly defined objective. Companies also need to consider legal requirements and the internal strategic positioning of IT as well how they will transform their internal information technology support to work effectively with offshore providers.

In summary, in all of these studies, the presence of CSFs which can be controlled or influenced seems to play a major role. CSFs are ranked differently depending on the

perspective taken (provider vs. client, large companies vs. SME, and various project contexts, e.g. project type). None of the studies conducted a comprehensive study on all of these dimensions. Their CSFs are either insufficiently described, reflect a provider perspective or are based on specific types of companies (SME, startups). It became apparent that only two of the four OSD CSF studies rely on literature research (Adelakun and Jennex 2003; Delmonte and McCarthy 2003), while only Adelakun & Jennex (2003) mention interviews as their primary source of information. Furthermore, only Adelakun & Jennex (2003) examine the relevance of the identified CSFs, and none of the studies provides a more sophisticated management analysis of to the proposed CSFs. There is no single study focused on the examination of CSFs for OSD projects in German-speaking companies. In this context, a number of studies dealing with the CSFs of related subject areas such as IT outsourcing (Berger et al. 2004; Oecking and Westerhoff 2005) and IT offshoring (BITKOM 2005; Laabs 2004; Stephan 2005) exist. Although the CSFs introduced in these studies can in part be transferred to OSD, none of them addresses its specific challenges.

RESEARCH DESIGN

CSF researchers have used a variety of methods, e.g. action research, case study research, literature reviews, and structured interviewing. In order to overcome the limitations of each method, the multi-method approach has become more popular (Mingers 2001). Here, qualitative and quantitative research methods need not be seen as mutually exclusive (Van Maanen, 1979). Rather, the application of different research methods can increase the robustness of the research results, e.g. through the cross-validation of data obtained by different methods (Kaplan and Duchon 1988). This is particularly important for a comprehensive CSF research agenda driven by different research questions and taking into account the identification, analysis and management of CSFs (Esteves and Pastor 2004) (Table 1).
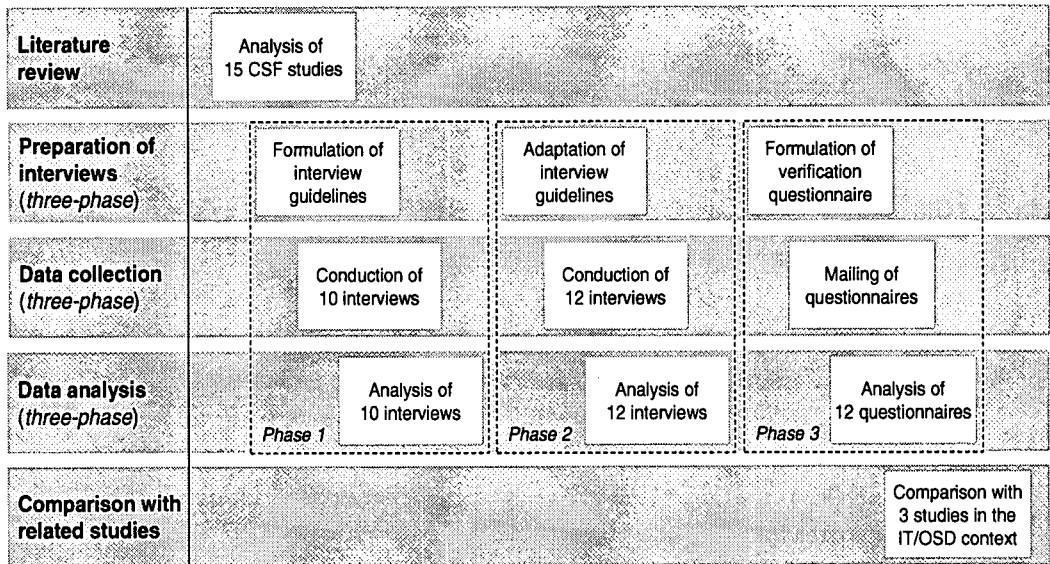
IDENTIFICATION OF CSFs

In order to develop an emergent theory of CSFs we followed a qualitative research approach by using concepts from grounded theory (GT). The use of GT is especially beneficial where there is a limited amount of literature to draw from and/or the subject of study is often greatly influenced by organizational aspects and social interactions. The latter assertion is confirmed by both the results of respective CSF studies in English-speaking countries (e.g. Delmonte and McCarthy 2003) as well as our own results presented here. We follow the approach from Strauss (1998), where literature plays a key role in sensitising the researcher before developing a theory in GT.

Table 1. A multi-method design for CSF research in OSD projects

CSF Research Phase	Research question	Dominant research design	research steps & methods	
1) State of the Art	What is the state-of-the-art of CSF research in the field of IT outsourcing and offshoring	QUAL	• Comprehensive literature review on IS projects and context (market, project lifecycle etc.)	Triangulation (data, method, investigator)
2) Identification	Which CSFs are relevant when implementing offshore software development projects?	QUAL→qual	• Literature review on CSFs in OSD projects and related projects • Grounded theory (expert interviews, open and axial coding, comparison with related studies) • Development of CSF model • Focus on different stakeholder and roles	
3) Relevance	Which CSFs are particularly relevant in which offshore software development project contexts and stages?	QUAN→qual	• Literature review (CSF rankings) • Literature review on similar research (CSF ranking for IT implementation projects) • Web survey (CSF ranking in general, across stages, different dimensions) • Statistical analysis (descriptive, correlations)	
4) Management	What suggestions for management are proposed in literature in regard to the identified CSFs and how are these CSFs managed in practice?	QUAL→qual	• Literature Review (tools and methods) • Expert interviews • Case study approach combined with grounded theory	

In terms of data collection, a total of 22 experts were interviewed. When selecting the interview partners, it was taken into consideration that to create a comprehensive understanding of the successful implementation of OSD projects, a variety of company perspectives (client, provider, and consultancy) needed to be taken into account. While the majority of the participants (59 percent) were employed by OSD client companies, 27 percent worked for IT consultancies and 14 percent for OSD providers. In terms of these requirements, all of the interview partners had already implemented several OSD projects, predominantly in India (64 percent), and had taken on leading roles in these projects

The implementation of GT is characterized by an iterative process (Pandit 1996) reflecting a total of three iterative loops, all building on one another, running through these pivotal research steps (Figure 1).

Literature review	Analysis of 15 CSF studies		
Preparation of interviews (*three-phase*)	Formulation of interview guidelines	Adaptation of interview guidelines	Formulation of verification questionnaire
Data collection (*three-phase*)	Conduction of 10 interviews	Conduction of 12 interviews	Mailing of questionnaires
Data analysis (*three-phase*)	Analysis of 10 interviews — Phase 1	Analysis of 12 interviews — Phase 2	Analysis of 12 questionnaires — Phase 3
Comparison with related studies			Comparison with 3 studies in the IT/OSD context

Figure 1. Iterative research process implemented

Based on the review of the literature, the conducting of interviews with experts in the field of OSD, and the subsequent verification of the compiled results, we derived a list of CSFs. By applying open and axial coding procedures from GT we gave the analytical process precision and rigor. Here, data are broken down, compared to each another, and similar data combined to form concepts. Finally, related concepts are grouped together on a higher level to form categories.

When comparing our CSF list with prior lists three new CSFs emerged from the data which had not been previously mentioned in current literature ("standardized and documented processes", "efficient internal organizational structure" and "international corporate culture"). Other CSFs mentioned in the considered studies but not contained in our CSF list either deal with U.S.-specific legal aspects (e.g. H-1B visas (Delmonte and McCarthy 2003) or provider-specific aspects (e.g. attrition (Rajkumar and Mani 2001)).

It has to be noted that the number of identified CSFs (29) is quite large, bearing in mind that by most definitions there are a low number of CSFs. Rather we see these 29 factors as potential CSFs, which might become CSFs depending on situational and contextual factors. In doing so, we acknowledge some literature that criticizes the CSF approach of 'oversimplifying' and 'overselling' CSF results, putting these results into practice without considering contextual factors (Nicolai and Kieser, 2002, March and Sutton, 1997).

Using this process, four dimensions emerged from the data, classifying the CSFs into a balanced set according to the following dimensions: "internal vs. external" and "static (suitability) vs. dynamic (management)" (Table 2). Here, static CSFs apply to the outsourcing decision, whereas dynamic CSFs apply to the management of the outsourced project(s):

1. *Internal suitability factors (ISFs)* related to the offshore readiness on the part of the client.
2. *Internal management factors (IMFs)* related to the planning of an OSD project.
3. *External suitability factors (ESFs)* related to the selection of an offshore provider.
4. *External management factors (EMFs)* related to the implementation of an OSD project.

Table 2. CSF model (classified by CSF categories)

	Static	Dynamic
	Internal suitability factors (ISF)	**Internal management factors (IMF)**
Internal	Sustained management support	Definition of clear project goals
	Standardized and documented processes	Preparation of a detailed project specification
	Efficient internal organizational structure	Definition of project standards
	Appropriate internal technical knowledge	Early internal change management
	Comprehensive experience with IT outsourcing projects	Selection of a suitable software component
	International corporate culture	Creation of a cultural sensitivity among employees
		Development of a comprehensive business case
	External suitability factors (ESF)	**External management factors (EMF)**
External	High quality of offshore employees	Continuous controlling of project results
	Good language abilities of the offshore employees in German and English	Ensuring of a continuous communication flow
	Financial stability of the offshore provider	Composition of an appropriate project team
	Standardized & documented processes on provider side	Creation of a partnership-like relationship
	Legal and political stability in the offshore country	Establishment of an efficient IT infrastructure
	Comprehensive industry knowledge of the offshore provider	Ensuring bilateral knowledge transfer
	Suitable company size of the offshore provider	Definition of an accurate contract
	Geographical closeness of the offshore provider	Face-to-face meetings with the offshore provider

RELEVANCE OF CSFs

On the basis of the categorized CSF list developed, we analyzed the relevance of the identified CSFs for OSD projects by means of an online survey. With the help of the

Internet communication platform Xing (http://www.xing.com), we identified and contacted company representatives working in the field of OSD. In addition, we sent e-mails to 813 German-speaking companies listed in various company directories (e.g. http://www.firmenregister.de), and got in touch with 161 medium-sized and large-scale enterprises via phone and e-mail. All contacted companies and persons were invited to participate in the online survey, provided that these companies or persons had already implemented OSD projects.

In total, 103 company representatives with relevant project experience participated in the online survey. The majority of the respondents worked for an OSD client company (39.4 percent), had implemented OSD projects in Asia (69.9 percent), and took on a leading position within their companies' OSD projects (90.3 percent). In terms of OSD project experience, more than half of the participants (52.5 percent) stated that they possessed more than three years of experience with OSD and have implemented more than three such projects within the last three years, i.e. they had a high amount of project experience.

The assessment of the CSFs was carried out by means of a Likert scale with values from 1 to 5, where 1 was "not relevant" and 5 was "significantly relevant". Based on the arithmetic mean for each individual CSF, we compiled an overall CSF ranking. By conducting a one-sample hypothesis test with a threshold value of 4.5 on the mean value of each CSF, seven CSF were identified as being the most critical ones. Corresponding CSF rankings were developed both for the participants as a whole and for individual participant groups (e.g. participants working for OSD clients). In addition, we analyzed the significance of group-specific assessment differences within different analysis dimensions (e.g. differences between participants working for OSD clients, providers, and consultancies within the dimension "company perspective"). We conducted an ANOVA-test with an alpha value of 0.05. Before implementing the ANOVA-test, we verified the normal distribution of the variables by means of histograms. Due to multiple answers we were not able to test the significance of existing assessment differences for the geographical location and the project type.

General Ranking: Table 3 ranks the 29 CSFs by the arithmetic mean (AM) of their relevance ratings in descending order. The "definition of clear project goals" represents the most relevant CSF. Other CSFs rated as significantly relevant for the success of an OSD project are "continuous controlling of project results", "ensuring of a continuous communication flow", "high quality of offshore employees", "good language abilities of the offshore employees in German and English", "composition of an appropriate project team", and "preparation of a detailed project specification". All seven CSFs have an arithmetic mean of higher than 4.5.

Table 3. General CSF ranking

Rank	Critical Success Factor	CSF Group	AM	SD
1	Definition of clear project goals	IMF	4.75	0.537
2	Continuous controlling of project results	EMF	4.73	0.509
3	Ensuring of a continuous communication flow	EMF	4.69	0.524
4	High quality of offshore employees	ESF	4.67	0.493
5	Good language abilities of offshore employees in German and English	ESF	4.55	0.763
6	Composition of an appropriate project team	EMF	4.54	0.623
7	Preparation of a detailed project specification	IMF	4.52	0.654
8	Creation of a partnership-like relationship	EMF	4.30	0.802
9	Sustained management support	ISF	4.29	0.859
10	Establishment of an efficient IT infrastructure	EMF	4.25	0.737
11	Ensuring bilateral knowledge transfer	EMF	4.24	0.720
12	Definition of project standards	IMF	4.22	0.740
13	Financial stability of the offshore provider	ESF	4.21	0.695
14	Early internal change management	IMF	4.21	0.882
15	Standardized and documented processes	ISF	4.16	0.916
16	Standardized and documented processes on provider side	ESF	4.09	0.830
17	Definition of an accurate contract	EMF	4.06	0.927
18	Legal and political stability in the offshore country	ESF	3.95	0.922
19	Face-to-face meetings with the offshore provider on a regular basis	EMF	3.95	1.115
20	Selection of a suitable software component	IMF	3.93	1.182
21	Efficient internal organizational structure	ISF	3.83	0.864
22	Creation of a cultural sensitivity among employees	IMF	3.67	1.033
23	Comprehensive industry knowledge of the OSD provider	ESF	3.59	1.004
24	Appropriate internal technical knowledge	ISF	3.59	1.175
25	Development of a comprehensive business case	IMF	3.42	1.133
26	Suitable company size of the offshore provider	ESF	3.28	1.033
27	Comprehensive experience with IT outsourcing projects	ISF	3.28	1.088
28	International corporate culture	ISF	3.22	1.093
29	Geographical closeness of the offshore provider	ESF	2.62	1.351

When calculating the average arithmetic means for each CSF category, it becomes apparent that management factors, which are highlighted in grey, represent the most relevant CSF category. More specifically, external management factors (avg. AM of 4.35) seem to be more important for the success of an OSD project than internal management factors (avg. AM of 4.10). In contrast, the participants assessed the internal suitability factors (avg. AM of 3.73) and the external suitability factors (avg. AM of 3.87) as less relevant.

Company perspective: When examining the assessment differences within the analysis dimension "company perspective", we found that the relevance ratings in 13 of the 29 CSFs differ significantly (Table 4). Here it is noticeable that from the perspective of providers and consultancies, the "definition of clear project goals" represents the most important CSF, while clients rank this CSF fourth on their list. In general it can be noted that providers and consultancies granted a higher degree of relevance to the individual CSF than the clients.

15

Table 4. CSF relevance by company perspective

Rank	Client CSF (AM)	Provider CSF (AM)	Consultancy CSF (AM)
1	Ensuring of a continuous communication flow (4.69)	Definition of clear project goals (4.84)	Definition of clear project goals (4.91)
2	Good language abilities of the offshore employees in German and English (4.67)	Continuous controlling of project results (4.81)	Continuous controlling of project results (4.87)
3	High quality of offshore employees (4.62)	High quality of offshore employees (4.78)	Composition of an appropriate project team (4.65)
4	Definition of clear project goals (4.56)	Ensuring of a continuous communication flow (4.73)	Ensuring of a continuous communication flow (4.61)
5	Continuous controlling of project results (4.56)	Preparation of a detailed project specification (4.73)	Preparation of a detailed project specification (4.57)

Company size: As seen in Table 5, it becomes apparent that the CSF "definition of clear project goals" always ranks first or second. In addition, it can be observed that the CSF "good language abilities of the offshore employees in German and English" is rated as particularly important by representatives of microenterprises. In contrast, this factor is not among the top five CSFs within the SME and LE relevance rankings. This could possibly be traced back to the fact that these companies are more used to dealing with foreign employees (e.g. due to cooperation with foreign subsidiaries and joint ventures). The only CSF with significant assessment differences is "efficient internal organisational structure."

Table 5. CSF relevance by company size

Rank	Micro enterprise CSF (AM)	SME CSF (AM)	LE CSF (AM)
1	Definition of clear project goals (4.89)	Definition of clear project goals (4.76)	Continuous controlling of project results (4.76)
2	Good language abilities of the offshore employees in German and English (4.89)	Ensuring of a continuous communication flow (4.73)	Definition of clear project goals (4.69)
3	Continuous controlling of project results (4.84)	High quality of offshore employees (4.64)	Ensuring of a continuous communication flow (4.67)
4	High quality of offshore employees (4.84)	Continuous controlling of project results (4.61)	High quality of offshore employees (4.63)
5	Ensuring of a continuous communication flow (4.68)	Preparation of a detailed project specification (4.58)	Composition of an appropriate project team (4.57)

Geographical location: Results are similar based on different geographic locations of the projects (Table 6). Within all three regions under examination, the factors "continuous controlling of project results", "definition of clear project goals", "ensuring of a continuous communication flow", and "high quality of offshore

employees" are among the top four CSFs. Thus, how CSFs are ranked seems to be independent from the geographical location.

Table 6. CSF relevance by geographical location

Rank	Asia CSF (AM)	Eastern Europe CSF (AM)	Others CSF (AM)
1	Continuous controlling of project results (4.78)	Ensuring of a continuous communication flow (4.72)	Ensuring of a continuous communication flow (4.71)
2	Definition of clear project goals (4.76)	Continuous controlling of project results (4.69)	Definition of clear project goals (4.71)
3	Ensuring of a continuous communication flow (4.68)	Definition of clear project goals (4.69)	Continuous controlling of project results (4.65)
4	High quality of offshore employees (4.65)	High quality of offshore employees (4.61)	High quality of offshore employees (4.65)
5	Good language abilities of the offshore employees in German and English (4.58)	Good language abilities of the offshore employees in German and English (4.57)	Preparation of a detailed project specification (4.61)

Project type: Project type seems to have little impact on the relevance rating of our CSF list. Within all three dimension values, the CSF "definition of clear project goals", "continuous controlling of project results", and "ensuring of a continuous communication flow" rank first, second, and third (Table 7).

Table 7. CSF relevance by project type

Rank	Development of individual and standard software CSF (AM)	Software maintenance and migration CSF (AM)	Development of web applications CSF (AM)
1	Definition of clear project goals (4.82)	Definition of clear project goals (4.77)	Definition of clear project goals (4.82)
2	Continuous controlling of project results (4.78)	Continuous controlling of project results (4.75)	Continuous controlling of project results (4.78)
3	Ensuring of a continuous communication flow (4.69)	Ensuring of a continuous communication flow (4.69)	Ensuring of a continuous communication flow (4.69)
4	Preparation of a detailed project specification (4.69)	High quality of offshore employees (4.63)	Preparation of a detailed project specification (4.69)
5	High quality of offshore employees (4.65)	Composition of an appropriate project team (4.55)	High quality of offshore employees (4.65)

Project experience: As shown in Table 8, the CSF "continuous controlling of project results" rises in importance with increasing project experience in the field of OSD. While participants with little OSD project experience ranked this CSF fourth in their list, participants with a medium level of project experience ranked it second, and participants with a high level project experience ranked it first in their respective CSF ranking. In contrast, participants with a low OSD experience rated the CSF "high quality of offshore employees" as most relevant, while both participants with a

17

medium and a high project experience ranked this CSF fourth in their lists. When examining differences in how CSFs are ranked with regard to the level of project experience, we found that with increasing OSD project experience the relevance of the CSF "ensuring bilateral knowledge transfer" significantly increases, while the relevance of the CSF "international corporate culture" significantly decreases.

Table 8. CSF relevance by project experience

Rank	Low CSF (AM)	Medium CSF (AM)	High CSF (AM)
1	High quality of offshore employees (4.82)	Definition of clear project goals (4.77)	Continuous controlling of project results (4.75)
2	Definition of clear project goals (4.76)	Continuous controlling of project results (4.73)	Definition of clear project goals (4.73)
3	Ensuring of a continuous communication flow (4.71)	Ensuring of a continuous communication flow (4.63)	Ensuring of a continuous communication flow (4.71)
4	Continuous controlling of project results (4.65)	High quality of offshore employees (4.57)	High quality of offshore employees (4.65)
5	Good language abilities of the offshore employees in German and English (4.65)	Good language abilities of the offshore employees in German and English (4.57)	Good language abilities of the offshore employees in German and English (4.56)

Project size: Table 9 shows that participants in medium-sized and large OSD projects in particular emphasize the importance of a "continuous controlling of project results". In contrast, in small OSD projects, participants in the online survey emphasized the importance of the "high quality of offshore employees".

Table 9. CSF relevance by project size

Rank	Small CSF (AM)	Medium CSF (AM)	Large CSF (AM)
1	High quality of offshore employees (4.81)	Definition of clear project goals (4.88)	Continuous controlling of project results (4.74)
2	Ensuring of a continuous communication flow (4.65)	Continuous controlling of project results (4.79)	High quality of offshore employees (4.68)
3	Definition of clear project goals (4.62)	Ensuring of a continuous communication flow (4.76)	Preparation of a detailed project specification (4.68)
4	Continuous controlling of project results (4.62)	Good language abilities of the offshore employees in German and English (4.69)	Definition of clear project goals (4.68)
5	Preparation of a detailed project specification (4.50)	High quality of offshore employees (4.55)	Ensuring of a continuous communication flow (4.61)

MANAGEMENT OF CSFs

In order to obtain an accurate view of the management practices with regard to the identified CSFs, we chose a descriptive case study design (Yin 1993) and selected two cases, both with German-speaking companies, one with a Swiss

large-scale (PCS) and another with a German medium-sized enterprise (CCS)[1] (Table 10.).

Table 10. Comparison of the research context

	Name	PCS	CCS
Company information	Country	Switzerland	Germany
	Industry	Banking and insurance	Chemical industry
	Revenue[2]	EUR 17.5 bill. (worldwide)	EUR 1.1 bill. (worldwide)
	Employees[2]	16.000 employees (worldwide)	2.400 employees (worldwide)
	IT department[2]	740 employees (Switzerland)	20 employees (Germany)
Project information	Goals	*Primary goal:* Cost reduction *Secondary goals:* Flexibility, process, and quality improvements, development of experience with OSD	*Primary goal:* Cost reduction *Secondary goal:* Reduction of dependencies
	Perspective	OSD client	OSD client
	Experience	One nearshore project (18 months ago) Two offshore pilot projects (ongoing)	One offshore project (ongoing)
	Destinations	Spain (nearshore project) India (offshore project I and II)	India
	Organization	Cooperation with subsidiary (nearshore project) Cooperation with third-party-vendor with subsidiaries in Germany and Switzerland (offshore project I and II)	Cooperation with third-party-vendor with subsidiary in Germany
	Type	Web design (nearshore project) Code migration (offshore project I) Data warehouse migration (offshore project II)	Re-development of legacy system
	Duration	Six months (nearshore project) Four months (offshore project I) Nine months (offshore project II)	Six months
	Volume	5 to 10 external employees nearshore (nearshore project) 2 external employees onshore and 10 offshore (offshore project I) 2 to 4 external employees onshore and 10 offshore (offshore project II)	1 to 2 external employees onshore and 18 offshore

---

[1] Company names were changed for privacy reasons (PCS/CCS is short for "Pilot/Confirmatory Case Study").

[2] Quoted numbers refer to the fiscal year 2004.

Concerning the data collection process, we decided to primarily rely on interviews, participant observations and project documentation. In terms of data analysis, we first triangulated the collected data and used selected open coding from GT to analyze and evaluate the collected data. In both case studies, we conducted five interviews with different members of the OSD projects under investigation. Here, all of our interview partners took on leading roles (project managers and coordinators). In order to create a comprehensive understanding of the management of CSFs, we also interviewed the offshore provider's "single point-of-contact", who permanently worked on the client site. We were also able to observe project members during their daily work and analyzed project documents, such as presentations, project plans or charts. Here, the main intention was to gain as much project-related background information as possible. In order to verify the initial data interpretations by the research team, the participants received a structured summary of the interpretations via e-mail.

Both PCS and CCS compete in international markets. While PCS operates in the service industry (banking and insurance), CCS is part of the manufacturing industry (chemicals). PCS represents a large-scale enterprise (16000 employees worldwide) whereas CCS can be characterized as a medium-sized enterprise (2400 employees worldwide). The size of the corresponding IT department emphasizes the differences in company size: PCS with its focus on data and services within their business operations employs 740 people within its IT department alone, as opposed to the lean IT staff of 20 employees in CCS.

Prior to engaging in OSD projects both companies exhibited either little (PCS) or no experience (CCS) with OSD. Their primary goals were focused on cost reduction. However, while PCS particularly intended to improve their internal business processes, their flexibility, and the quality of their software, CCS aimed to reduce internal dependencies caused by their current legacy system.

Within PCS our analysis focused on two OSD projects: a relatively small four-month code migration project from Assembler to PL/1 as well as a nine-month data warehouse migration project. Within CCS we analyzed a comprehensive six month re-development project of a legacy system. There are similarities between PCS's code migration and the CCS re-development project, as both of these projects are characterised by scarce internal technical know-how and high maintenance costs.

RESULTS

As a first step, we analyzed how CSFs are managed within the OSD projects under study. We identified 148 management activities carried out by the case study partners which significantly influenced the top seven CSFs of our survey. Figure 2 highlights these findings.
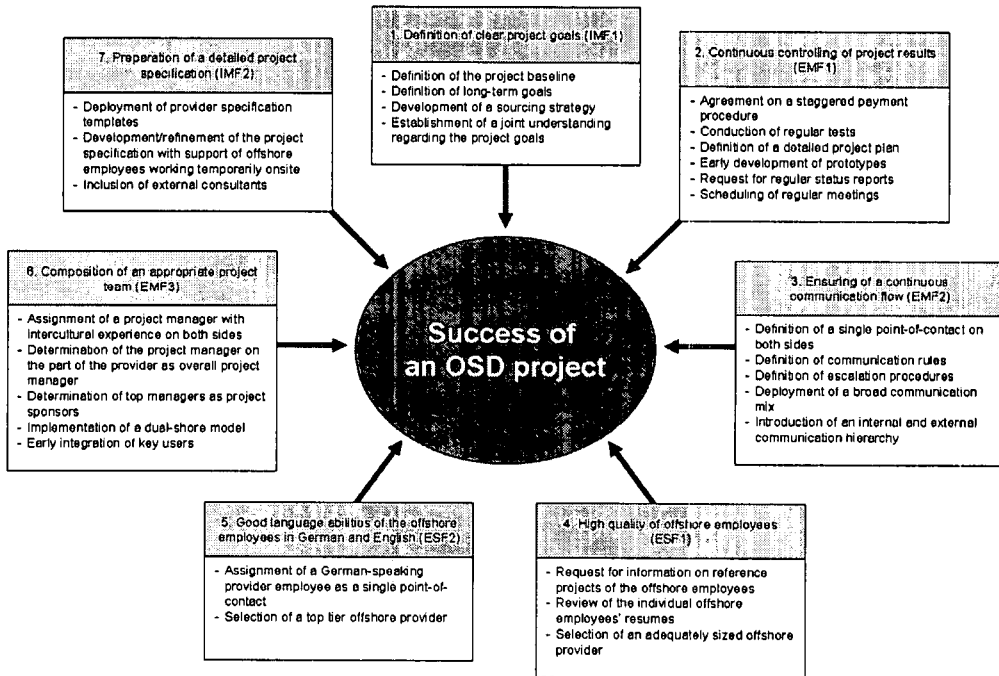
Figure 2. Key management activities derived from case studies

In order to investigate any similarities or context-specific differences in how CSFs are ranked we asked the interview partners to rank the CSFs from our CSF list. Even though – due to the small number of respondents – these results have to be interpreted with care, when combined with the analysis of the corresponding management activities they reveal interesting insights, which we now outline.

Confirming our survey results, management factors are also ranked highly in both case studies. In the case of PCS, these management factors are balanced internally and externally, while external management factors (factors related to the implementation) are clearly dominant in the case of CCS. CCS provided much less strategic IT resources than PCS, with the latter running a whole department working exclusively in the area of OSD, and thus providing more resources in the planning of the project. In addition, PCS was more experienced in outsourcing and knew in advance about the importance of a detailed planning phase.

As in the survey, our interview partners saw the "Definition of clear project goals" as the most important CSF. Management actions taken by both companies in regard to the definition of project goals clearly demonstrate the cost focus of the companies' OSD projects: examples are PCS's definition of a project baseline and CCS's definition of restrictions on change requests. In this context, it is notable that even though both companies defined long-term project goals, only PCS developed a clear sourcing strategy. Here, CCS particularly emphasized the discussion of the defined project goals with the offshore provider, in an effort to establish a joint understanding regarding the individual goals.

The CSF viewed as the least relevant by PCS and CCS included the "creation of a cultural sensitivity among employees". In addition, the low rank attributed to the CSF "international corporate culture" by both companies confirmed the low relevance of cultural aspects in the two case studies as well as in the online survey. In both case studies only a few internal employees were managing the interfaces to the offshore employees, making it unnecessary to build up a cultural sensitivity for all employees.

Even more interesting are differences in how CSFs are ranked compared to the survey results, as these show the context-dependency of certain CSFs. For example, the CSF addressing the "definition of an accurate contract" and the "geographical closeness of the offshore provider" received a significantly higher degree of relevance in both case studies than in the online survey. Referring back to the interview transcripts we were able to find some plausible explanations. As both companies had lower experience with OSD projects they tried to deal with this uncertainty by taking extra care in formulating the contract. Due to the geographical distance of the offshore provider, the conclusion of the contract with the provider's subsidiary in Germany and Switzerland, respectively, was very important for PCS and CCS. PCS also included detailed contractual penalties in the case of missed due dates. However, in the case of PCS both project partners accepted that not every issue could be formulated within the contract. Therefore, PCS and the offshore provider eventually agreed on a rather lean contract structure, thereby avoiding an unrealistic level of detail.

Both companies ranked the CSF "appropriate internal technical knowledge" significantly higher than in the survey. CCS for example gave this CSF the highest mark of 5, whereas in the survey this CSF received an average of 3.59. One plausible explanation refers to the nature of the OSD project. One of the the biggest challenges for CCS in the one-to-one re-development of the legacy system was to figure out how to transfer knowlede of the legacy system from one employee to the Indian OSD provider. CCS solved this problem by including the corresponding internal knowledge carriers within its OSD project. They were responsible for equipping the offshore provider with precise internal programming knowledge and conveying the importance of company-specific elements of the system to the side of the provider. Early face-to-face contact was key to preventing any negative impact on the OSD project such as

22

effects on the motivation and commitment of the internal employees. In this particular case one key employee was strongly integrated in the provider team. He visited the offshore location several times and was shown that he would still play an important role after the legacy system is replaced.

In the case of CCS the definition of project standards were given a significantly lower mark (3.0 compare to 4.22 in the survey and 4.4 at PCS). Similar low grades were given to the CSF "good language abilities of the offshore employees in German and English". This allows for certain interpretations. As far as project standards are concerned, CCS adopted selected standards from the offshore provider, especially in regard to various elements of project management (e.g. high- and low-level design, risk analysis, and testing). Templates used for project documentation and status reports were also transferred from the side of the provider. In line with this provider-oriented approach, English was chosen as the primary project language. However, by using the provider's templates, in particular for requirements analysis, CCS ran into numerous comprehension problems because these templates had not been aligned to the standards the client was accustomed to using.

These problems were preceded by other problems related to the presence of the project team at the client's location. In order to conduct the requirements analysis and to ensure early bilateral knowledge transfer, the project team from the Indian OSD provider was invited to the client's workplace. However, their mere physical presence caused uncertainty and resentment due to the fear of job losses. This initial difficulty was solved by setting up a web site on the intranet to introduce the new Indian team members and present up-to-date information on the project status. The project manager told us that the central message to be distributed to the employees on the client's site was 'don't worry about your job'.

FINAL DISCUSSION

There are several interesting results to discuss in light of prior studies on CSFs. One is the predominance of management factors rather than suitability factors. More precisely, our results suggest external management factors are more important for the success of an OSD project than internal management factors. This is in particular true for smaller companies which have less OSD experience such as CCS. Our result is in line with Adelakun & Jennex (2003) and extends their view that not only providers but also clients prefer to focus on CSFs, which they are able to control. It is also interesting to see that not only is the definition of clear project goals (a task related to the pre-implementation phase) the most important general CSF, but it also ranks highly throughout all other analysis dimensions. This result is in contrast to the findings in Adelakun & Jennex (2003), where this factor was not even identified as important. However, even though the other studies did not rank CSFs, they included this factor in their lists.

It might well be that cultural factors (such as the "creation of a cultural sensitivity among employees" and "international corporate culture", often named in prior research as one of the most critical factors) have previously been overemphasized. Not only the survey but also the two confirming case studies found that cultural issues played only a minor role. The results from the two case studies suggest some possible explanations, even though more empirical work is needed to confirm our findings. In both case studies communication with the provider was channeled through a few 'bridging' employees, who were particularly skilled in dealing with the provider's culture (Krishna et al. 2004), making it unnecessary to build up a cultural sensitivity for all employees. In addition, we found out that the relevance of the CSF "creation of a cultural sensitivity among employees" significantly rises with increasing project size. In particular, when examining the larger OSD project of PCS we found dedicated activities to ensure cultural sensitivity among employees, such as coaching of internal project members in order to prevent misunderstandings. In this context, Rao (2004) stresses the importance of understanding culturally specific idioms.

As already indicated in prior studies, we were able to confirm that how CSFs are perceived largely depends on the perspective taken. In particular with regard to the company perspective, providers and consultancies in general tend to rank CSFs significantly higher than clients. Setting clear goals seems to be even more beneficial for providers as they are trying to avoid unrealistic expectations due to cost reduction, and this is reflected in the contract's penalties and defined time frame (Alami et al. 2008; Rajkumar and Mani 2001).

Language issues seem to play a significant role for microenterprises, and there are several possible interpretations of this. Data from our case analysis suggests that in larger companies many project team members have a high level of English proficiency, allowing English to be used as a second spoken language to mitigate communication problems with their offshore partners (Rao 2004). Lack of proficiency in English is a problem often faced by smaller companies. In both case study companies, English was strongly promoted for use as a second business language throughout the company, a policy only found in microenterprises with a strong export orientation.

The geographical location and the type of project seem to have no impact on how CSFs are ranked. We have learned from our case study that in fact the quality of interface and relationship management plays a key role. If the key interfaces are staffed with employees who know and can match the provider's culture (Krishna et al. 2004), then the question of cooperating with India or Poland will be one of much less importance.

It is interesting to see that participants working predominantly in small OSD projects tend to emphasize the quality of offshore employees. Obviously these projects rely

heavily on individual team members who need to integrate various roles, not only in terms of technical but also social skills, e.g. building and maintaining bridging relationships (Heeks et al. 2001).

Some interesting results emerged concerning the level of project experience: the more experienced the project managers are, the more they are aware that continuous control over the project plays an important role. Conversely, participants with a low OSD experience rated the CSF "high quality of offshore employees" as most relevant, while both participants with a medium and a high level of project experience ranked this CSF fourth in their lists. Apparently, people with lower levels of project experience are more willing to rely on the expertise of individuals than those with greater experience, and this was also confirmed by both case studies.

Such findings add to the body of knowledge on the use of control structures. Prior research suggests that in client provider relationships task uncertainty, low levels of trust and client knowledge (such as technical and relationship knowledge) are positively associated with the amount of formal control (Rustagi et al. 2008). This is because improved relationship management capabilities facilitate a stronger partnership approach between the client and the provider, thus reducing the need for extensive control. The same is true for stronger client capabilities, which lead to more effective and efficient vendor monitoring and evaluation, thus also reducing the need for formal control. It may well be that more experienced project managers, having already built up this knowledge, will use formal control structures to a far lesser extent than less experienced project mangers who often face greater task uncertainty and either tend to rely on highly skilled employees or, as prior research suggests, use more formal control. This is certainly an area which needs to be researched further.

It is also notable that with higher levels of OSD project experience the relevance rating of the CSF "ensuring bilateral knowledge transfer" significantly increases. Knowledge transfer is a key factor in establishing a true strategic partnership between client and OSD provider and it seems that project experience plays an important role in entering the so-called run stage. There, a true strategic partnership is established with the OSD provider and preparations and governance become seamless (Raisinghani 2008). Also, sharing of tacit knowledge is an important part of achieving congruence, the so-called "synching', and thus establishing successful relationships between OSD provider and client (Alami et al. 2008; Heeks et al. 2001). We could identify numerous activities in both case studies supporting this partnership, such as a joint steering committee, enforced mutual company visits, a broad mix of communications and well-defined communication rules.

25

CONCLUSIONS AND OUTLOOK

This is the first known comprehensive study on the identification, analysis and management of CSFs in the field of OSD. Based on a comprehensive literature research as well as interviews with OSD experts, a list of CSFs was developed from the perspective of German-speaking companies. The derived CSFs can be classified into internal and external factors as well as suitability and management factors, resulting in a two-dimensional CSF model.

On the basis of the developed CSF model, 29 factors were ranked according to different analytical dimensions. We identified the following seven CSFs as generally being the most relevant for the successful implementation of an OSD project: "definition of clear project goals"; "continuous controlling of project results"; "ensuring of a continuous communication flow"; "high quality of offshore employees"; "good language abilities of the offshore employees in German and English"; "composition of an appropriate project team"; and "preparation of a detailed project specification". In particular, (external) management factors are relevant for the successful implementation of an OSD project. This is also confirmed by the multitude of management activities taken in regard to these CSFs within two conducted case studies as well as the results of the online survey.

We also explored some issues and challenges involved in managing these CSFs. There were some challenges in both case studies which were unique to their project context and closely related to the CSF management activities carried out. In particular, the underlying analysis shows the importance of looking at interrelationships between CSFs and corresponding activities. The results also suggest that the importance of some of the CSFs is dependent on the underlying context such as the risk awareness of the company or the type of software to be outsourced.

Some limitations still exist regarding the statistical interpretation of the data collected: within two of the six analysis dimensions, respondents were allowed to specify multiple answers. Even though this possibility enabled us to collect more precise data, it led to interdependencies between the corresponding dimensions, making it impossible to analyze the significance of assessment differences within these two dimensions. It is also important to recognise that we conducted only two case studies. Because of this, additional research may be necessary in order to verify the analysis of CSF management. In addition, the development of integrated management methods and tools for the identified CSFs or clusters of them was not part of this research project. However, the developed CSF list and the proposed CSF classification could serve as a starting point for the development of such methods or tools.

Although we have investigated CSFs for German-speaking companies, the results of the study strongly indicate that they can be generalized to other countries; in particular to those countries where English is not the first language and where OSD is still an

emerging field. Further research, such as further in-depth analyses of single CSFs, is needed to shed light into some of the results presented here.

REFERENCES

Adelakun, O., and Jennex, M.E. 2003. "Success Factors for Offshore Information System Development," *Journal of Information Technology Cases and Applications* (5:3), pp 12-29.

Alami, A., Wong, B., and McBride, T. 2008. "Relationship Issues in Global Software Development Enterprises," *Journal of Global Information Technology Management* (11:1).

Amoribieta, I., Bhaumik, K., Kanakamedala, K., and Parkhe, A.D. 2001. "Programmers Abroad: A Primer on Offshore Software Development," *The McKinsey Quarterly* (2001:2).

Berger, A., Hodel, M., and Risi, P. 2004. *Outsourcing realisieren*. Wiesbaden: Vieweg.

BITKOM. 2005. "Leitfaden Offshoring." Retrieved 23.08, 2005, from http://www.bitkom.org.

Brown, D., and Wilson, S. 2005. *The Black Book of Outsourcing - How to Manage the Changes, Challenges and Opportunities*. New Jersey: John Wiley & Sons.

Buchta, D., Linß, H., Röder, H., and Ziegler, R. 2004. "IT-Offshoring und Implikationen für den Standort Deutschland." AT Kearney.

Chi-wai, K.R., Huynh, M.Q., Lee, J.-N., and Pi, S.-M. 2000. "The Evolution of Outsourcing Research: What Is the Next Issue?," *The 33rd Hawaii International Conference on System Sciences*, Hawaii, USA.

Cliff, S. 2004. "Badly-Managed Offshore Software Development Costs Firms Millions," in: *Computer Weekly*.

Cullen, S., and Willcocks, L. 2003. *Intelligent IT Outsourcing - Eight Building Blocks to Success*. Oxford: Elsevier Butterworth Heinemann.

Delmonte, A.J., and McCarthy, R.V. 2003. "Offshore Software Development: Is the Benefit Worth the Risk?," *The Ninth Americas Conference on Information Systems*, Tampa, USA.

Esteves, J., and Pastor, J. 2004. "Using a Multimethod Approach to Research Enterprise Systems Implementations," *Electronic Journal of Business Research Methods* (2:2), pp 69-82.

Fjermestad, J., and Saitta, J.A. 2005. "IT Outsourcing: A Strategic Management Framework," *ISOneWorld 2005*, Las Vegas, USA.

Gupta, U.G., and Raval, V. 1999. "Critical Success Factors for Anchoring Offshore Projects," *Information Strategy: The Executive's Journal* (15:2), pp 21-27.

Heeks, R., Krishna, S., Nicholson, B., and Sahay, S. 2001. "Synching or Sinking: Global Software Outsourcing Relationships," *IEEE Software,* (18:2), Mar/Apr, pp 54-60.

Jacobson, I., and Lidman, S. 2004. "Controlled Offshore Outsourcing with an Active Process." Retrieved 24.09, 2004, from http://www.jaczone.com.

Kaplan, B., and Duchon, D. 1988. "Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study," *MIS Quarterly* (12:4), pp 571-586.

Khan, N., Currie, W.L., Weerakkody, V., and Desai, B. 2003. "Evaluating Offshore IT Outsourcing in India: Supplier and Customer Scenarios," *The 36th International Conference on System Sciences*, Hawaii, USA.

King, W.R. 2005. "Outsourcing and Offshoring: The new IS Paradigm?," *Journal of Global Information Technology Management* (8:2), pp 1-4.

King, W.R., and Torkzadeh, G. 2008. "Information Systems Offshoring: Research Status and Issues," *MIS Quarterly* (32:2), pp 205-225.

Kobayashi-Hillary, M. 2004. *Outsourcing to India - the Offshore Advantage.* Berlin: Springer.

Krishna, S., Sahay, S., and Walsham, G. 2004. "Managing Cross-Cultural Issues in Global Software Outsourcing," *Communications of the ACM* (47:4), pp 62-66.

Laabs, K.-P. 2004. "Offshore Outsourcing und Co-Sourcing," in: *IT Outsourcing in der Praxis,* T. Gründer (ed.). Berlin Erich Schmidt, pp. 116-129.

Mingers, J. 2001. "Combining Research Methods: Towards a Pluralistic Methodology," *Information Systems Research* (12:3), pp 240-259.

Moczadlo, R. 2002. "Chancen und Risiken des Offshore Development. Empirische Analyse der Erfahrungen deutscher Unternehmen." Retrieved 15.04, 2004, from http://www.competence-site.de.

Oecking, C., and Westerhoff, T. 2005. "Erfolgsfaktoren langfristiger Outsourcing-Beziehungen," in: *Outsourcing - Schlüsselfaktoren der Kundenzufriedenheit,* W. Köhler-Frost (ed.). Berlin Erich Schmidt, pp. 35-52.

Pandit, N.R. 1996. "The Creation of Theory: A Recent Application of the Grounded Theory Method," *The Qualitative Report* (2:4).

Raisinghani, M.S. 2008. "The Expert Opinion," *Journal of Global Information Technology Management* (11:1), pp 69-72.

Rajkumar, T.M., and Mani, R.V.S. 2001. "Offshore Software Development. The View from Indian Suppliers," *Information Systems Management* (18:2), pp 63-73.

Rao, M.T. 2004. "Key Issues for Global IT Sourcing: Country and Individual Factors," *Information Systems Management*, (21:3), pp 16-21.

Rao, M.T., Poole, W., Raven, P.V., and Lockwood, D.L. 2006. "Trends, Implications, and Responses to Global IT Sourcing: A Field Study," *Journal of Global Information Technology Management* (9:3), pp 5-23.

Raval, V. 1999. "Seven Secrets of Successful Offshore Software Development," *Information Strategy: The Executive✗s Journal* (15:4), pp 34-39.

Rockart, J. 1979. "Chief Executives Define Their Own Information Needs," *Harvard Business Review* (25:2), pp 81-92.

Rustagi, S., King, W.R., and Kirsch, L.J. 2008. "Predictors of Formal Control Usage in IT Outsourcing Partnerships," *Information Systems Research* (19:2), June, pp 126-143.

Sparrow, E. 2003. *Successful IT Outsourcing: From Choosing a Provider to Managing the Project*. London: Springer.

Stephan, R. 2005. "Kommunikation und Wissenstransfer - Schlüsselfaktoren für erfolgreiche Offshore-Projekte," in: *Outsourcing - Chancen und Risiken, Erfolgsfaktoren, rechtsichere Umsetzung*, H.-J. Hermes and G. Schwarz (eds.). Freiburg: Haufe, pp. 221-229.

Strauss, A., and Corbin, J. 1998. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park: Sage.

Van Maanen, V. 1979. "Reclaiming Qualitative Methods for Organizational Research: A Preface," *Administrative Science Quarterly* (24:4), pp 520-526.

Yin, R. 1993. *Applications of Case Study Research*. Newbury Park: Sage.

Ulrich Remus is a Senior Lecturer at the University of Canterbury, New Zealand. He holds a Masters in IS from the University of Bamberg and a PhD from the University of Regensburg, Germany. His main area of research is process and knowledge management and the development of large enterprise systems. Before moving to New Zealand in 2006, he was an Assistant Professor for IS at the University of Erlangen-Nuremberg, Germany. He has worked for many years as IT consultant and was a research scholar at the Victoria University of Wellington in 2005. Ulrich has authored and co-authored more than forty papers in international journals, books and conference proceedings.

Martin Wiener studied Information Systems at the University of Erlangen-Nuremberg, Germany. After residing in the United States for research purposes, he was a research associate at the IS Department at the University of Erlangen-Nuremberg in the field of IT offshoring. In 2007, his PhD thesis on the management and critical success factors of offshore software development projects was awarded the annual prize for best doctoral thesis by the Alcatel-Lucent Foundation. Currently, Martin is working for an international management consulting firm in Munich, Germany.