Martin Wiener

Critical Success Factors of Offshore Software Development Projects

The Perspective of German-Speaking Companies

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With a foreword by Prof. Dr. Michael Amberg

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Foreword

Why do projects succeed or fail? Can managers influence the outcome of a project? Are there core indicators that are extremely important in reaching targeted goals, values and expectations? Nearly every manager responsible for a project has to deal with such questions sooner or later. This is especially the case for projects that are innovative to an organization.

With the emergence of global communication technologies and driven by the desire of corporations to take advantage of the lower costs of production and skilled labor in developing countries, the movement in German-speaking countries to export work offshore has experienced a notable rise in popularity. The offshoring of information technology and software development has spawned an entire industry. Still, many offshore projects do not live up to their expectations.

This book offers an enlightening and detailed analysis of the phenomenon of offshoring software development and its critical success factors. The critical success factor approach allows management to harness the organization's resources on those issues that will make a difference. It will help to focus attention on major concerns and guide businesses in creating and measuring success.

Practitioners and researchers will herein find a valuable resource to better understand the role of critical success factors in project management. It is our hope that managers will recognize the potential benefits of deriving and applying critical success factors in their organization and consequently realize improvements in managing offshore software development projects through this simple, yet powerful concept.

Michael Amberg

Preface

Many people have contributed to this doctoral thesis with support of many kinds: Through practical help, suggestions of ideas, and editing. Foremost, I would like to thank my thesis advisor Michael Amberg for his guidance and support over the past four years. I am also grateful to my colleagues Doris, Manuela, Olga, Sonja, Shota, Steffen, and Ulrich for their helpful suggestions and their sensitive copyediting of this thesis; my students Nadja, Christian, and Michael for their support during the state-of-the-art analysis, the implementation of the case studies, and the conduction of the web survey respectively; Gerold Herold, Rudolf Kodes, Roland Kraus, and Rolf Stephan for their ongoing support throughout this doctoral research project; Michael Weber for his help in the process of finding company partners for the conduction of the web survey; Mario Babini and Stefan Ziolkowski for their help with the implementation of the case studies.

My thanks extend to Flo for helping me bring this thesis to its completion, as well as for being a great friend over the last six years; Fips and Martin for being there for me whenever I needed them; Daniel for supporting me during the final stages of my thesis and becoming a good friend over the last years; Caro, Christiane, Jess, Sabine, Andi, and Stephan for taking care of me; Ines, Julia, Holger, and the rest of their team for continuously providing me with mocha coffee while working on this thesis; Kathi and Stephan for enabling me to relax after long working days.

Last, but not least, I would like to thank my parents, Maria and Toni, to whom this thesis is dedicated, for their unconditional love and support.

Martin Wiener

Short Index

Index

List of Tables

List of Figures

List of Abbreviations

AM	Arithmetic mean
AMCIS	Americas Conference on Information Systems
ANOVA	Analysis of variance
ASP	Application service providing
BERI	Business Environment Risk Index
BPO	Business process outsourcing/offshoring
CACM	Communication of the Association for Computing Machinery
CCS	Confirmatory case study
CEO	Chief executive officer(s)
CIO	Chief information officer(s)
CMM	Capability Maturity Model
CSF	Critical success factor(s)
DSS	Decision support system(s)
ECIS	European Conference on Information Systems
EMF	External management factor(s)
ERP	Enterprise resource planning
ESF	External suitability factor(s)
ETL	Extract, transform, and load
EU	European Union
FMER	Federal Ministry of Education and Research
FORTRAN	Formula Translation

HBR	Harvard Business Review
HICSS	Hawaii International Conference on System Science
ICIS	International Conference on Information Systems
IMF	Internal management factor(s)
IP	Intellectual property (or interview partner)
IS	Information systems
ISF	Internal suitability factor(s)
ISO	International Organization for Standardization
ISR	Information Systems Research
IT	Information technology
ITIL	IT Infrastructure Library
KPI	Key performance indicator(s)
KSF	Key success factor(s)
LE	Large-scale enterprise(s)
LIMS	Laboratory information management system
LoI	Letter of Intent
MISQ	Management Information Systems Quarterly
NASSCOM	National Association of Software and Service Companies
NDA	Non-disclosure agreement
MS	Microsoft
OS	Online survey
OSD	Offshore software development

P-CMM	People Capability Maturity Model
PCS	Pilot case study
PL/1	Programming Language One
QUAL	Qualitative-driven research design
QUAN	Quantitative-driven research design
RFI	Request for information
RFP	Request for proposals
RPG	Report Program Generator
RUSSOFT	Russian Software Developers Association
SLA	Service level agreement(s)
SME	Small and medium-sized enterprise(s)
SMR	Sloan Management Review
SPSS	Statistical Package for the Social Sciences
SRS	System requirements specification(s)
TCO	Total cost of ownership
TCP	Technical, commercial, and process-related
TQM	Total Quality Management
UK	United Kingdom
U.S.	United States
VPN	Virtual private network(s)

Chapter 1

Introduction

Chapter Contents: This chapter introduces the doctoral research project, hereby outlining why such research has been carried out (*1.1 Motivation*), and placing the research in context as well as presenting the research objectives and questions (*1.2 Research Focus*). Finally, the contents of the chapters within this thesis are outlined (*1.3 Organization*).

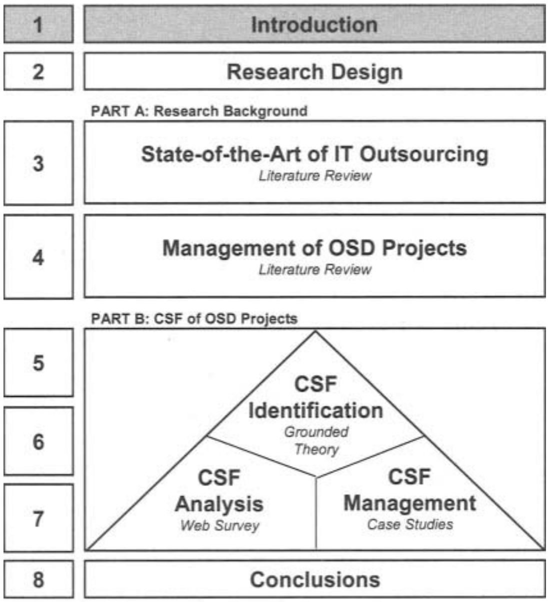


Figure 1: Thesis roadmap – Introduction (chapter 1)

1.1 Motivation

From the perspective of companies worldwide, due to the increasing standardization of IT services (Allweyer, Besthorn, and Schaaf, 2004; BITKOM, 2005), IT is losing in strategic importance (Carr, 2004). Particularly CEO often face problems with recognizing the value added by IT, resulting in drastically reduced IT budgets (Buchta, Linß, Röder, and Ziegler, 2004). In addition, a rising number of CIO does not consider IT as a strategic investment any longer (Habler, 2004). Consequently, in an effort to cut costs and re-focus on their core competences, companies outsource IT commodity services (Allweyer et al., 2004). The first major instance of **IT outsourcing** was reported when Kodak outsourced the entire operation of its information center in 1990 (Mani and Rajkumar, 2001). Since then, well known companies worldwide followed Kodak, indicating the global rise of IT outsourcing.

Alongside the concentration on core competences, the major reason for engaging in IT outsourcing projects is cost reduction (Allweyer et al., 2004). This can primarily be reached through economies of scale and scope on the part of the service provider. However, as long as the provider operates in the same country, the achievable cost savings are limited (Buchta et al., 2004). These restrictions on cost savings as well as the continuous increase in competition, resulting from a globalization of sales and procurement markets (Bavarian Chamber of Commerce and Industry, 2002) [BCCI], prompted companies worldwide to look for new, profitable ways to structure their business operations. In this context, the labor cost differences as well as the large pool of highly qualified workers within low-wage countries like India attracted companies' attention and promoted the trend to **IT offshoring**[1] (Buchta et al., 2004). This distinct modification of IT outsourcing is existent as soon as companies relocate IT services to a provider in low-wage countries, such as China, India, or the newly added EU-countries (Broß, 2005).

Beside the already mentioned cost- and workforce-related benefits offshore countries have to offer, the IT offshoring trend is primarily driven by the following structural changes of the global economy (Kalakota and Robinson, 2004):

- *Globalization*: Transition to a global economy through technological advances (e. g., the Internet).
- *Competition*: Reorganization of the IT service provider landscape (e. g., market entry by offshore service providers).

[1] In the following, the term "IT nearshoring" is subsumed in the term "IT offshoring".

- *Evolution*: Transfer of common business practices from other industries (e. g., manufacturing).
- *Deflation*: Rising customer demands (faster, cheaper, better).
- *Demographics*: Aging population and declining birth rates in developed countries (e. g., Germany's workforce will decrease by two million in the next 15 years).

UNITED STATES

In the United States, companies have already cooperated with offshore providers for more than ten years (Allweyer et al., 2004). Contributing to the rise of IT offshoring was the shortage of IT professionals in the late 1990s (Adelakun and Jennex, 2003). Nowadays, IT offshoring can be considered as an established business practice in the United States (Allweyer et al., 2004). 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 U.S. companies' IT budgets is spent in low-wage countries, of which more than 80 percent is invested in India (Buchta et al., 2004). Here, according to a study by Farrell (2004a), the U.S. economy gains more than one dollar of new wealth for every dollar of corporate spending abroad.

One aspect of IT offshoring is the relocation of software services abroad (Krishna, Sahay, Walsham, 2004), the 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, Bhaumik, Kanakamedala, and Parkhe, 2001). Currently, the high demand for e-business and web-based solutions (Adelakun and Jennex, 2003), as well as the maintenance and the re-development of legacy systems (Schaaf, 2004) are continuing the drive for OSD. In consequence, a growing proportion of the global offshore market is in the software development area (Delmonte and McCarthy, 2003). At present, almost two out of five 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 for the next years (Jacobson and Lidman, 2004).

However, up to now, OSD had its fair share of trial and error and disappointment. Many a time, 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 are close to 50 percent, actual savings were many a time 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 the changing type of OSD projects (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. Contrary to these traditional projects, 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, leading to an increasing risk of failure.

In an attempt to assist companies with the successful implementation of OSD projects, the concept of **critical success factors (CSF)** is gaining in importance. The term "*critical success factors*" initially appeared in management literature in Daniel (1961). Rockart (1979, p. 85) defines these as "*the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization*", and emphasizes the great amount of importance, which should be attributed to CSF, when he says: "*...the critical success factors are areas of activity that should receive constant and careful attention from management*". Ramaprasad and Williams (1998) also acknowledge the increasing popularity of the CSF concept: "*...there is a great deal of attention devoted to the concept [of CSF] in the IS literature as many argue that the use of CSF can have a major impact on the design, development, and implementation of IS*". In this context, Delmonte and McCarthy (2003) look at the benefits and the risks of OSD, thereby developing a set of CSF from a U.S. client perspective. In line with Delmonte and McCarthy (2003), Raval's (1999) "seven secrets" of successful OSD address the perspective of U.S. clients. On the contrary, Mani and Rajkumar (2001) describe key success factors from the point of view of Indian service providers. Adelakun and Jennex (2003) expand this research by focusing their CSF research on OSD providers located in Eastern and Western Europe. However, with regard to the mentioned studies, it has to be noted that the presented CSF are many a time insufficiently described and analyzed. For instance, only one of the four studies examines the relevance of the identified CSF (Adelakun and Jennex, 2003), and none of these studies provides a more sophisticated management analysis in regard to the proposed CSF.

GERMANY

In recent years, the rising trend to IT offshoring has also reached Europe. According to Farrell (2004a), 40 percent of the 500 largest companies in Western Europe have already begun relocating IT services abroad. More than 80 percent of these companies are satisfied with the results of their offshore projects, reporting cost savings in the range of 20 to 40 percent (Eichelmann, Fredriksson, Sauvant, and Schneidereit, 2004). However, the majority of European companies with offshore experience are located in the UK, which accounts for almost two thirds of the European IT offshoring market (Eichelmann et al., 2004). Here, according to Buchta et al. (2004), particularly culture- and language-related advantages of UK-based companies facilitate the relocation of IT services abroad.

In comparison to English-speaking companies, Buchta et al. (2004) assume that German companies are currently three years behind. This becomes particularly evident when considering the size of the German IT offshoring market. With a total market volume of 0.4 billion euros in 2003 (compared to a 54 billion euros U.S. market), at present, the German market for IT offshoring is still in its fledgling stages (Broß, 2005). According to Buchta et al. (2004), Germany's considerably smaller market size can be reasoned by 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 linguistical issues of German companies. In addition, numerous German companies are still in the process of preparing their IT organizations for IT offshoring. However, behind the background of potential cost savings for German firms of approximately two billion euros per year (Buchta et al., 2004), enormous market growth potentials remain (Allweyer et al., 2004). Broß (2005), for instance, assumes that the German IT offshoring market will double in size until 2008. In this context, particularly the rising cost pressure, triggered by globalization (Böhm, 2003a), increases the likelihood of a significant growth of the German market. For example, statistics show that more than half of all software projects in Germany fail on account of cost pressure. In turn, German companies lose an enormous amount of potential innovations, making it even tougher for these companies to maintain their competitive position in a global economy (Beeler, 2004). Another reason for such a development of the German IT offshoring market can be seen in the increasing saturation of the U.S. market. In an effort to keep annual growth rates of more than 20 percent, especially large offshore providers (e. g., India-based providers such as TCS, Wipro, and Infosys) will attempt to fortify the penetration of the German market in the near future (Buchta et al., 2004).

Level	Examples	Service form
Process	Call center, helpdesk	Business process outsourcing/offshoring
Application	Software development, software migration	Software development outsourcing/offshoring
IT infrastructure	Network management, server management	Infrastructure service outsourcing/offshoring

Source: Lancellotti, Schein, Spang, and Stadler (2002)

Figure 2: Levels of IT outsourcing/offshoring projects

Regarding the type of services, relocated in the context of an IT outsourcing/offshoring initiative, Allweyer et al. (2004) generally distinguish among a process, an application, and an infrastructure level (compare Figure 2). On a process level, entire business processes such as call center operations are relocated. This specific service form is also referred to as business process outsourcing/offshoring (BPO) (e. g., Fritsch and Stimmer, 2004). While the application level encompasses the outsourcing/offshoring of software development projects, the outsourcing/offshoring of network or server management operations is related to a company's IT infrastructure.

Analogous to the global IT offshoring market, OSD (compare gray highlighted row in the figure above) currently makes up the majority of the German offshore market (Broß, 2005). In general, this can be reasoned by the fact that software services are particularly suitable for relocation abroad due to their labor intensity and modularity (Rack, 2001). In particular, this can be traced back to the insufficient German language abilities in many offshore countries, hampering the relocation of other IT services like call center operations to low-wage countries.

In Germany, the increasing trend towards OSD is mainly fortified by the opportunities it offers. According to a survey by Moczadlo (2002), the major reasons for German companies to develop software offshore are:

- *Cost reduction*: Exploitation of lower labor costs in low-wage countries like India, Russia, etc.
- *Flexibility in staff numbers*: Improvement of a company's reactivity on current market conditions.
- *Quality improvement*: Utilization of economies of scope.
- *Time-to-market reduction*: Reduction of development times through external support and "follow the sun" approaches.

Despite the manifold benefits of OSD, German companies' first experiences were not consistently positive (Schaaf and Weber, 2005). Media reports of companies, whose OSD projects could not live up to their expectations, were abundant (BITKOM, 2005). Beside the changing type of OSD projects (Adelakun and Jennex, 2003), in the case of German companies, the major reason for these negative headlines can be found in poor project management (Moczadlo, 2002). Primarily, this can be traced back to these companies' lack in experience with IT outsourcing projects in general and OSD projects in particular (Buchta et al., 2004).

Against this background, the questions, which factors determine the success or the failure of an OSD project and how these factors can be influenced, arise. In this context, some German associations (e. g., BITKOM, 2005) as well as research institutes of large-scale German enterprises (e. g., Schaaf, 2004) have published practical guidelines on the implementation of IT offshoring projects in general. However, only little research has been carried out in regard to the CSF of OSD projects from a German client perspective. Even though, some research studies, which concentrate on the CSF of OSD projects from a U.S. client perspective (e. g., Delmonte and McCarthy, 2003; Raval, 1999), already exist, we do not know if the results of these studies can be transferred to German clients. This can be reasoned by the structural, cultural, and linguistical issues of German companies (Buchta et al., 2004). Therefore, in an effort to support German companies with the successful implementation of OSD projects, we decided to examine the CSF of such projects in more detail. Here, according to Kulik (1997), understanding why projects succeeded is of particular importance, because "*repeating what worked on successful projects is a powerful strategy to ensure the success of future projects*".

1.2 Research Focus

While IT offshoring and OSD can already be regarded as commonly used business practices in the United States and the UK (Allweyer et al., 2004), they still represent a relatively new and emerging trend in Germany and other German-speaking countries (Broß, 2005). As a result, in these fields, only a limited number of research studies (e. g., Schaaf, 2004; Schaaf and Weber, 2005; BITKOM, 2005; Moczadlo, 2002), focusing on the interests and issues of German-speaking companies, exist. For this reason, we decided to focus this doctoral research project on the relocation of IT services to foreign countries from a **German-speaking client** perspective.

At present, **OSD** accounts for the majority of the German-speaking IT offshoring market (Broß, 2005). However, despite dominating the market, OSD projects run a particularly high risk of failure, resulting from their high complexity and level of interaction (Adelakun and Jennex, 2003) as well as German-speaking companies' insufficient experience with IT outsourcing projects in general and OSD projects in particular (Buchta et al., 2004). Hence, we decided to focus our research project on the development of software at offshore locations. In this context, we concentrate on software development in a broad sense, which according to Albert and Thondavadi (2004) incorporates the development of individual and standard software (software development in a narrow sense), as well as the migration, the maintenance, and the support of software systems.

Regarding our research focus, it has to be added that the doctoral thesis at hand does not consider OSD from a national economy (compare Farrell, 2004a) or an industry perspective (compare Daniel, 1961). Rather, by concentrating on information needs for management control, it examines OSD from a **project management** perspective (compare Rockart, 1979). In this context, we follow Gray and Larson's (2000) definition which describes a project as "*a complex, non-routine, one-time effort limited by time, budget, resources and performance specifications designed to meet customer needs.*" (p. 6)

With regard to OSD projects, some research has already been carried out on the CSF of such projects from the perspective of U.S. clients as well as Indian and European service providers. In contrast, from a German-speaking client perspective, there is only little research on the CSF of OSD projects. The doctoral thesis at hand makes an effort to close this gap. Therefore, in order to support German-speaking clients with the successful implementation of OSD projects, we aim to identify and structure the **CSF** of such projects, to analyze the identified CSF in more detail, as well as to derive management activities in regard to these CSF. In doing so, the following research questions will be addressed:

1. **CSF Identification:** Which CSF do companies have to consider when implementing OSD projects?

2. **CSF Analysis:** Which of the identified CSF are particularly relevant in which OSD project contexts, which of these CSF are specific for which OSD project phases, and in which time frame can these CSF be influenced?

3. **CSF Management:** How can companies influence the identified CSF in practice?

By addressing the research questions listed above, the goal of this doctoral thesis is to contribute to a deeper understanding of successful project management in the realm of OSD. Furthermore, the thesis aims to provide a comprehensive basis for further research. Here, for instance, the identified CSF of OSD projects could be compared to the CSF of other IT projects in general and IT outsourcing/offshoring projects in particular as well as to the CSF of OSD projects in other countries. In addition, by promoting a unified CSF research agenda, this thesis aims to assist researchers with the conduction of CSF research in a more holistic and systematic manner.

1.3 Organization

The structure of the thesis at hand is based on the different phases of the doctoral research project. Figure 3 presents the thesis roadmap followed, including the predominantly applied research methods within the individual research phases.

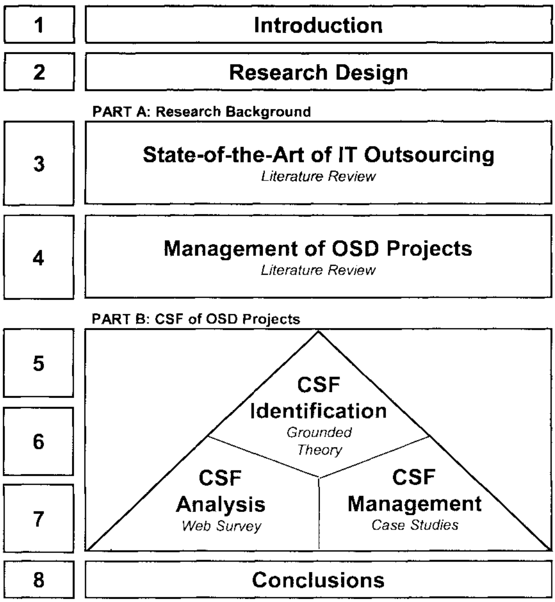


Figure 3: Thesis roadmap

The doctoral thesis is organized in eight chapters plus appendices. The initial two chapters deal with general aspects: Introduction and research design. The next two chapters analyze the state-of-the-art of IT outsourcing in general and the management of OSD projects in particular (Part A). The following three chapters present the core of the doctoral thesis at hand and deal with the identification, the analysis, and the management of CSF for OSD projects (Part B). The last chapter summarizes and discusses the research results of this thesis, and gives an outlook on possible impacts of IT offshoring on the German economy.

Chapter 2 describes the research design undertaken in this doctoral research project. For this purpose, the chapter first aims to give an overview of existing IS research paradigms and methods (*2.1 IS Research Paradigms and Methods*), as well as an introduction to CSF research (*2.2 CSF Research*). Afterward, the implemented research strategy, including the research paradigms and methods adopted and used within the research project, is presented (*2.3 Research Strategy*). Finally, in order to evaluate our research results, we introduce four evaluation criteria with regard to the trustworthiness of qualitative research (*2.4 Trustworthiness of the Research*).

Chapter 3 describes the background of IT outsourcing in general, introducing definitions for relevant terms (*3.1 Definition*), as well as giving information on the history (*3.2 History*) and the theoretical foundations of IT outsourcing (*3.3 Theoretical Foundations*). Next, the chapter presents a state-of-the-art analysis on IT outsourcing research in general. Here, key IS conferences and journals were examined in regard to publications dealing with IT outsourcing, IT offshoring, and OSD, resulting in an annotated bibliography in the field of IT outsourcing (*3.4 Annotated Bibliography*). Finally, the chapter gives an overview of the market (*3.5 Market*) and the benefits of IT outsourcing and related sub-fields (*3.6 Benefits*).

Chapter 4 presents a project phase model for OSD projects from the client perspective. The model is primarily based on a comprehensive literature review and differentiates between three project phases. Within the chapter, first, we outline the results of the conducted literature review (*4.1 Literature Review*). Next, we describe the developed OSD project phase model in its entirety (*4.2 Project Phase Model*), and then consider each individual project phase in more detail: Planning and analysis (*4.3 Planning and Analysis Phase*), decision and negotiation (*4.4 Decision and Negotiation Phase*), and implementation (*4.5 Implementation Phase*).

Chapter 5 defines a CSF model for OSD projects from a German-speaking client perspective. The model was developed through a comprehensive literature research, the conduction of 22 interviews with experts in the field of OSD, and the comparison of the developed CSF list with the content of related studies. Within the chapter, we first detail our research design (*5.1 Research Design*), present the results of the conducted literature review (*5.2 Literature Review*), as well as provide company-, project-, and person-related information on the interviewees (*5.3 Research Context*). Afterward, we introduce the two-dimensional CSF model, describe each of the identified CSF in more detail, and extend the initially developed CSF model by comparing it with similar models in related fields (*5.4 CSF Model*). Finally, we summarize our findings (*5.5 Discussion*).

Chapter 6 analyzes the relevance, the phase specificity, as well as the level of influence of the identified CSF for OSD projects by means of an online survey with 103 representatives of German-speaking companies. Within the chapter, we first detail our research design (*6.1 Research Design*). Second, we provide company-, project-, and person-related information on the participants of the online survey (*6.2 Research Context*). Third, we present the analysis results of our online survey, hereby focusing on the relevance, the phase specificity, and the level of influence in regard to our list of 29 CSF (*6.3 CSF Analysis*). Finally, we close the chapter with a summary of our findings (*6.4 Discussion*).

Chapter 7 analyzes the relevance and the management activities in regard to our list of 29 CSF for OSD projects within two organizational contexts. For this purpose, we conducted two in-depth case studies, one with a Swiss large-scale enterprise (PCS) and another with a German medium-sized enterprise (CCS). Within the chapter, we first detail our research design (*7.1 Research Design*). Next, we present the results of the pilot and the confirmatory case study (*7.2 Pilot Case Study* and *7.3 Confirmatory Case Study*). In an effort to identify similarities as well as differences between the two case studies, we compare the results of the pilot and the confirmatory case study to one another (*7.4 Comparison of the Case Studies*). Finally, we summarize our findings (*7.5 Discussion*).

Chapter 8 first outlines the answers to the research questions addressed (*8.1 Research Questions Addressed*) and evaluates the trustworthiness of the research results (*8.2 Trustworthiness*). Following, it discusses the limitations of the research project (*8.3 Limitations*) and summarizes the contributions of this thesis (*8.4 Contributions*). Finally, the chapter looks at possible future developments of the German IT offshoring market as well as potential impacts of these developments on the German economy (*8.5 Outlook*).

Chapter 2

Research Design

Chapter Contents: This chapter describes the research design undertaken in this doctoral research project. For this purpose, the chapter first aims to give an overview of existing IS research paradigms and methods (*2.1 IS Research Paradigms and Methods*), as well as an introduction to CSF research (*2.2 CSF Research*). Afterward, the implemented research strategy, including the research paradigms and methods adopted and used within the research project, is presented (*2.3 Research Strategy*). Finally, in order to evaluate our research results, we introduce four evaluation criteria with regard to the trustworthiness of qualitative research (*2.4 Trustworthiness of the Research*).

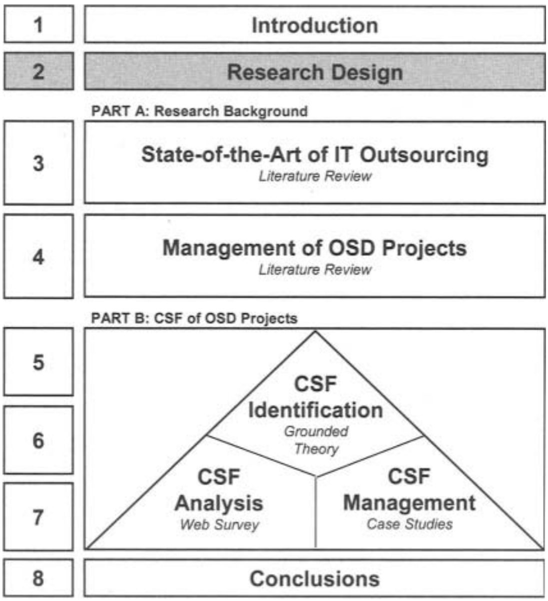


Figure 4: Thesis roadmap – Research Design (chapter 2)

2.1 IS Research Paradigms and Methods

According to Esteves (2004), research paradigms and methods are the "*set of activities a research community considers appropriate to the production of understanding (knowledge)*" (p. 67). Here, particularly the number of research paradigms has multiplied over the last two decades. Therefore, Creswell (2003) recommends giving a review on these paradigms before proposing a research framework.

2.1.1 Critical, Interpretive, and Positivist Research

Generally, "*all research presupposes a worldview, a collection of fundamental objects, natural laws and above all definitions of what research is*" (Esteves, 2004, p. 68). However, in contrast to natural sciences, not any worldviews or paradigms have yet been established in immature sciences (Kuhn, 1970). For this reason, doing research in a less developed science such as economics or psychology, a researcher has to develop his own paradigm (Esteves, 2004). Here, according to Khazanchi and Munkvold (2002), a paradigm is primarily characterized by the following three components:

- **Epistemology:** Theory of knowledge (e. g., objectivism, subjectivism)
- **Methodology:** Procedure of knowledge generation (e. g., experimental research, survey research)
- **Ontology:** Theory of existence (e. g., ontological assumptions)

The most popular classification of IS research paradigms differentiates among critical, interpretive, and positivist research (Baroudi and Orlikowski, 1991; Klein and Myers, 1999):

- **Critical research** "*assume[s] that social reality is historically constituted (...). Although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination.*" (Esteves, 2004, p. 68) According to Esteves (2004), the main task of critical research is seen in social critique, hereby shedding light on the restrictive conditions of the status quo.
- **Interpretive research** "*adopt[s] the position that our knowledge of reality is a social construction by human factors. In this view, value-free data cannot be obtained, since the enquirer uses his or her preconceptions in order to guide the process of enquiry, and furthermore the research interacts with the human subjects of the enquiry, changing the preconceptions of both parties*" (Walsham, 1995).

- **Positivist research** "*assume[s] that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments*" (Esteves, 2004, p. 68). In general, in an effort to gain a better understanding of a phenomenon, positivists attempt to test theory. According to Baroudi and Orlikowski (1991) as well as Esteves (2004), IS research can be classified as positivist if there was evidence of formal propositions, quantifiable measures of variables, the testing of hypothesis, or the induction of inferences about a phenomenon.

According to Heylighen (1999), in post-modern thinking, there is also the idea that different paradigms can coexist. Here, knowledge is seen as a set of perspectives.

2.1.2 Quantitative, Qualitative, and Mixed-/Multi-method Research

According to Esteves (2004), research methods are typically classified in qualitative and quantitative methods. Although the majority of researchers do either qualitative or quantitative research, an increasing number of researchers combine qualitative and quantitative methods. This type of research is referred to as mixed-/multi-method research.

In line with Creswell (2003, p. 19), the following table gives an overview of qualitative, quantitative, and multi-method research methods.

Table 1: Overview of different research methods

	Qualitative Research	**Quantitative Research**	**Mixed-/Multi-method Research**
Methods	• Emerging approaches • Open-ended questions • Text or image data Etc.	• Pre-determined approaches • Close-ended questions • Numeric data Etc.	• Both emerging and pre-determined approaches • Both open- and close-ended questions • Both qualitative and quantitative data Etc.

In the following, the three types of research mentioned above are described in more detail, hereby, primarily addressing the question under which circumstances the use of which research type is most appropriate.

2.1.2.1 Qualitative Research

In an effort to enable researchers to examine social and cultural phenomena, qualitative research was developed in the social sciences. Examples of qualitative methods are: Action research, case study research, and ethnography. Here, qualitative data sources include: Participant observation (fieldwork), interviews, questionnaires, documents, and texts, as well as the researcher's impressions.

According to Creswell (2003), the use of qualitative research methods is recommendable when the researcher "*positions himself or herself, collects participant meanings, focuses on a single concept or phenomenon, brings personal values into the study, studies the context or setting of participants, validates the accuracy findings, makes interpretations of the data, creates an agenda for change or reform, [and] collaborates with the participants*" (p. 19).

2.1.2.2 Quantitative Research

Quantitative research has its origin in the natural sciences. In this context, well accepted methods are: Survey methods, laboratory experiments, formal methods, and numerical methods (Esteves, 2004).

Creswell (2003) recommends the use of quantitative methods, as the researcher "*tests or verifies theories or explanations, identifies variables to study, relates variables in questions or hypotheses, uses standards of validity and reliability, observes and measures information numerically, uses unbiased approaches, [and] employs statistical procedures*" (p. 19).

2.1.2.3 Mixed-/Multi-method Research

In regard to the use of more than one research method within one research project, in particular the terms "mixed-method research" and "multi-method research" can be found in literature. Even though, the terms are often used interchangeably, Esteves (2004) emphasizes the need to distinguish between these terms. Here, Morse (2003) provides the following definitions for mixed- and multi-method research:

- **Mixed-method research** "*is the incorporation of various qualitative and quantitative strategies within a single project that may have either a qualitative or quantitative theoretical drive. The 'imported' strategies are supplemental to the major or core method and serve to enlighten or provide clues that are followed up within the core method.*" (p. 190)

- **Multi-method design** "*is the conduct of two or more research methods, each conducted rigorously and complete in itself, in one project. The results are then triangulated to form a complete whole.*" (p. 190)

According to Brewer and Hunter (2003), particularly the multi-method research approach "*is a strategy for overcoming each method's weaknesses and limitations by deliberately combining different types of methods within the same investigations*" (p. 578).

Table 2: Multi-method research designs (examples)

Sequence	**Priority**	**Interpretation**
Simultaneous	QUAL+qual	Qualitative-driven, and qualitative simultaneous design
	QUAN+quan	Quantitative-driven, and quantitative simultaneous design
	QUAL+quan	Qualitative-driven, and qualitative and quantitative simultaneous design
	QUAN+qual	Quantitative-driven, and quantitative and qualitative simultaneous design
Sequential	QUAL→qual	Qualitative-driven project, followed by a second qualitative project
	QUAN→quan	Quantitative-driven project, followed by a second quantitative project
	QUAL→quan	Qualitative-driven project, followed by a second quantitative project
	QUAN→qual	Quantitative-driven project, followed by a second qualitative project

Morse (2003) mentions that multi-method research can be carried out in manifold combinations (compare Table 2) with regard to the implementation sequence ("+" indicates a simultaneous application of the selected research methods, "→" indicates a sequential application process) and the priority given to the qualitative and quantitative research methods ("QUAL" indicates a qualitative-driven research design, "QUAN" indicates a quantitative-driven design).

2.2 CSF Research

According to a study by Esteves (2004), the CSF approach has been established and popularized over the last 30 years by a number of researchers, particularly Rockart (1979). Today, the approach is increasingly used by consultants and IS departments as a means of support to IS strategic planning (Esteves, 2004). Ramaprasad and Williams (1998) underline this position by stating that "*there is a great deal of attention devoted to the concept in the IS literature as many argue that the use of CSF can have a major impact on the design, development, and implementation of IS*".

2.2.1 Definition

In literature, several definitions of CSF exist. Representing one of the most frequently cited definitions, Rockart (1979) uses ideas from Daniel (1961) and Anthony, Dearden, and Vancil (1972) in defining CSF as "*the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization*" (p. 85). Consequently, Rockart (1979) stresses, that these particular areas of activity should be constantly and carefully managed by a company.

In a similar fashion, Bruno and Leidecker (1984) define CSF as "*those characteristics, conditions or variables that, when properly sustained, maintained, or managed, can have a significant impact on the success of a firm competing in particular industry*", while Pinto and Slevin (1987) regard CSF as "*factors which, if addressed, significantly improve project implementation chances*" (p. 22). According to Esteves (2004), however, both of these definitions fail to address the comprehensive concept proposed by Rockart (1979), which seeks to identify an ideal match between environmental conditions and business characteristics for a particular company.

Within the field of strategic management, the definition of key success factors (KSF) is closely related to the CSF concept. In this context, Ellegard and Grunert (1993) define KSF as a qualification or resource that a company can invest in, which, in turn, accounts for a significant part of the observable differences in perceived value and/or relative costs in the companies' relevant markets. In literature, the terms CSF and KSF are often alternately used.

Within this doctoral thesis, we define **CSF** as those factors which, if addressed, significantly improve the chances of a successful project implementation (compare Pinto and Slevin, 1987).

2.2.2 Evolution

Research on CSF can be traced back to 1961, when Daniel (1961) first discussed "success factors" in management literature. In a broad approach, he focused on industry-related CSF which are relevant for any company in a particular industry.

In 1972, Anthony et al. (1972) went a step further by emphasizing the need to tailor CSF to both a company's particular strategic objectives and its particular managers. Here, management planning and control systems are responsible for reporting those CSF that are perceived by the managers as relevant for a particular job and industry.

Combining the perspective of both Daniel (1961) and Anthony et al. (1972), Rockart (1979) described a study on three organizations, which confirmed that companies in the same industry may exhibit different CSF. The reasons for such a constellation are differences in geographic location and strategies among other factors. Nevertheless, Rockart (1979) was also able to identify analogies between the CSF lists of the three examined organizations: "*It is noticeable that the first four factors on the mature clinic's list also appear on the other two lists. (...) These, it can be suggested, are the all-encompassing industry-based factors. The remaining considerations, which are particular to one or the other of the practices but not to all, are generated by differences in environmental situation, temporal factors, geographic location, or strategic situation.*" (p. 87).

In line with his initial study, Rockart (1982) gathered data in regard to IS executives. This data indicated that executives share a limited number of CSF. "*Each executive (...) lists some, but not all, of the CSF gathered from the sample as a whole*" (Zahedi, 1988, p. 190). The remaining differences were linked to organizational aspects as well as the time pressure facing the particular manager at the time the data was collected (Rockart, 1982).

Furthermore, Rockart (1979) stressed that his approach did not attempt to address information needs related to the field of strategic planning. Instead, his CSF approach concentrates on information needs for management control and seeks to identify data which can be used to monitor and improve existing areas of business. In this context, Rockart (1979) follows Anthony's (1965) categorization of management activities into operational control, management control and strategic planning. However, it must be emphasized that Rockart (1979) limited his approach to management control which was precisely defined by Anthony (1965) as "*the process of ensuring that resources are obtained and used effectively toward the attainment of corporate goals*".

Today, Rockart's (1979) CSF approach is particularly relevant within the limits of project management and IS implementation and therefore often used by IS executives. This is confirmed by Ramaprasad and Williams' (1998) study, in which the results from 263 responses indicate the major areas in which the CSF approach is utilized: Project management (63.49 percent), IS implementation (49.21 percent), and requirements (47.62 percent).

2.2.3 Dimensions

Reflecting the progress in CSF research, several different CSF dimensions have emerged in literature over the course of the years. In the following, the most common dimensions according to Esteves (2004) will be reviewed.

2.2.3.1 Hierarchy vs. Group of CSF

Rockart (1979) defines a specific hierarchy of CSF which is primarily based upon the organizational level at which the individual strategic issues are discussed. In line with this particular approach, CSF can be addressed on either an industry, corporate, or sub-organizational level, thereby forming a certain type of CSF hierarchy within the organization (Rockart and Van Bullen, 1986). While a pre-defined level structure is dominant within the hierarchy suggested by Rockart (1979), Barat (1992) argues that the hierarchy of CSF may also be built upon logical dependencies such as those existent between business aims and the factors influencing these aims.

In addition, the hierarchical approach is extended to include groups of CSF. Here, either CSF for a group of organizations belonging to the same particular industry (industry CSF) or CSF for a group of managers in a particular role belonging to different organizations (occupational CSF) are identified. As a result, the idea of generic CSF for these particular groups is addressed (Esteves, 2004).

2.2.3.2 Temporary vs. Ongoing CSF

According to Ferguson and Khandewal (1999), CSF can be of either a temporary or ongoing nature. An example of an ongoing CSF is the existence of a project champion in top management, thereby influencing all phases of the project's implementation. On the contrary, the definition of the project scope represents a temporary CSF which is only regarded critical for a certain period of time. In this context, Ferguson and Khandewal (1999) note that all CSF can be defined in a way that makes them temporary. However, CSF may differ in their individual degree of temporality, some spanning a larger timeframe than others. Consequently, the key is to recognize their individual relevance for different stages within a project's lifecycle.

2.2.3.3 Internal vs. External CSF

CSF can further be distinguished by the dimension of which they are internal or external to the particular organization or unit in which they are applied. Arce and Flynn (1997) state that "*an internal CSF has related actions taken within the organization, while an external CSF has related actions performed outside the organization*" (p. 312). As a result, internal CSF are linked to issues within a manager's range of control, whereas external CSF may not be exclusively controlled by the manager.

According to Rockart (1979), the relevance of this CSF dimension is particularly high when determining the proper sources of information within a process of data collection.

2.2.3.4 Building vs. Monitoring CSF

Building and monitoring CSF refer, on the one hand, to the amount of control on the part of the management and, on the other hand, to the monitoring or building nature of the actions taken. According to Arce and Flynn (1997), "*a monitoring CSF is concerned only with monitoring an existing organizational situation [whereas] a building CSF is concerned with changing the organization or with future planning*" (p. 312). For instance, the maintenance of technological leadership would be a CSF which a company could build and control, while changing consumer demographics would represent a CSF which needs to be monitored, but not controlled (Esteves, 2004).

In a similar approach Rockart and Van Bullen (1986) distinguish between building CSF, used to achieve certain goals or implement a certain degree of change in performance, and monitoring CSF, used to monitor key issues over a larger time frame. Such long term monitoring is often closely related to the strategic and tactical CSF dimension (see below).

2.2.3.5 Strategic vs. Tactical CSF

This dimension focuses on the type of planning which takes place within an organization, thereby differentiating between strategic and tactical CSF. According to Esteves (2004), while strategic factors seek to identify *which* goals are to be achieved, the tactical factors describe possible alternatives in regard to *how* these goals can be met. Strategic factors, although based on opportunities, often contain a great amount of risk and, therefore, require long term planning primarily executed by senior executives. On the contrary, tactical factors deal with resources required to reach the goals described on the strategic level and only call for a short or medium term planning effort, most often performed by the middle management.

According to Ward (1990), "*there will normally be a mixture of tactical and strategic CSF. If they are all strategic, the business might founder in the short term while everybody concentrates on the blue skies ahead. Equally, if all CSF are tactical, the business might burn out like a super-nova.*" (p. 117)

2.2.3.6 Perceived vs. Actual CSF

The identified CSF in one organization do not necessarily apply to all other organizations. Rather, each individual company must align their CSF in accordance with their own specific goals and needs. This is where the final dimension comes into play, distinguishing between perceived and actual CSF. Initially proposed by Ellegard and Grunert (1993), the concept of perceived versus actual CSF could bring forth useful implications by shedding light on the knowledge concerning discrepancies between actual and perceived CSF. Experience in this field could, for instance, lead to more stable strategy formulations and implementations.

Although the measuring of actual CSF is not possible, Dess and Robinson (1984) suggest a more frequent confrontation of key decision makers with these factors. By doing this, decision makers might win insight on their perceptions in regard to both truly relevant CSF and those which are only perceived as such.

2.2.4 CSF Identification

In order to identify CSF, Esteves (2004) states that a wide array of research methods can be used (compare Table 3): For instance, the realization of case studies (e. g., Sumner, 1999), group interviews (e. g., Khandewal and Miller, 1992), structured interviews (Rockart and Van Bullen, 1986), as well as the analysis of relevant literature (e. g., Esteves and Pastor, 2000). According to Shah and Siddiqui (2002), the most frequently used method to identify CSF is the realization of a questionnaire.

Table 3: Research methods used for CSF identification

Research Method	Examples
Action research	Jenkins, Kock, and Wellington (1999)
Case studies	Gibson, Holland, and Light (1999), Sumner (1999)
Delphi technique	Atthirawong and McCarthy (2001), Brancheau, Janz, and Wetherbe (1996)
Group interviewing	Khandewal and Miller (1992)
Literature review	Esteves and Pastor (2000), Umble and Umble (2001)

Multivariate analysis	Dvir, Lipovetsky, Shenhar, and Tishler (1996)
Scenario analysis	Barat (1992)
Structured interviewing	Rockart and Van Bullen (1986)

2.2.5 CSF Relevance

Pinto and Prescott (1988) argued that "*the majority of the studies in the critical success factor research stream have been theoretical and have assumed a static view of the importance of various factors over the life of a project. In other words, a critical success factor was assumed to have the same degree of importance throughout the life of a project*" (p. 5). After having examined the criticality of CSF throughout the lifecycle of a project, they came to the conclusion that the degree of criticality of a CSF is subject to change during the different stages of a project lifecycle.

Although the number of studies examining the relevance of CSF in regard to the individual phases of the project lifecycle has increased, most studies still remain limited to the sole identification of these CSF, not addressing their individual degree of relevance at all. Out of the more comprehensive studies addressing both the identification and the relevance, two different approaches can be found: The approach implemented by Pinto and Prescott (1988), for instance, is based upon the same set of CSF at all times, while examining their individual degree of criticality along the different project phases. In contrast, other studies have chosen to define different sets for CSF for each project phase. Although differently executed, both concepts generally tend to refer to the same set of CSF.

According to Esteves (2004), in order to gain insight on CSF relevance, researchers most frequently use case studies as well as surveys based on interviews. Most of the time, participants are asked to either create a list of the most relevant CSF for each project phase or examine the relevance of individual CSF, using a scale which indicates a low, normal, or high relevance.

2.2.6 Benefits

According to Rockart (1979, p. 87), the following benefits exist for managers when applying the CSF approach:

- "*The process helps the manager to determine those factors on which he or she should focus management attention. It also helps to ensure that those significant factors will receive careful and continuous management scrutiny.*"

- *"The process forces the manager to develop good measures for those factors and to seek reports on each of the measures."*

- *"The identification of CSF allows a clear definition of the amount of information that must be collected by the organization and limits the costly collection of more data than necessary."*

- *"The identification of CSF moves an organization away from the trap of building its reporting and information system primarily around data that are 'easy to collect'. Rather, it focuses attention to those data that might otherwise not be collected but are significant for the success of the particular management level involved."*

- *"The process acknowledges that some factors are temporal and that CSF are manager specific. This suggests that the IS should be in constant flux with the new reports being developed as needed to accommodate changes in the organization's strategy, environment or organization structure. Rather than changes in an IS being looked on as an indication of 'inadequate design', they must be viewed as an inevitable and productive part of IS development."*

However, according to Esteves (2004), the CSF concept itself can be used for more than only IS design. This is also reflected by current studies, suggesting a number of additional areas of assistance to the management process.

2.3 Research Strategy

In this section, the research strategy of the doctoral thesis at hand is outlined. First, we present the research goals and define the research questions. Next, we briefly introduce the applied research paradigm. Finally, we describe the research approach followed.

2.3.1 Research Objectives and Questions

The doctoral thesis addresses the following research questions (compare section 1.2):

1. **CSF Identification:** Which CSF do companies have to consider when implementing OSD projects?

2. **CSF Analysis:** Which of the identified CSF are particularly relevant in which OSD project contexts, which of these CSF are specific for which OSD project phases, and in which time frame can these CSF be influenced?

3. **CSF Management:** How can companies influence the identified CSF in practice?

By addressing these questions, we aim to contribute to a deeper understanding of successful project management in the realm of OSD.

2.3.2 Research Paradigm

Developing this doctoral research project, we decided to adopt the interpretive research paradigm. This paradigm assumes that "*our knowledge of reality is gained only through social constructions such as languages, consciousness, shared meanings, documents, tools, and other artifacts*" (Klein and Myers, 1999, p. 69).

Characteristic for interpretive research is that dependent and independent variables are not predefined and that phenomena are explained through the meanings assigned to them by people (Baroudi and Orlikowski, 1991). According to Walsham (1993), the purpose of the interpretive research paradigm is to create an understanding of the context of IS and the correlation between IS and its context. Here, the research context is neither taken for granted, nor is it considered to be external (Boland, 1993).

2.3.3 Research Approach

We agree with Robey (1996) that "*theoretical foundations for research and specific research methods are justified by research aims, or purposes. They should not be chosen be-*

cause they conform to a dominant paradigm or because the researcher believes in their intrinsic value. Rather theory and method are justified on pragmatic grounds as appropriate tools for accomplishing research aims" (p. 406). Therefore, we propose a research framework (compare Figure 5) that combines both qualitative and quantitative research methods, with a predominance of qualitative ones. According to Mingers (2001), this type of research is defined as multi-method research.

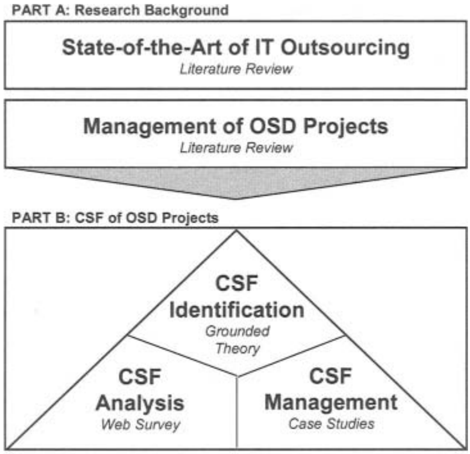


Figure 5: Multi-method research framework

In the field of IS, a general trend towards multi-method research can be observed (Mingers, 2001). Here, qualitative and quantitative research methods need not be seen as polar opposites (Van Maanen, 1983). Rather, according to Bonoma (1985), the application of different methods for data collection provides a wider range of coverage that may result in a deeper understanding of the unit under study. In addition, by using multiple research methods, the cross-validation of the data obtained by the different methods (method triangulation) can increase the robustness of the research results.

Table 4 presents the research methods applied in the different phases of the doctoral research project. In this table, a bullet indicates that we applied the respective method within the corresponding phase. Taking into account the research questions and the research context, we believe that these methods are appropriate for the research project.

Table 4: Research methods applied in the different research phases

Research phase	**Research design**	**Research method**						
		Qualitative					**Quantitative**	
		Literature Review	Expert Interviews	Grounded Theory	Case Study	Coding Procedure	Web Survey	Statistical Analysis
Research Background	QUAL	●						
CSF Identification	QUAL→qual	●	●	●		●		
CSF Analysis	QUAN+qual	●					●	●
CSF Management	QUAL→qual	●			●	●		

According to Morse's (2003) typology, the presented multi-method research framework primarily follows the "QUAL→qual" design type. In this context, we would like to highlight the complexity of our research framework, which includes a total of seven different research methods (five qualitative and two quantitative ones).

2.4 Trustworthiness of the Research

At present, there is a great deal of discussion on the validity and the reliability of qualitative research (Esteves, 2004). On the one hand, some researchers argue that these traditional measures are not applicable to qualitative research, hereby referring to the uniqueness of this type of research. On the other hand, some researchers call for the application of the same measures for qualitative and quantitative research when evaluating the trustworthiness of the research. However, according to Gibbs (2002), researchers agree that the issue of trustworthiness may not be neglected in any case.

Describing the criteria frequently used for evaluating qualitative studies, Guba and Lincoln (1985) determine that quality depends on the trustworthiness of the study and its results. The authors agree with other researchers that conventional criteria are not appropriate for qualitative studies and, therefore, propose the following criteria as an alternative:

- **Credibility**
- **Transferability**
- **Dependability**
- **Confirmability**

Following the four trustworthiness criteria listed above, the doctoral thesis at hand will be evaluated against these criteria in chapter 8. In the subsequent sections, each of these evaluation criteria will be described in more detail.

2.4.1 Credibility

The evaluation criterion credibility refers to the accuracy of the research results (Guba and Lincoln, 1985) and aims to ensure that the unit under study was accurately described (Esteves, 2004). In an effort to maximize credibility of research, Guba and Lincoln (1985) give the following recommendations: Increase the likelihood for credible research results by prolonged engagement, persistent observation, and triangulation, provide an external check on the inquiry process by stakeholder debriefing, refine the emerging results by negative case analysis, as well as test the results directly by verifying them with participants.

In regard to maximizing research credibility, a frequently used technique is triangulation. Patton (1987) distinguishes between four types of triangulation:

1. **Data triangulation:** Combination of different data sources.

2. **Investigator triangulation:** Combination of different evaluators.

3. **Theory triangulation:** Combination of different perspectives on the same data set.

4. **Methodological triangulation:** Combination of different methods.

With regard to data triangulation, Yin (1994) provides a list of possible data sources: Interviews, analysis of documents, direct observation, etc. Extending Yin's (2004) work, Bratthall and Jorgensen (2002) developed a list of practical guidelines for data triangulation.

2.4.2 Transferability

According to Esteves (2004), Guba and Lincoln's (1985) trustworthiness criterion transferability represents an "*alternative concept to the logical positivist's generalizability construct (or external validity)*" (p. 82). The use of the term transferability proposed by Guba and Lincoln (1985) implies the generalizability of the results to other circumstances, populations, settings, situations, etc. In this context, the idea beyond the generalizability of qualitative research results is usually not based "*on explicit sampling of some defined population to which the results can be extended, but on the development of a theory that can be extended to other cases*" (Maxwell, 1996, p. 97).

With regard to the transferability of research results, we agree with Esteves (2004) that this "*is mostly verified through 'thick' description*" (p. 82). Here, in an effort to facilitate transferability, the researcher provides an as complete data base as possible. In regard to the generalization of case study research, Yin (1994) differentiates between analytic and statistical generalization. In contrast to the statistical generalization, in which "*an inference is made about a population (or universe) on the basis of empirical data collected about a sample*" (Yin, 1994, p. 30), in the analytical generalization, "*the researcher is striving to generalize a particular set of results to some broader theory*" (Yin, 1994, p. 36).

In line with Esteves (2004), we believe that the use of a multi-method approach is "*perhaps the most defensible indicator of transferability*" (p. 82). By applying different research methods and then comparing the different results to see if they converge, researchers can enhance the robustness, and hereby, the transferability of their research.

2.4.3 Dependability

The criterion dependability examines the stability of the research results in time (Esteves, 2004). According to Guba and Lincoln (1985), to fulfill this criterion, researchers have to account for changes in the unit under study, the design, or the methodology.

In an attempt to assess the degree of dependability, Guba and Lincoln (1985) recommend an accurate and adequate documentation of changes, surprises, and so forth in the phenomenon under study. According to Esteves (2004), the following questions might help researchers to produce dependable research results: "*If change is to be expected, has it been thoroughly described? (...) have any unexpected but material occurrences which might affect our variables of study been identified and documented with adequate detail?*" (p. 82).

To establish dependability, Esteves (2004) advises researchers to continuously refine their understanding of the research setting, hereby trying to account for changes, surprises, and the like. However, Guba and Lincoln (1985) admit that dependability is difficult to achieve in an ever changing social world.

2.4.4 Confirmability

According to Guba and Lincoln (1985), with regard to evaluating the trustworthiness of research, the criterion confirmability is a synonym for objectivity. In this context, researchers need to show that their results "*are rooted in contexts and persons apart from the evaluator and are not simply figments of the evaluator's imagination*" (Esteves, 2004, p. 83). To establish evidence for this criterion, Esteves (2004) proposes two distinct approaches:

- **Via adopting more traditional notions of credibility:** "Does the research show a smooth logical progression?", "Does the research study evidence this progression?", etc.

- **Via providing some evidence for the lack of the researcher's own bias:** "Are the research results verified, for instance, by member checks?", "Are the results confirmed by other researchers from the same or a similar field?", etc.

Following one or even both of these approaches, researchers can improve the confirmability or objectivity of their research.

Part A: Research Background

In an effort to provide a substantiated basis for the examination of the CSF of OSD projects, the **first part** of the doctoral thesis at hand deals with the state-of-the-art of IT outsourcing in general (compare light gray highlighted area in Figure 6) as well as the management of OSD projects in particular (compare dark gray highlighted area in the figure below).

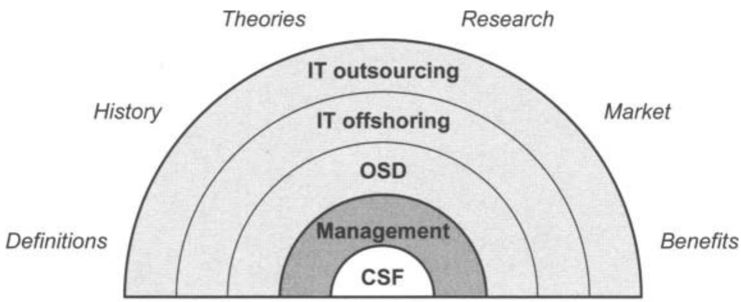


Figure 6: Classification of part A in the research context

In order to place our research in context, chapter 3 first discusses the **state-of-the-art of IT outsourcing** in general. Here, we aim to delimit OSD to other fields of IT outsourcing, for instance, by defining relevant terms. In addition, the chapter analyzes the state-of-the-art of research in the field of IT outsourcing, thereby clarifying the demand for further research with regard to IT offshoring and OSD. Furthermore, by presenting an overview of the existent IT service provider landscape as well as relevant market segments, we give background information on the basic conditions of the German IT outsourcing market.

In an effort to provide a management framework which enables the classification of relevant management actions in the OSD context, chapter 4 deals with the **management of OSD projects** in particular. Here, we identified and systematically structured management activities, which need to be considered within an OSD project, as well as supportive methods for these activities, resulting in a three-phase OSD project phase model. The comprehensive list of management activities within this model also clarifies the demand for the identification and the examination of those factors significantly influencing the successful implementation of an OSD project.

Chapter 3

State-of-the-Art of IT Outsourcing

Chapter Contents: This chapter describes the background of IT outsourcing in general, introducing definitions for relevant terms (*3.1 Definition*), as well as giving information on the history (*3.2 History*) and the theoretical foundations of IT outsourcing (*3.3 Theoretical Foundations*). Next, the chapter presents a state-of-the-art analysis on IT outsourcing research in general. Here, key IS conferences and journals were examined in regard to publications dealing with IT outsourcing, IT offshoring, and OSD, resulting in an annotated bibliography in the field of IT outsourcing (*3.4 Annotated Bibliography*). Finally, the chapter gives an overview of the market (*3.5 Market*) and the benefits of IT outsourcing and related sub-fields (*3.6 Benefits*).

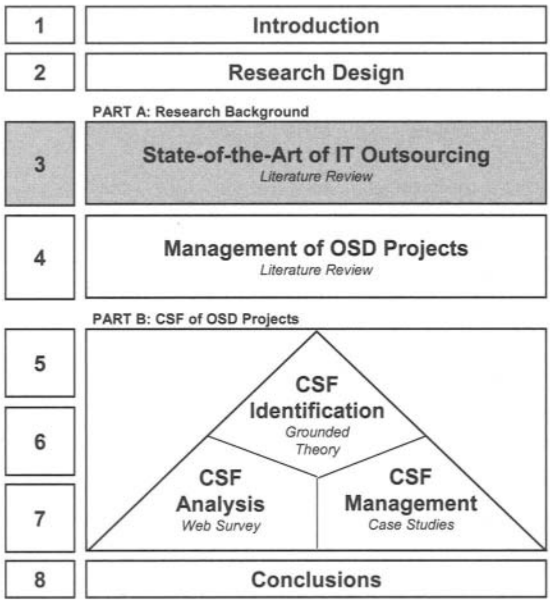


Figure 7: Thesis roadmap – State-of-the-Art of IT Outsourcing (chapter 3)

3.1 Definition

Carrying out research in the field of IT outsourcing and hereby concentrating on OSD, we decided to structure this as well as the following sections along the hierarchy of outsourcing research fields illustrated in Figure 8. Here, IT offshoring can be regarded as a sub-field of IT outsourcing, and, in turn, OSD can be viewed as a sub-field of IT offshoring.

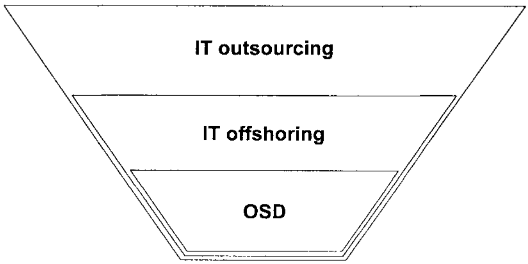


Figure 8: Hierarchy of IT outsourcing research fields

In regard to the hierarchy presented above, the term IT outsourcing *in a broad sense* is defined as IT outsourcing including IT offshoring and OSD, whereas IT outsourcing *in a narrow sense* refers to IT outsourcing excluding IT offshoring and OSD. Analogous to this definition, the term IT offshoring *in a broad sense* (*in a narrow sense*) is defined as IT offshoring including (excluding) OSD.

In the following, pivotal terms in the field of IT outsourcing are defined. Alongside IT outsourcing itself, IT offshoring as well as OSD is introduced. At this point, it must be emphasized that the three terms examined are related to one another as described above.

According to Allweyer et al. (2004), the word "outsourcing" finds its roots in the words "outside", "resource", and "using". Generally speaking, it reflects the use of external agents to perform one or more organizational activities (e. g., purchasing of a service), and is therefore not solely specific to IS. In addition, Schwarz (2005a) argues that the aspect of in-house performance of a specific activity prior to outsourcing that same activity must also be considered, as some start-up companies speak of "outsourcing" functions which they have never performed themselves. Nevertheless, the term is currently in vogue in the IS field of research, applying to everything from the use of contract programmers to third party facilities management (Dibbern, Goles, Hirschheim, and Jayatilaka, 2004). In IS literature, **IT outsourcing** has distinctly been defined as follows:

"*...the practice of turning over the planning, management and operation of certain functions to an independent third party, under the terms of a formalized service level agreement. It is usually, but not always, characterized by the transfer of assets from the customer to the service provider.*" (Sparrow, 2003, pp. 1-2)

"*...turning over part or all of an organization's IT/IS functions to external service providers.*" (Chen, Lin, and Tu, 2002, p. 101)

"*...the third party provision of IT products and services.*" (Hackney and Hancox, 1999, p. 1)

"*...business practice in which a company contracts all or part of its information systems operations to one or more outside information service suppliers.*" (Gebelt, Hu, and Saunders, 1997, p. 288)

"*...a decision taken by an organization to contract-out or sell the organization's IT assets, people and/or activities to a third party vendor, who in exchange provides and manages assets and services for monetary returns over an agreed time period.*" (Kern, 1997a, p. 37)

"*...the handing over to a third party management of IT/IS assets, resources, and/or activities for required results.*" (Kern and Willcocks, 1998, p. 2)

The concept of application service providing (ASP) represents a modified form of IT outsourcing and can often be found in IS literature. An ASP consortium, founded in 1999, defines ASP as follows: "*An [application service provider] deploys, hosts and manages access to a packaged application to multiple parties from a centrally managed facility. The applications are delivered over networks on a subscription basis.*" (Knolmayer, 2000, p. 443)

In contrast to traditional IT outsourcing, the ASP concept is only sparsely, if at all, tailored to meet the individual client's request. As a result, application service providers develop their applications in alignment with specific target groups (Knolmayer, 2000).

The concept of **IT offshoring**, also referred to as offshore outsourcing, can be regarded as a sub-category of IT outsourcing. While the classic outsourcing of IT functions requires an external provider situated in the same country as the client, Haried and Nazareth (2005) define IT offshoring as "*a term used in the United States to refer to IT outsourcing that occurs outside the United States.*" (p. 2664)

In a more general fashion, without mentioning a specific country, Adelakun and Jennex (2003) suggest the following definition: "*Offshore outsourcing is the transference of an Information Technology (IT) function, from a client company to a supplier organization located outside the borders of the client company's country.*" (p. 12)

Further definitions, frequently found in IS literature, include the following:

"*...sharing or transferring of responsibility for (...) IS services to a third-party vendor who operates from a foreign country.*" (Lado, Parzinger, and Ramarapu, 1997, p. 27)

"*...an activity where client firms outsource IT activities to external service providers in other countries.*" (Currie, Guah, and Khan, 2003a, p. 996)

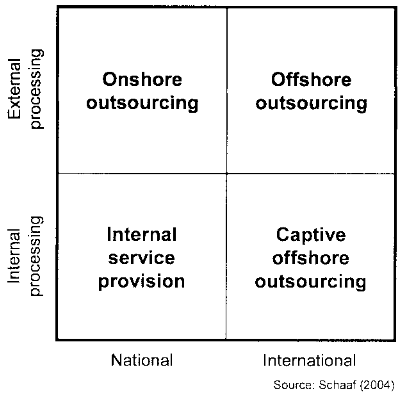


Figure 9: Types of IT outsourcing/offshoring

According to Schaaf (2004), IT offshoring refers to the relocation of IT activities and processes to foreign countries, mainly low-wage countries. The different types of IT offshoring are illustrated in the right column of the matrix presented in Figure 9. In many cases, offshoring projects are performed by external service providers (offshore outsourcing). However, in some instances, offshore services can also be rendered by subsidiaries, joint ventures or strategic alliances (captive offshore outsourcing).

The doctoral thesis at hand follows Schaaf's (2004) definition of IT offshoring. Consequently, a subsidiary or joint venture is considered an option for the performance of the outsourced IT services. In addition, depending on the distance between the origin and destination country, IT offshoring can be categorized into offshoring and nearshoring. From the perspective of a German-speaking company, countries such as India, China, or other similarly distant regions are regarded as offshore countries (Mayer and Söbbing, 2004), whereas potential nearshore countries include the Baltic States, the Czech Republic, Poland, or Romania, again observed from a German point of view (Prehl, 2005).

In practice, several different modifications of IT outsourcing or offshoring have emerged. This development can primarily be traced back to the wide array of different requirements companies pose during an outsourcing project. In order to create a consistent understanding of the relevant terms in the field of IT outsourcing, on the one hand, while drawing a clear line between the different kinds of concepts, on the other hand, Amberg and Wiener (2004a) distinguish between three dimensions of outsourcing forms (compare Figure 10):

- **Service:** The associated forms specify which IT services are being relocated (*Which services shall be outsourced?*).
- **Scope:** The associated forms reflect the degree to which IT services are being outsourced (*To what extent shall the selected services be outsourced?*).
- **Organization:** The associated forms describe alternate structures for the implementation of an outsourcing project (*How shall the selected services be outsourced?*).

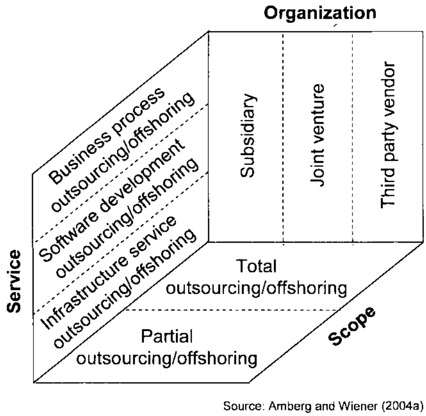


Figure 10: IT outsourcing/offshoring dimensions and forms

With regard to the service dimension, **OSD** represents one specific form of IT offshoring, and primarily encompasses the offshoring of application development. In this context, individual and standard software as well as web-based and e-business applications have been subject to OSD projects in recent years.

Mani and Rajkumar (2001) define OSD as follows: "*Outsourcing of the application initiative for new applications development, enhancement or maintenance of existing applications is called applications outsourcing. Offshore development of software occurs when the supplier is from a different country than the company outsourcing its development.*" (p. 63)

Gopalakrishnan, Kochikar, and Yegneshwar (1996) go a step further and take into account the characteristical division of work within an OSD project: "*...[offshore software] development is done predominantly at offshore development centers, with a small team being stationed at the customer's site ('onsite'). The offshore team typically handles most of the coding and unit testing, while the onsite team's responsibility primarily consists of customer interfacing, integration and system testing.*" (p. 392)

Within this doctoral thesis, we define **OSD** as the relocation of software development services to an IT service provider which is located in a foreign country. In this context, it is not relevant if the foreign provider represents a third-party vendor, a subsidiary, or a joint venture (compare Schaaf, 2004).

3.2 History

According to Dibbern et al. (2004), the outsourcing of information systems initially consisted of an external vendor providing a single basic function to the customer. This could for instance include the operational control over the customer's technology assets, primarily a data center.

In 1963, **IT outsourcing** began to evolve when Blue Cross of Pennsylvania turned over their data processing services and IS employees to Electronic Data Systems (EDS) in a pioneering agreement, which marked the first time a large company handed over their complete data processing department to a third party.

Despite constant growth in the 1970s, most notably due to standardized software packages and a lack of qualified IT staff, IT outsourcing did not receive real acceptance until the mid 1980s, when EDS signed contracts with Continental Airlines, First City Bank, and Enron. All three of these deals were financially motivated, as EDS took an equity position in its clients and paid for certain software products, which it thought could be expanded and used to allure new clients.

According to Dibbern et al. (2004), IT outsourcing ultimately stepped into the limelight in 1989 when Eastman Kodak engaged in a strategic alliance with IBM, Digital Equipment Corporation, and Businessland. Although a number of outsourcing deals had been concluded in the years prior to the Kodak deal, none of them generated as much interest as this particular strategic alliance did. In consequence, well known companies worldwide soon followed in the footsteps of Kodak, indicating the global rise of IT outsourcing. This newborn trend towards outsourcing was further supported by the concept of core competences, publicized by Hamel and Prahalad (1990). The idea of a company focusing solely on its core competences simultaneously implicated that corporate functions outside the limits of these competences were regarded as less important and, therefore, analyzed in terms of their suitability for outsourcing (Schwarz, 2005). In consequence, many internal IT functions, which were viewed by managers as a necessity rather than a tool for gaining a competitive edge, became top candidates for outsourcing arrangements. Managers were less concerned about the technical details of the IT infrastructure than with the final outcome of their IT investments and its impact on the organization's efficiency and effectiveness (Sparrow, 2003). The concept of outsourcing IT activities began to prosper.

IT outsourcing has left the traditional one vendor – one client structure behind and evolved to complex arrangements integrating multiple vendors and clients. Dibbern et al. (2004) describe the present role of IT outsourcing as follows: "*Outsourcing now embraces significant partnerships and alliances (...) where client and vendor share risk and reward. The deals* *have moved beyond simple cost-savings to include value-based outsourcing, equity-based outsourcing, eBusiness outsourcing and business process outsourcing.*" (p. 8)

IT offshoring first started to make waves in the 1980s, as several companies began to relocate their IT activities to foreign, mainly low-wage countries. In the mid 1990s, this process evolved significantly, most notably due to both the significant differences in labor costs (e. g., Schaaf, 2004) and a lack of qualified staff in the booming IT industry (e. g., BITKOM, 2005).

In the United States, primarily labor-intensive aspects of software development were initially outsourced to nearby countries like Mexico or Canada. Soon thereafter, countries such as Ireland, Israel, or India emerged as attractive destination countries for IT offshoring, as the costs for qualified IT personnel were low and the working language was English (Arora and Gambardella, 2004). At present, India occupies more than 450.000 employees within the IT sector, boasting an annual growth rate of 30 to 40 percent in the country's IT industry (BITKOM, 2005).

Regarding the total amount of investments in offshoring services, Germany is momentarily about three years behind the United States and the UK (Buchta et al., 2004). Although, several German companies have engaged in IT offshoring in recent years, the concept never really made waves within the nation's economy (BITKOM, 2005). One reason for this was the country's decision to fight the lack of qualified IT staff by granting green cards to IT experts from foreign countries in the 1990s, rather than considering IT offshoring. Since then, however, things have changed, as IT processes have constantly become more standardized. As a result, a company's competences in the field of IT are not necessarily seen as a tool for gaining an edge over the competition any more, and have therefore become subject to IT offshoring deals (BITKOM, 2005).

Similar to the evolution of IT offshoring, **OSD** began to catch on in the late 1990s (Adelakun and Jennex, 2003). According to Mani and Rajkumar (2001), the Y2K problem as well as the conversion of systems to accommodate the European change in currency to the euro have stressed the organizations' ability to keep up with necessary development. This, in turn, has led to the outsourcing of software development projects to offshore developers. Furthermore, significant advances in telecommunications technology have increased the ability of companies in low wage countries to provide the requested development services. Currently, the high demand for e-business and web-based solutions are primarily responsible for keeping the OSD trend afloat (Mani and Rajkumar, 2001).

3.3 Theoretical Foundations

The field of **IT outsourcing (in a broad sense)** can be traced back to numerous theories, all of which may prove to be useful when identifying which IT activities shall be outsourced and determining how the outsourcing arrangement shall be coordinated and managed most efficiently. In the process of compiling these reference theories in their research, Dibbern et al. (2004) adapted the structuring approach of Kim and Lee (1999), hereby combining the different theories into three distinct categories.

- **Economic theories** concentrate on the coordination and the regulation of economic agents or units in regard to their transactions with one another. Reference theories in this context include the agency theory and the popular transaction cost theory.
- **Social theories** focus on different types of relationships that exist between individuals, groups, and organizations, thereby encompassing theoretical foundations such as power and politics theories, relationship theories, and the social exchange theory.
- **Strategic theories** deal with a company's approach to developing and implementing strategies and include the resource-based theory, the resource dependency theory, as well as strategic management theories.

Table 5 gives an overview of the individual theories, thereby pointing out their basic assumptions, specific focus, as well as supporting literature (Dibbern et al., 2004).

Beside the already mentioned theories concerning IT outsourcing in general, the concepts of **IT offshoring** and **OSD** can originally be traced back to Ricardo's **theory of comparative advantage**. According to this theory, even if a country could produce everything more efficient than another country, it would benefit from specializing in what it was best at producing and trading with other nations (Ricardo, 1821).

Ricardo's theory also forms the basis of modern trade theory, reformulated as the **Heckscher-Ohlin theorem**. This theorem states that a country possesses a comparative advantage in the production of a product if it is relatively well-endowed with the factors of production which are used intensively in producing this product (Case and Fair, 1999).

Table 5: Overview of theoretical foundations

	Theoretical concept	Level of analysis	Basic assumptions	Main variables	Key authors
Economic theories	**Agency theory**	Organizational	Asymmetry of information, differences in perceptions of risk, uncertainty	Agent costs, optimal contractual relationships	Jensen and Meckling (1976)
	Transaction cost theory	Transaction	Limited rationality, opportunism	Transaction costs, production costs	Coase (1937), Williamson (1975, 1981, 1985)
Social theories	**Power and politics theories**	Individual, organizational	Power, idiosyncratic interests, and politics play major roles in organizational decision-making.	Different degrees of power, organizational politics	Pfeffer (1981, 1982), Markus (1983)
	Relationship theories	Organizational	Parties in the relationship assume that the outcome of a relationship is greater than the one achieved by individual parties separately.	Cooperation, interactions, social and economic exchanges	Kern (1997a), Klepper (1995)
	Social exchange theory	Individual, organizational	Participation in exchange occurs with the assumption of rewards and obligation to return rewards.	Exchange of activities, benefits/costs, reciprocity, balance, cohesion, and power in exchanges	Blau (1964), Emerson (1972), Homans (1961)
Strategic theories	**Resource theories**	Organizational	A firm is a collection of resources, and resources are central to a firm's strategy.	Internal resources, resources in the task environment	Barney (1991), Penrose (1959), Pfeffer and Salancik (1978), Thompson (1967)
	Strategic management theories	Organizational	Firms have long-term goals, and they plan and allocate resources to achieve these goals.	Strategic advantage, strategies, choice of individuals	Chandler (1962), Miles and Snow (1978), Porter (1985), Quinn (1980)

The theoretical concepts listed above will each be briefly introduced in the following sections.

3.3.1 Agency Theory

According to Dibbern et al. (2004), both the agency theory and the transaction cost theory represent economic theories. Agency theory is based on the concept that a company represents a conjunction of contracts between principals or stakeholders and agents.

The basic assumption of agency theory is the existence of asymmetric information and a different degree of risk perception between principal and agent as well as uncertainty. Here, the basic line of reasoning suggests that the principal hands over specific decision rights to the agent and, at the same time, sets incentives in order to ensure that the agent's actions are in line with the principal's interest. In this context, the dimension of such incentives depends significantly on the anticipated costs of controlling the agent (Dibbern et al., 2004). An example of agency theory used in the field of IT outsourcing is given by Hackney and Hancox (1999, p. 5), who suggest: "*...the focus of AT [agency theory] is not the decision to source via the hierarchy or via the market (...). AT in short, helps to expose problems of divergent interests within both markets and hierarchies.*" However, in response, Dibbern et al. (2004) point out the lack of attention attributed to the potential for adverse outcomes, as a result of wrong decisions.

3.3.2 Transaction Cost Theory

When deciding which IT activities shall be outsourced, transaction cost theory, introduced by Coase (1937), is among the most frequently mentioned theoretical foundations. Primarily developed by Williamson (1975, 1981, 1985), the theory, also referred to as transaction cost economics, suggests that, as a result of a costly market, economic efficiency can only be achieved by means of a comparative analysis of production and transaction costs. Further, the theory assumes both limited rationality and opportunistic behavior from all the relevant parties (Simon, 1957). In consequence, the parties take advantage of opportunities at the expense of others (Williamson, 1981). Here, however, it must be noted that the negative consequences of opportunistic behavior are more likely to emerge in market coordination than within a company, as there, they can be prevented by hierarchy structures.

In a more detailed fashion, Schwarz (2005a) projects the four types of transaction costs onto the field of IT outsourcing:

- **Search costs:** For identifying and evaluating potential partners.
- **Contract costs:** Associated with the negotiation and writing of an agreement with the outsourcing provider.

- **Monitoring costs:** Ensuring that all parties fulfill their contractual obligations.
- **Modification costs:** Resulting from either changes in performance on the part of the provider or changes in regard to external conditions.

Transaction cost theory has often been used for research in the field of IS in an attempt to explain the impact of IT on the boundaries of a company (Huang and Yang, 2000). According to Bryson and Ngwenyama (1999), it provides a set of principles for analyzing buyer-supplier transactions and identifying the most efficient way of structuring and managing them. This idea, when projected on the field of IT outsourcing, could, for instance, reflect the transactions between the outsourcing company and the provider.

3.3.3 Power and Politics Theories

Power and politics theories represent an example of the social theories examined by Dibbern et al. (2004). As opposed to Emerson's (1972) perception of power in regard to individuals in a social exchange, Pfeffer (1981) assumes that power as well as idiosyncratic interests and politics take on major roles in an organization's decision-making process. In this context, power is often defined as the basic energy to initiate and sustain actions, in order to translate intentions into reality (Dibbern et al., 2004).

According to de Looff (1997), power and politics can influence a decision-making process in the field of IT outsourcing in three different ways: In the decision process itself, in the examination of the expected distribution of power, as well as in the design and the management of the outsourcing agreement.

During the actual decision-making process, decision makers may embrace other objectives than the best interest of their department or organization, and, therefore, turn to rely on other tactics aside from plain arguments or research results. In this context, Hirschheim and Lacity (1993) found that some IT managers used political tactics, such as the requesting of bids from expensive suppliers, to underline the efficiency of their department towards top management. In addition, Hirschheim and Lacity (1993) identified some IT department as the least powerful departments in their respective organizations, with the IT manager ranking up to three levels below the company's CEO. Senior managers often label IT functions as cost burdens and regard them as value-consuming. Their perceptions combined with the lack of power on the part of the IT departments many a time result in restrictive IT investments (de Looff, 1997).

De Looff (1997) further emphasizes the need for decision makers to analyze the expected distribution of power between the client organization and possible suppliers, when considering outsourcing as a perceived unbalanced distribution that may represent a key argument for not engaging in outsourcing activities. One particular source of power on the part of the client organization in this context could be the client's decision regarding which IT activities to award to a specific supplier or whether or not to offer follow-up contracts.

In regard to existing IT outsourcing relationships, de Looff (1997) dwells on the need for the client organization to ensure a constant balance of power between themselves and their supplier. In an attempt to design such a relationship, the client may, for instance, split the project into phases, only awarding the first phase to the supplier, or postpone a percentage of the payments for a development project until the system has proven to be error-free.

3.3.4 Relationship Theories

Closely related to the social exchange theory, yet more complex and tangible, relationship theories regard cooperation, interactions, as well as social and economic exchanges as pivotal factors in interorganizational relationships. Due to their focus on the interactions between parties that are specifically geared towards the joint accomplishment of the individual party's objectives, relationship theories are often linked to strategic management or topics such as alliances, competitive advantages, and supplier-buyer relationships (Dibbern et al., 2004). Klepper (1995) and Kern (1997a) further point out that the parties to an exchange agree that the outcomes of the exchange are greater than those that could be achieved through alternate forms of exchange or from exchange with a different partner. This mutual agreement serves as a kind of motivation for the parties to consider the relationship important, hereby offering to devote resources towards its maintenance and development (Dibbern et al., 2004).

3.3.5 Social Exchange Theory

Social exchange theory, according to Homans (1961), centers on the exchange of activities between two or more people. In this context, the relevant activities may be tangible or intangible as well as rewarding or costly.

Blau (1964) defines social exchange as "*voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others*" (p. 91). Based on Emerson's (1972) research, the attributes reciprocity, balance, cohesion, and power are pivotal in an exchange. While reciprocating the benefits received helps to reinforce the attributes of an exchange, balance refers to the individual degree of dependency the actors possess on their counterparts in the exchange. Further, cohesion takes place when one or both actors in the exchange encounter conflict in regard to the exchange (Dibbern et al., 2004). Finally, Emerson (1972) defines power as the level of cost one actor can bring about over the other.

3.3.6 Resource Theories

In regard to strategic theories, Dibbern et al. (2004) examine resource theories as well as strategic management theories. Resource theories can be either resource-based or resource-dependent. Both of them view a firm's resources as the sole foundation for the implementation of the company's strategy. While resource-based theory emphasizes a firm's internal resources, resource-dependency theory focuses on various resources in the company's external environment. In regard to resource-based theory, Barney (1991) and Penrose (1959) argue that a firm can only gain competitive advantage, if heterogeneity and immobility of the firm's resources exists. In contrast, from a resource-dependant perspective, Pfeffer and Salancik (1978) point out that all organizations are, in varying degrees, dependant on at least some of the elements of their specific external environments, due to the control these environments have on their resources.

3.3.7 Strategic Management Theories

Theories explaining the strategic activities of a particular company are referred to as strategic management theories. While numerous definitions of strategy can be found in literature, Chandler (1962) defines strategy as the determinant of the basic long-term goals of an enterprise, as well as the adoption of courses of action and the allocation of resources necessary for carrying out these goals. A well known example for strategic management theory is Porter's (1985) theory of strategic advantage, in particular his five forces model.

3.4 Annotated Bibliography

In an effort to provide a substantiated basis for our research project, we first analyzed the state-of-the-art of research on IT outsourcing (in a broad sense), hereby developing an annotated bibliography on this topic (Amberg, Hoßbach, and Wiener, 2005b). In this context, in order to give an overview of academic activity in this research field, we selected key IS conferences and journals (compare Table 6), and scanned the corresponding conference proceedings and journals for key words like "IT outsourcing", "IT offshoring", "offshore software development" within the time frame from 1997 to 2005. To identify relevant publications within these data sources, we used advanced search methods including Ferber's (2003) stemming approach. This approach refers to the mapping of words to their normalized forms (e. g., "outsourcing" to "outsource").

Table 6: IS conferences and journals examined

IS conferences	IS journals
AMCIS – Americas Conference on Information Systems	**CACM** – Communication of the Association for Computing Machinery
ECIS – European Conference on Information Systems	**HBR** – Harvard Business Review
HICSS – Hawaii International Conference on System Science	**ISR** – Information Systems Research
ICIS – International Conference on Information Systems	**MISQ** – Management Information Systems Quarterly
	SMR – Sloan Management Review

The selected conferences belong to the top events in the field of IS research in the Western hemisphere. Whereas all of these conferences were founded more than ten years ago (AIS, 2005a; AIS, 2005b; ECIS, 2005), the HICSS can even look back on a history of almost 40 years (HICSS, 2005).

With regard to the selected journals, we chose the top five European IS journals according to a ranking by Mylonopoulos and Theoharakis (2001). This ranking is based on a survey, primarily among professors and doctoral candidates, on the contribution of altogether 50 IS journals to research in the IS field, and, in contrast to many other rankings of IS journals, is not limited to North American journals.

Based on the key word search within the mentioned conference proceedings and journals, we were able to identify more than 600 articles and conference papers related to IT outsourcing (in a broad sense). However, not all of the identified publications focused on this topic. Therefore, we reviewed the abstract and the introduction of all of the 600 publications in order to determine whether the content of a publication specifically deals with IT outsourcing (in a broad sense). Resulting from this additional manual search, we were able to identify 182 publications solely dealing with IT outsourcing (in a broad sense). Table 7 shows the number of relevant publications per IS conference and journal respectively within each year examined as well as in total.

Table 7: IT outsourcing publications in selected IS conferences and journals (1997-2005)

		1997	1998	1999	2000	2001	2002	2003	2004	2005[2]	Total
IS conference	AMCIS	-	3	1	4	9	9	17	18	13	**74**
	ECIS	1	3	1	3	2	1	5	3	1	**20**
	HICSS	1	5	4	3	5	6	6	5	8	**43**
	ICIS	4	-	3	1	1	2	3	5	-	**19**
IS journal	CACM	-	-	1	1	-	-	2	2	-	**6**
	HBR	1	-	-	-	-	1	-	-	2	**4**
	ISR	1	-	-	-	-	-	2	2	-	**5**
	MISQ	-	2	-	-	-	1	2	-	1	**6**
	SMR	1	2	-	-	1	-	-	-	1	**5**
Total		**9**	**15**	**10**	**12**	**18**	**20**	**37**	**35**	**26**	**182**

Concerning the number of the identified publications, it becomes apparent that the majority of these publications were published in conference proceedings (156 papers). Here, particularly the AMCIS provides a great number of papers in the field of IT outsourcing (in a broad sense) (74 papers).

In regard to the publication year of the identified articles and papers, a continuous growth in the number of publications per year can be observed. While in 1997, only nine publications focusing on IT outsourcing (in a broad sense) were able to be identified, in the middle of 2005, already 26 publications, dealing with this topic, were published within the mentioned data sources.

In a first step, the 182 publications identified within the literature review were classified into three different research fields: IT outsourcing (in a narrow sense), IT offshoring (in a narrow sense), and OSD (compare Figure 8 in section 3.1). In a second step, the identified publications were compared to one another regarding their specific content by assigning them to eight content categories. Here, we found that some publications could be assigned to two categories. In these cases, we assigned the corresponding publications to both categories (one category as a first choice and the other category as a second choice).

[2] In the year 2005, only journal articles, which were published before July (exclusive), and papers in the conference proceedings of AMCIS, ECIS, and HICSS were included in the literature review.

Based on the classification and the comparison of the identified articles and papers in the field of IT outsourcing (in a broad sense), a classification matrix with the dimensions "research field" and "content category" was able to be developed (annotated bibliography).

3.4.1 Classification

For further analyses, the publications, identified within the mentioned IS conferences and journals, were classified according to the following three **research fields** (compare section 3.1):

1. **IT outsourcing (in a narrow sense):** Handing over of an organization's IT activities to a domestic IT service provider.
2. **IT offshoring (in a narrow sense):** Handing over of IT activities to a service provider located in a foreign country.
3. **OSD:** Handing over of software development activities and related activities to a foreign service provider.

In accordance with this classification framework, 151 publications were attributed to the research field of IT outsourcing (in a narrow sense), 18 publications to the field of IT offshoring (in a narrow sense), and 13 publications to the field of OSD (compare Figure 11).

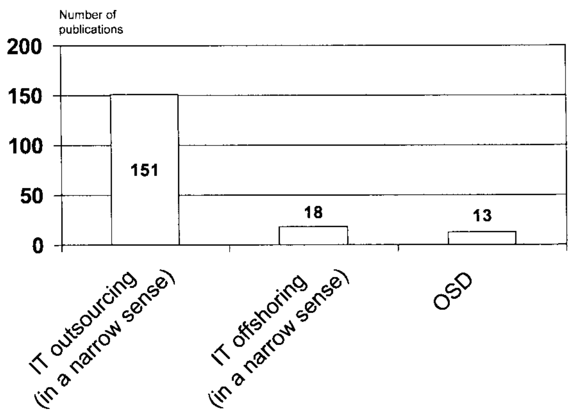


Figure 11: Classification of publications by outsourcing research fields

Based on the classification of the 182 publications presented in the figure above, Table 8 shows the number of the identified publications by outsourcing research fields as well as IS conferences and journals.

Table 8: Classification of publications by outsourcing research fields and IS conferences/journals

		IS conference				IS journal				
		AMCIS	ECIS	HICSS	ICIS	CACM	HBR	ISR	MISQ	SMR
Research field	IT outsourcing (in a narrow sense)	60	18	39	14	3	2	5	4	5
	IT offshoring (in a narrow sense)	8	1	3	3	2	1	-	1	-
	OSD	6	1	1	2	1	1	-	1	-
Total		**74**	**20**	**43**	**19**	**6**	**4**	**5**	**6**	**5**

When comparing the number of publications in different research fields within the selected data sources, it becomes apparent that only little research was carried out in regard to IT offshoring (in a narrow sense) and OSD. In the IS journals under examination, only seven articles dealt with these two research fields within the time period from 1997 to 2005. Within this time frame, popular journals such as ISR and SMR have not published any articles in these fields.

Table 9: Classification of publications by outsourcing research fields and publication years

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Research field	IT outsourcing (in a narrow sense)	7	15	9	12	18	19	28	24	18
	IT offshoring (in a narrow sense)	-	-	-	-	-	-	6	8	5
	OSD	2	-	1	-	-	1	3	3	3
Total		**9**	**15**	**10**	**12**	**18**	**20**	**37**	**35**	**26**

Looking at the development of the number of publications within the three research fields over the time frame examined, a positive trend can be observed. From our perspective this trend is also likely to continue: Although, the data of the year 2005 is not complete yet, we were already able to identify more papers in this year than in the year 2002.

With regard to the development of the number of publications within each single research field, particularly the increasing number of publications in the research fields IT offshoring (in a narrow sense) and OSD, as of 2003, is remarkable. While in the years from 1997 to

2002, no article or conference paper was published which explicitly referred to IT offshoring (in a narrow sense), we were able to find at least five publications within the last three years.

3.4.2 Comparison

In an attempt to analyze academic activity in the field of IT outsourcing (in a broad sense), we assigned each of the 182 identified publications to a specific content category. With regard to the applied content categories, we refer to the six primary research areas in the field of IT outsourcing (in a broad sense) identified by Chi-wai, Huynh, Lee and Pi (2000): Contract, decision, environment, organization, performance, and relationship. In order to ensure a distinct classification of the relevant articles to a specific content category, the content areas mentioned above were extended by the two categories "culture" and "strategy", related to Fjermestad and Saitta's (2005) strategic management framework for IT outsourcing projects. Here, it has to be added that strategic issues are also mentioned by Chi-wai et al. (2000) within their organization category.

The resulting eight **content categories** for the comparison of the identified publications in the IT outsourcing context are listed below in alphabetical order:

1. **Contract:** Aspects related to the agreement on the project contents.
2. **Culture:** Aspects related to cultural similarities and differences between the project partners.
3. **Decision:** Aspects related to the selection of the provider, the project, the project location, etc.
4. **Environment:** Aspects related to political and legal regulations.
5. **Organization:** Aspects related to the coordination of the project.
6. **Performance:** Aspects related to the controlling of the services rendered by the provider.
7. **Relationship:** Aspects related to the interaction between the project partners.
8. **Strategy:** Aspects related to the development of a vision, the setting of goals, the definition of a strategy, etc.

Articles and papers, which were not able to be assigned to one of the content categories listed above, were subsumed under the additional category "**Others**". In the case of a publication related to two categories, we assigned this publication to both categories. Here, one category was labeled as "first choice" (the category which fit best) and the other category was labeled as "second choice".

Figure 12 shows the allocation of the identified publications along the presented categories. In this figure, the black area illustrates the number of those publications assigned to the corresponding content category as a second choice.

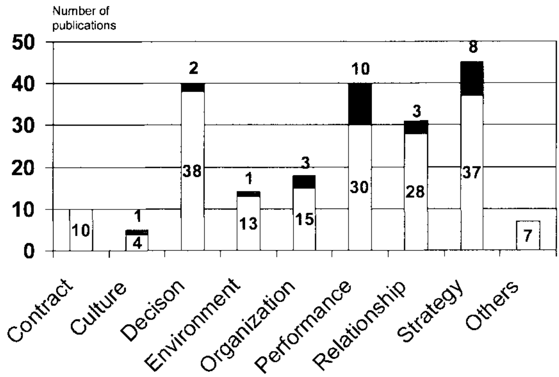


Figure 12: Number of IT outsourcing publications by content categories

By assigning the 182 identified publications to the eight content categories, we found that there are three main categories of publications in the examined conferences and journals over the chosen time period from 1997 to 2005: Strategy, decision, and performance. Here, the content category "strategy" ranks first with 45 publications assigned. The categories "decision" and "performance" rank second with 40 publications both. In contrast, we were able to identify only five articles/papers within the content category "culture". The small number of publications within this category may be reasoned by the fact that cultural aspects are particularly relevant in the context of IT offshoring and OSD, and that publications in these research fields are generally fewer in number than in the field of IT outsourcing (in a narrow sense).

Figure 12 also confirms the adequacy of our developed content classification framework. According to Lange (2005), the adequacy of such a classification scheme can be measured by the number of publications which cannot be classified. Overall, we identified only seven publications which were not able to be assigned to one of our eight categories. These seven articles and conferences make up a proportion of 3.8 percent of not classifiable publications, and, therefore, confirm the adequacy of the framework applied.

Table 10 classifies the identified 182 publications by content categories and sources. Here, particularly the large number of publications provided by the AMCIS within the categories "decision" (23 papers) and "performance" (18 papers) as well as by the HICSS in the category "strategy" (14 papers) is remarkable. Concerning the selected IS journals, the relatively high accumulation of publications in the categories "performance" and "strategy" (ten articles in each category) is noteworthy.

Table 10: Comparison of number of publications by content categories and IS conferences/journals

		IS conference				IS journal					Total
		AMCIS	ECIS	HICSS	ICIS	CACM	HBR	ISR	MISQ	SMR	
Content category	**Contract**	4	1	4	1	-	-	-	-	-	**10**
	Culture	2	1	-	-	1	-	-	1	-	**5**
	Decision	23	5	7	2	1	1	-	1	-	**40**
	Environment	5	1	1	5	1	1	-	-	-	**14**
	Organization	6	3	7	1	-	-	1	-	-	**18**
	Performance	18	5	4	3	-	1	3	3	3	**40**
	Relationship	11	-	12	5	1	-	1	1	-	**31**
	Strategy	13	5	14	3	3	2	2	1	2	**45**
	Others	3	1	2	-	-	1	-	-	-	**7**
Total		**85**	**22**	**51**	**20**	**7**	**6**	**7**	**7**	**5**	**210**[3]

By applying both classification dimensions (the three research fields introduced in section 3.4.1 as well as the eight content categories introduced within this section), a two-dimensional classification framework can be developed. Table 11 presents the numerical allocation of the 182 publications within this framework.

Regarding the number of publications in the field of IT outsourcing (in a narrow sense), it becomes apparent that publications in this field mainly deal with the topics "decision", "strategy" (both 38 publications), "performance" (36 publications), and "relationship" (29 publications). In regard to the research field of IT offshoring (in a narrow sense), the majority of publications deal with environmental (seven publications) and strategic aspects (four publications). In contrast to the other two research fields, in the field of OSD, no major research topics were able to be identified, which can be traced back to the little number of publications identified in this area of research in general.

The detailed classification of the 182 publications along the developed framework dimensions (annotated bibliography) is presented in Table 94 in the appendix.

[3] 28 publications were assigned to two categories.

Table 11: Comparison of number of publications by content categories and outsourcing research fields

		Research field			Total
		IT outsourcing (in a narrow sense)	IT offshoring (in a narrow sense)	OSD	
Content category	Contract	10	-	-	**10**
	Culture	-	2	3	**5**
	Decision	38	2	-	**40**
	Environment	5	7	2	**14**
	Organization	13	2	3	**18**
	Performance	36	1	3	**40**
	Relationship	29	1	1	**31**
	Strategy	38	4	3	**45**
	Others	7	-	-	**7**
Total		**176**	**19**	**15**	**210**

In conclusion, it can be summarized that, up to now, only little research has been carried out with regard to IT offshoring in general and OSD in particular. For instance, in the selected IS journals, no more than seven articles dealt exclusively with these two research fields within the last eight years. This finding was also one of the major reasons for not restricting our more specific literature reviews (see sections 4.1 and 5.2) solely to OSD.

3.5 Market

In Anglo-American countries, IT outsourcing as well as IT offshoring have already been established as common business practices throughout the various industries. For example, in the United States, about 20 percent of companies' total IT budgets is invested in low-wage countries, most notably India (Buchta et al., 2004).

From a European perspective, ever since the concept of **IT outsourcing** made waves in the 1990s, its popularity among both medium-sized enterprises and multinational companies has remained stable (Schwarz, 2005). Correspondingly, Allweyer et al. (2004) expects the European market volume for the outsourcing of IT services to increase significantly from 45 billion euros in 2003 to approximately 100 billion euros in 2008, with the UK and Germany accounting for nearly half of that figure. The global consulting firm Frost and Sullivan reach out even further, predicting that total revenues for the European outsourcing market will grow to about 150 billion euros in 2006 (Söbbing, 2002).

Although, Europe as a whole has embraced the various IT outsourcing arrangements as effective and sustainable business practices, non-English speaking countries such as Germany are still struggling to catch up. Particularly in the context of **IT offshoring**, structural, cultural, and linguistical issues complicate the cooperation of German-speaking companies with offshore providers. In consequence, according to Buchta et al. (2004), only one third of German companies which cooperated with an offshoring partner were able to realize cost savings surpassing the 30 percent mark, whereas half of all the international companies involved in IT offshoring projects were cutting costs by more than 30 percent. Possible reasons for this unbalanced statistic are:

- **High vertical integration in German firms:** In German companies, internal IT departments often cover the complete range of services from software development to IT operations. Therefore, many a time, external service providers are only called upon sporadically, explaining the low outsourcing rate in Germany compared to the United States or the UK. As a result, German-speaking firms often lack experience in relocating and managing IT services over a larger geographical distance.

- **Small number of strong relationships with local IT service providers:** As a result of long lasting partnerships, many a time, German companies are used to fast and direct communication processes with their IT service providers. While the small number of local service partners is familiar with the specific characteristics of their clients, and, therefore, only need a general description of a specific project, offshore service providers require much more detailed project specifications.

- **Cultural and linguistical differences with Indian IT service providers:** A lot of German-speaking companies followed the Indian mainstream, resulting in additional problems due to cultural and linguistical differences, which U.S. and UK companies do not have to fear, at least not to this extent. In Germany, the word offshoring tends to be used as a synonym for outsourcing to India. As a result, alternative offshoring destinations (e. g., in Eastern Europe) are often not even considered, while the many differences in culture and language continuously give way to substantial problems, thereby prohibiting a smooth cooperation between the project partners.

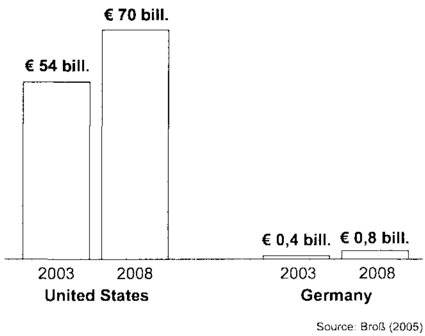


Figure 13: Size of the German IT offshoring market

On a whole, when compared to the U.S. market, the German market for IT offshoring has just recently begun to "crawl out" of its fledgling stages. Nevertheless, experts from Deutsche Bank Research see a significant amount of potential in the market (Broß, 2005), and project a doubling of the market size for Germany until 2008 (compare Figure 13).

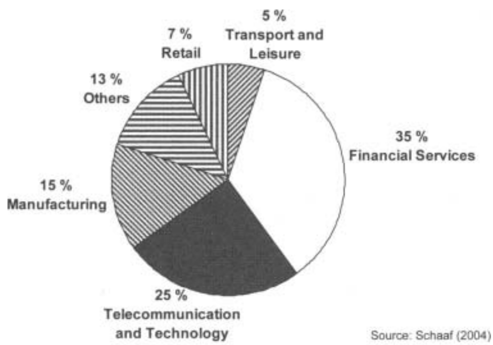


Figure 14: German IT offshoring market shares by industries

Especially in the financial services sector (AT Kearney, 2003) and the IT industry (Buchta et al., 2004; Allweyer et al., 2004), the offshoring of IT services is becoming more and more of an established business practice (compare Figure 14). This is most notably due to the high degree of standardization and enormous cost pressure attributed to these particular industries (Allweyer et al., 2004). Furthermore, a similar trend towards IT offshoring is already apparent in the German automotive industry (Boes and Schwemmle, 2004).

At present, in Germany, three major types of offshore providers can be distinguished. According to Buchta et al. (2004), these are:

- **Offshore subsidiaries, joint ventures or strategic alliances:** Especially large-scale enterprises have built or acquired IT subsidiaries in low-wage countries. Another possibility is to cooperate with IT service providers in these countries by means of joint ventures or strategic alliances. All three of these arrangements give companies the opportunity to embrace the various benefits offshoring has to offer (e. g., reduced labor costs, access to a highly qualified workforce, etc.), while simultaneously minimizing the risks associated with relocating IT projects abroad. An example is Munich-based Siemens which possesses IT subsidiaries in Hungary, India, and other developing countries.

- **International IT service providers:** Companies like IBM, Accenture, or EDS have already established offices in countries like India, hereby using their global network to perform IT services at the most suitable location. Due to their strong competitive position in global markets, these providers do not have to fear the competition of classical offshore providers.

- **Classical offshore IT service providers:** In order to strengthen their competitive position in Europe, offshore providers like NIIT Technologies have tried to enter the German service market. In this context, however, offshore providers realized that many German companies had significant difficulties with directly relocating their IT services to countries like India. As a result, numerous offshore providers established offices or acquired IT service providers in Germany (e. g., NIIT Technologies acquired Mannheim-based AD Solutions in 2002), in an attempt to penetrate the German market.

Against the background of a total cost savings potential of 2 billion euros per year in Germany (Buchta et al., 2004), offshore providers expect annual growth rates of more than 20 percent in the German market. Here, particularly the huge differences in labor costs between developed countries like Germany and developing countries like India, Russia, etc., as well as the enormous potential of highly qualified IT workers in these countries, will fortify the IT offshoring trend in Germany. In this context, due to a cultural similarity and an adequate knowledge of the German language, especially IT service providers in Eastern European countries (e. g., Czech Republic, Poland, Russia, Ukraine) might be able to benefit from the growing trend towards IT offshoring in Germany.

With regard to the type of activities selected for an offshore project, Eichelmann et al.'s (2004) research confirms that representatives of European companies consider the full range of IT services, from front office to back office, as suitable for offshoring. While back office services such as finance, accounting, IT support and human resources are already involved in about 60 percent of all current or planned offshoring projects, one third of the European companies interviewed also mentioned front office services as potential offshore candidates. This, however, is in many cases not feasible for German-speaking companies, due to the language barrier.

Schaaf (2004) bases his research on the perspective of a German bank and thereby finds the following IT activities and processes to be particularly affected by IT offshoring initiatives (listed in the order of their offshoring likeliness[4]): Application development, coding, application maintenance, helpdesk, call center, IT infrastructure, data center, network management, etc. Here, it should be noted that this list of potential offshoring activities is representative rather than comprehensive. In addition, the order of the activities may differ, depending on the specific company and industry.

In line with Schaaf's (2004) ranking of offshore activities, Broß (2005) found that **OSD**, primarily in the form of application development and maintenance, currently accounts for the most significant part of the German IT offshoring market. In contrast to other IT offshoring markets, IT services such as call center and data center operation only make up a small part of the German market.

[4] IT services more likely to be offshored rank first.

3.6 Benefits

In the style of Amberg and Wiener (2004b), the benefits of **IT outsourcing** can be classified into the following three categories:

- **Financial benefits:** Reduction of IT costs, improvement of cost transparency, conversion of fixed costs, reduction of capital lockup, etc.
- **Qualitative benefits:** Improvement in service quality, improvement of business processes, guarantee of service levels, access to technical know-how, etc.
- **Strategic benefits:** Improvement in flexibility, focus on core competences, restructuring of the corporate organization, insight on innovative technologies, transfer of risks, reduction of the time-to-market, etc.

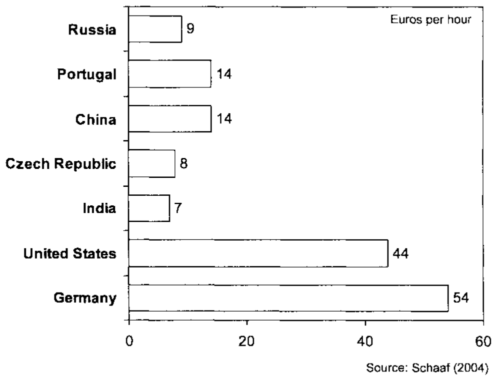


Figure 15: Labor costs in different countries

With regard to **IT offshoring**, the reduction of IT costs is probably the most attractive benefit. Consequently, the reasons why companies relocate their internal IT services to low wage countries are often cost driven (Böhm, 2003a). The cost advantage of foreign service providers primarily results from the lower labor costs in their countries (compare Figure 15).

Although, the access to specialized knowledge and IT know-how also plays an important role when deciding on a particular offshoring arrangement, the cutting of operational costs is still the most emphasized benefit within companies engaging in offshore activities. In consequence, a clear business trend towards relocating labor-intensive services to low wage countries can be observed (Mayer and Söbbing, 2004). Here, despite additional costs for provider selection, contract management, and project planning, costs can be cut by around 30 percent in the long run (TransCrit, 2004).

Aside from cost reduction, by implementing an **OSD** project, many companies aim at reducing the time-to-market of a software product (Fischer and Schumacher, 2004). Depending on the location of the selected project partners, the different time zones can enable both domestic and foreign programmers to work on the development project for up to 18 hours daily. Albert and Thondavadi (2004) refer to this particular approach as a so called "follow the sun" development. Especially, when developing software for products with short product lifecycles (e. g., mobile phones), this can help in gaining a significant competitive edge over rival companies (Rack, 2001).

Chapter 4

Management of Offshore Software Development Projects

Chapter Contents: This chapter presents a project phase model for OSD projects from the client perspective. The model is primarily based on a comprehensive literature review and differentiates between three project phases. Within the chapter, first, we outline the results of the conducted literature review (*4.1 Literature Review*). Next, we describe the developed OSD project phase model in its entirety (*4.2 Project Phase Model*), and then consider each individual project phase in more detail: Planning and analysis (*4.3 Planning and Analysis Phase*), decision and negotiation (*4.4 Decision and Negotiation Phase*), and implementation (*4.5 Implementation Phase*).

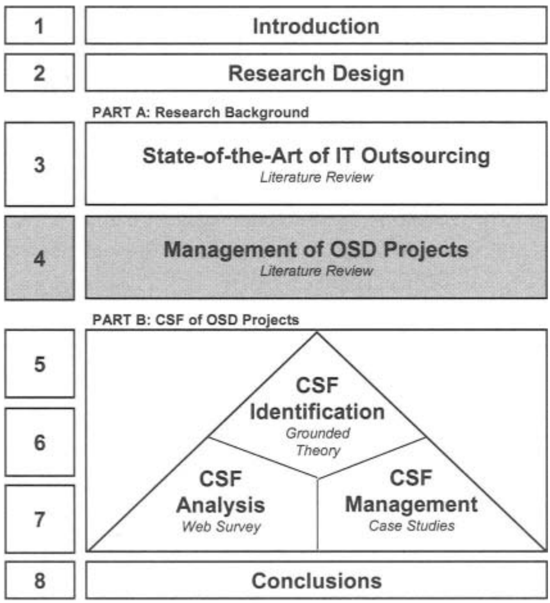


Figure 16: Thesis roadmap – Management of OSD Projects (chapter 4)

4.1 Literature Review

Based on the results of the annotated bibliography (compare section 3.4), a comprehensive literature review, focusing on project phase models in the field of IT outsourcing, was carried out. Here, beside the already examined IS conferences and journals, books on the subject of IT outsourcing (in a broad sense) as well as scientific online databases were searched for key words like "project phase model", "project lifecycle model", "project process model" "project phase(s)", "project stage(s)", "IT outsourcing", "IT offshoring", and "offshore software development" in an effort to find corresponding publications. In this context, it has to be mentioned that the terms (project) lifecycle and (project) process model will be subsumed in the term (project) phase model in the following.

On the basis of the conducted literature research, a total of ten publications, explicitly focusing on project phase models in the IT outsourcing context, were able to be identified (listed alphabetically): Berger, Hodel, and Risi (2004), Bergweiler (2002), Brown and Wilson (2005), Chylla, Graack, and Rusch (2004), Cullen and Willcocks (2003), Dibbern et al. (2004), Lacity and Willcocks (2001), Mayer (2005), Schwarz (2005b), and Söbbing (2002). A brief description of the corresponding phase models can be found in section 4.1.2.

In a first step, the ten project phase models were classified into different areas of research and perspectives. Next, the models were briefly described and then compared to one another in regard to their specific content. Here, it became apparent that all of the identified project phase models focus on IT outsourcing projects in general. Although, these models can in part be transferred to OSD, none of them addresses OSD-specific challenges.

4.1.1 Classification

The following table presents a classification of the identified project phase models along the dimensions "research field", "perspective", and "number of project phases". In regard to the research field, the table distinguishes between phase models specific for IT outsourcing, IT offshoring, and OSD projects. In regard to the model perspective, the table differentiates between the point of view of clients and providers.

The classification shows that all of the identified project phase models deal with IT outsourcing in general. In regard to the perspective of the identified phase models, it becomes apparent that the great majority of the models represent a client's point of view (nine models). In contrast, only one model considers the perspective of the IT service provider (Chylla et al., 2004). The number of phases of the individual project phase models ranges from two to six. However, the majority of the identified phase models comprise four or more phases (seven models).

Table 12: Classification of identified project phase models in the IT outsourcing context

Model	Research field	Perspective	Number of phases
Berger et al. (2004)	IT outsourcing	Client	4
Bergweiler (2002)	IT outsourcing	Client	6
Brown and Wilson (2005)	IT outsourcing	Client	6
Chylla et al. (2004)	IT outsourcing	Provider	3
Cullen and Willcocks (2003)	IT outsourcing	Client	3
Dibbern et al. (2004)	IT outsourcing	Client	2
Lacity and Willcocks (2001)	IT outsourcing	Client	6
Mayer (2005)	IT outsourcing	Client	6
Schwarz (2005b)	IT outsourcing[5]	Client	5
Söbbing (2002)	IT outsourcing	Client	4
Our project phase model	OSD	Client	3

In comparison, our phase model focuses on the management of OSD projects, classifies respective management activities into three phases, and reflects a client's point of view (compare Table 26).

4.1.2 Description

In the following, the ten project phase models, which were identified within the literature review, will be described briefly (in alphabetical order according to the name of the first author).

Berger et al. (2004) suggest a relatively comprehensive project phase model. Their model for IT outsourcing projects is built on four phases, each of which contains a set of pivotal steps: The *preparation phase* encompasses the analysis of the initial position before engaging in an outsourcing initiative, the evaluation of benefits and risks tied to an outsourcing arrangement, as well as the establishment of specific goals and a detailed approach for reaching these goals. Next, the *initiation phase* focuses primarily on establishing a solid foundation for a future relationship with an IT outsourcing provider. This includes defining service level agreements (SLA), evaluating various providers, compiling the requirements specifications,

[5] Model focuses on the management of shared service projects.

and, finally, selecting an adequate partner. Following, the *implementation phase* tests the qualities of both client and provider. Here, according to the authors, the successful transfer of the outsourced activities, assets, and staff from the client to the provider, as well as the establishment of specialized project teams is essential for a stable long-term relationship. Finally, the *operation phase* rounds off the lifecycle and focuses primarily on the controlling and monitoring aspects of the outsourcing arrangement, the change management, and the securing of stable daily operations on the part of both client and provider.

The IT outsourcing phase model introduced by **Bergweiler (2002)** encompasses six project phases: The *as-is analysis phase* (identification of outsourcing candidates, analysis of potential benefits and risks of an outsourcing arrangement, etc.), the *make-or-buy decision phase* (definition of core competences, selection of IT services and processes), the *initiation phase* (definition of a to-be profile, identification of potential service providers), the *alignment phase* (evaluation of potential outsourcing partners, selection of a partner), the *contract phase* (presentation of tasks and areas of responsibility, formulation of the contract), and the *implementation phase* (integration of existing processes, performance controlling, etc.). In addition, in an attempt to facilitate the management of an IT outsourcing project, Bergweiler (2002) proposes several methods for each project phase.

Brown and Wilson (2005) divide their IT outsourcing project phase model into six distinct phases: The *strategy phase* focuses on the outsourcing decision itself, determining the feasibility of outsourcing, defining objectives, as well as estimating the total effort in terms of time, budget, and necessary resources. Following, the *scope phase* focuses on the selection of an appropriate IT service provider, hereby dealing with the specification of service levels on the part of the provider and the developing of a request for proposals (RFP). After collecting and analyzing responses from various providers, an adequate provider is finally chosen. Negotiations and agreements, leading up to the ultimate signing of a contract between the two parties, occur in the corresponding *negotiation phase*. In the following *implementation phase*, the actual transition from internal to external provision takes place. Aside from planning the transition, budgeting and forecasting must be carried out before the project can be launched. The fifth phase in Brown and Wilson's (2005) IT outsourcing model is referred to as the *management phase* and centers on the coordination and the management of the outsourcing relationship with the provider. This includes the monitoring of performance as well as the negotiation and implementation of any changes that may occur in the relationship. Finally, the *completion or termination phase* marks the end of the contract period. Here, the client company may either negotiate a further contract with the existing provider, terminate the relationship and align its outsourcing strategy with a new provider, or end the relationship with the provider and insource the respective functions.

The project phase model proposed by **Chylla et al. (2004)** considers IT outsourcing projects from the provider perspective and can be subdivided into an offer, a detail analysis, and a transformation/integration phase. The *offer phase* ranges from the request for a proposal to the submission of a proposal. The *detail analysis phase* begins with the conclusion of a Letter of Intent (LoI) between the potential project partners, examines the potential outsourcing projects in regard to legal, technical, commercial, and HR-related aspects, and ends with the conclusion of the outsourcing contract. Following, the *transformation/integration phase* encompasses the actual transition from internal to external service provision.

Cullen and Willcocks' (2003) IT outsourcing project phase model is based upon eight building blocks, divided into three distinct phases. The *architect phase* represents the first four blocks ("Discard the myths", "Prepare the strategies", "Target the services", and "Design the future") and aims to create a comprehensive picture of the landscape surrounding the anticipated IT outsourcing arrangement. This process includes determining realistic benefit expectations, analyzing the client company's competences and strategic preferences, identifying the appropriate services for outsourcing, conducting a feasibility and impact analysis, as well as examining various arrangement models in terms of SLA and price. Blocks five and six ("Select the supplier(s)" and "Make the transition") make up the *engage phase* of the IT outsourcing lifecycle: After a thorough evaluation, decision, and negotiation process, an outsourcing agreement is signed with the adequate provider and assets, knowledge and staff are transferred. Finally, the *govern phase* contains blocks seven and eight ("Manage the project" and "Reconsider the options"), thereby concluding the authors' lifecycle for outsourcing projects. In this phase, continuous audits and evaluations seek to facilitate relationship management and bring forth satisfactory results. In addition, industry and market reviews focus on bringing about refreshed strategies, in an attempt to remain competitive and keep up with both internal and external changes.

Dibbern et al. (2004) base their IT outsourcing project phase model upon Simon's general model of decision-making, originally published in 1960. According to Simon (1960), four major stages exist within a decision-making process: Intelligence, design, choice, and implementation. Dibbern et al. (2004) adapt Simon's (1960) model to the field of IT outsourcing by developing a framework that parallels the decision-making process an organization goes through when evaluating its outsourcing options. This particular framework contains five stages which can be broken down into two distinct phases. While the *decision phase* focuses on the questions "Why shall the organization outsource?", "What outsourcing arrangements are appropriate?", and "Which of the identified arrangements shall be implemented?", the *implementation phase* deals with the problem of "How shall the organization implement the outsourcing arrangement?" and the "Outcome of the outsourcing arrangement". Further, Dibbern et al. (2004) expand the pivotal stages of each phase to include the activities and tasks that organizations go through as they progress their outsourcing evaluation.

According to **Lacity and Willcocks (2001)**, an IT outsourcing project comprises the following six phases: The *scoping phase* (identification of core capabilities, identification of outsourcing candidates), the *evaluation phase* (definition of a baseline, creation of the RFP, etc.), the *negotiation phase* (conduction of a due diligence, definition of SLA, etc.), the *transition phase* (distribution of the contract, establishment of post-contract management infrastructure and processes, etc.), the *middle phase* (benchmarking of performance, involvement of supplier on more value-added services), and the *mature phase* (recalibrating of investment criteria, decision on termination or extension of the relationship). Here, particularly the last two project phases reveal the emphasis of Lacity and Willcocks' (2001) project phase model on the maturity and the management of the relationship between client and provider.

Mayer's (2005) phase model divides IT outsourcing projects into six phases: The *activation phase* (analysis of internal strengths and weaknesses, make-or-buy decision, etc.), the *startup phase* (identification and analysis of appropriate service providers, selection of a provider, etc.), the *design phase* (definition of SLA, formulation of the contract, etc.), the *implementation phase* (transition of staff, conclusion of the contract, etc.), the *operation phase* (monitoring of the delivered services, management of changing requirements, etc.), and the *breakup phase* (termination of the cooperation).

The project phase model suggested by **Schwarz (2005b)** focuses on the management of shared service projects, which can be regarded as a special form of IT outsourcing projects. Within his model, the author differentiates between the following five project phases: The *feasibility analysis phase* (formulation of a shared vision, development of a business case, etc.), the *planning phase* (definition of a clear project goal, creation of project structures, and composition of the project team, etc.), the *development and testing phase* (development of the user handbook, establishment of interfaces, etc.), the *implementation phase* (development of a migration strategy, management of the relationship, etc.), and the *optimization phase* (benchmarking of the delivered services, improvement of internal processes, etc.).

Söbbing (2002) divides his IT outsourcing project phase model into four phases: The *preliminary thoughts phase* (development of a project vision, definition of an outsourcing strategy), the *planning phase* (evaluation of the as-is state, analysis of the total cost of ownership, etc.), the *implementation phase* (conduction of a due diligence, conclusion of the outsourcing contract, etc.), and the *operation phase* (activation of the SLA, benchmarking, etc.). With regard to Söbbing's (2002) phase model, it has to be added that the author's focus lies on fiscal and legal issues of IT outsourcing projects.

4.1.3 Comparison

The ten project phase models identified within the literature review are in part not sufficiently described, giving room for a variety of interpretations. For this reason, we decided to compare the identified models in regard to pivotal management activities, typically carried out during the course of an IT outsourcing project, rather than to compare these models in regard to each individual activity proposed.

In this context, based on the state-of-the-art analysis of IT outsourcing research (compare section 3.4), the results of a research cooperation with a German multinational company, as well as the analysis of the content of the ten project phase models, we were able to identify management activities which proved to be of particular importance in regard to the management of an IT outsourcing project in general. In the following, the resulting thirteen **categories of management activities** for the comparison of the phase models are briefly introduced (in alphabetical order):

1. **Change/Relationship management:** Aspects related to the preparation of the client employees for organizational changes (e. g., "*Conduction of informative events*") and the relationship between the project partners (e. g., "*Involvement of the service provider on more value-added areas*").

2. **Communication management:** Aspects related to the communication between the project partners (e. g., "*Development of a communication strategy*").

3. **Contract formulation:** Aspects related to the contents of the outsourcing contract (e. g., "*Definition of service levels*").

4. **Contract management:** Aspects related to the adaptation of the outsourcing contract during the course of the project (e. g., "*Management of change requests*").

5. **Contract negotiation:** Aspects related to the agreement on the contents of the outsourcing contract (e. g., "*Preparation of position papers*").

6. **Country selection:** Aspects related to the selection of a destination country (e. g., "*Analysis of country-specific risks*").

7. **Internal assessment:** Aspects related to the assessment of the outsourcing readiness on the part of the client (e. g., "*Analysis of IT outsourcing project experience*").

8. **Performance management:** Aspects related to the controlling and monitoring of the project results (e. g., "*Preparation of status reports*").

9. **Project analysis/selection:** Aspects related to the analysis of the identified project candidates (e. g., "*Formulation of a business case*") and the selection of a candidate (e. g., "*Development of a project evaluation matrix*").

10. **Project identification:** Aspects related to the identification of outsourcing candidates (e. g., "*Definition of core competences*").

11. **Provider selection:** Aspects related to the selection of a service provider (e. g., "*Mailing of a RFP*").

12. **Strategy definition:** Aspects related to the definition of a sourcing strategy (e. g., "*Definition of long-term goals*").

13. **Transition management:** Aspects related to the transition from internal to external service provision (e. g., "*Transfer of know-how*").

Furthermore, the listed management activities can be classified into three distinct phases: Planning and analysis (I), decision and negotiation (II), and implementation (III). According to the presented classification, the *planning and analysis phase* comprises the internal assessment, the project analysis/selection, the project identification, and the strategy definition. The *decision and negotiation phase* encompasses the contract formulation and negotiation as well as the country and provider selection. The *implementation phase* covers the change/relationship, communication, contract, performance, and transition management. This classification of phases and activities also served as the basis for the development of our project phase model.

Table 13 displays which of the identified phase models address which of the management activities listed above. In this table, a bullet indicates that the model accounts for the corresponding activity.

When comparing the content of the ten project phase models, the following table shows that these models particularly address the project analysis/selection (ten mentions), the project identification, the change/relationship management, and the transition management (all nine mentions), as well as the contract formulation, the provider selection, and the performance management (all eight mentions). In contrast, the comparison clarifies a lack in regard to the communication management (three mentions). In addition, none of these models considers the internal assessment of the client organization as well as the country selection. This can be reasoned by the fact that all of the identified models deal with IT outsourcing in general.

As already mentioned, due to the fact that our project phase model is based on the results of the conducted literature review, it addresses all pivotal management activities displayed in the table below.

Table 13: Comparison of identified project phase models in regard to their content

Model	Number of phases	I				II				III				
		Internal assessment	Project analysis/selection	Project identification	Strategy definition	Contract formulation	Contract negotiation	Country selection	Provider selection	Change/Relationship mgmt.	Communication mgmt.	Contract management	Performance management	Transition management
Berger et al. (2004)	4		●	●	●	●	●		●	●	●	●	●	●
Bergweiler (2002)	6		●	●		●	●		●	●			●	●
Brown and Wilson (2005)	6		●		●	●	●			●		●	●	●
Chylla et al. (2004)[6]	3		●	●					●	●				●
Cullen and Willcocks (2003)	3		●	●	●	●	●		●	●	●	●	●	●
Dibbern et al. (2004)	2		●	●	●				●	●				
Lacity and Willcocks (2001)	6		●	●	●	●	●		●	●		●	●	●
Mayer (2005)	6		●	●		●	●		●	●		●	●	●
Schwarz (2005b)	5		●	●	●	●				●	●		●	●
Söbbing (2002)	4		●	●	●	●	●		●			●	●	●
Our project phase model	3	●	●	●	●	●	●	●	●	●	●	●	●	●

Furthermore, it became apparent that only three of the identified project phase models also provide method support in regard to the proposed activities (Berger et al., 2004; Bergweiler, 2002; Cullen and Willcocks, 2003). In contrast, our OSD project phase model includes corresponding methods in order to facilitate the execution of the suggested activities.

[6] Model addresses a provider's point of view.

In conclusion, it can be summarized that all of the identified project phase models deal with IT outsourcing in general, and, therefore, do not address OSD-specific challenges. Further, the comparison of the content of the phase models showed that these models only provide limited method support in regard to the proposed management activities.

4.2 Project Phase Model

Based on the conducted literature review (compare section 4.1) and the regular exchange of information with OSD experts during the course of a two-year research project with a German multinational company, we were able to develop an **OSD project phase model** from a client perspective. This model can be divided into "phases", "activities", and "methods". While the first determine "*Which* activities need to be carried out *when*?", the latter addresses the question "*How* these activities can be supported by methods?" (Amberg, 1999).

As illustrated in Figure 17, the model classifies the management activities which need to be executed as well as the corresponding methods to support these activities into three project phases: "Planning and Analysis", "Decision and Negotiation", and "Implementation" (compare Amberg and Wiener, 2004c). In this context, it has to be mentioned that we were not able to identify supportive methods for each single activity.

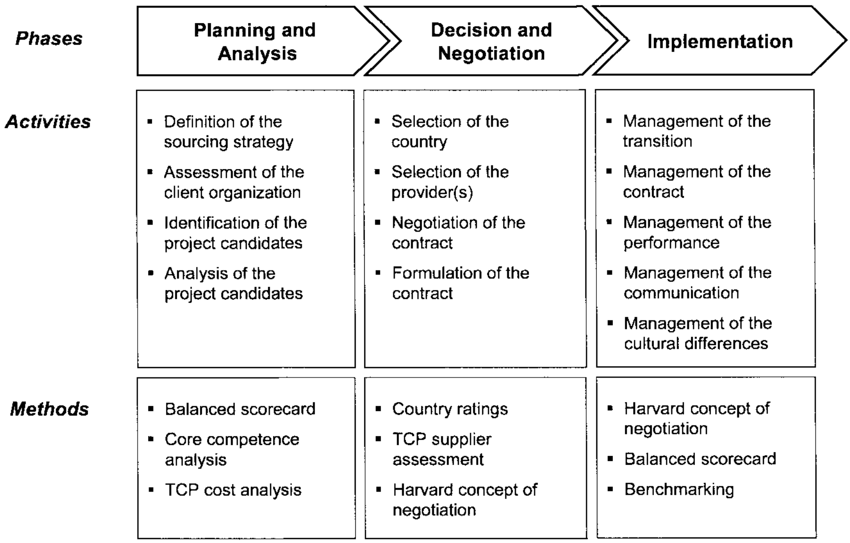


Figure 17: OSD project phase model

During the **planning and analysis phase**, major management activities comprise the definition of the sourcing strategy, the assessment of the internal organization, the identification of project candidates, and the analysis of the identified candidates. Methods to support the mentioned activities are: The balanced scorecard (strategy definition), the core competence analysis (project identification), and the TCP cost analysis (project analysis).

The **decision and negotiation phase** concentrates on the selection of an offshore destination, the selection of one or multiple offshore providers, as well as the negotiation and the formulation of the contractual agreement with the offshore provider(s). These activities can be supported by the following methods: Country ratings (country selection), the TCP supplier assessment (provider selection), and the Harvard concept of negotiation (contract negotiation).

The **implementation phase** primarily deals with typical project management issues: Managing the transfer of assets, staff, as well as data and know-how between the project locations, managing the contract during the course of the project, managing the performance delivered by the offshore provider(s), managing the communication with the foreign provider(s), and managing the cultural differences between the project partners. Supportive methods in regard to the activities listed above are: The Harvard concept of negotiation (contract management), the balanced scorecard, and the benchmarking (both performance management).

Alongside the management activities illustrated in Figure 17, the management of an OSD project also encompasses a number of cross-phase activities. These supporting activities (e. g., the composition of the project team) are not explicitly mentioned as a separate activity within our project phase model, but are included in various activities.

In contrast to the more general project phase models identified within the literature review, our project phase model pays particular attention to OSD-specific aspects (e. g., the assessment of the offshore readiness of the internal organization, the selection of the offshore destination country, and the management of the cultural differences). Beside these OSD-specific management activities, our model contains activities which are relevant in all types of IT outsourcing projects. In regard to these more general management activities, OSD-specific challenges can arise as well. Therefore, we decided to include them in our phase model. In addition, contrary to the majority of the identified project phase models in the IT outsourcing context (compare section 4.1.3), our model provides methods in regard to the proposed management activities.

In regard to the entire project phase model, it has to be noted that our model does not focus on issues related to the technical software development process implemented within an OSD project (operational level), but rather on issues related to the management of such a project (tactical and strategic level). In addition, even though our project phase model considers the complete lifecycle of an OSD project, it does not or rather conditionally address the ex-post evaluation of such a project and the rollout of the developed software within the client company. Furthermore, it has to be added that a real-life OSD project does not necessarily run sequentially through the presented phase model. Rather, the presented management activities can be implemented in any order, simultaneous, or even in iterations. Particularly the activities proposed within the third phase of our project phase model usually run synchronously. Nevertheless, the presented classification of activities can serve managers as a checklist in regard to the management of their OSD projects.

In the following sections, each phase of our OSD project phase model and the corresponding activities and methods are described in more detail.

4.3 Planning and Analysis Phase

The pivotal management activities which need to be carried out within the planning and analysis phase of an OSD project are displayed in Figure 18. These activities as well as supportive methods will be detailed within the following sections.

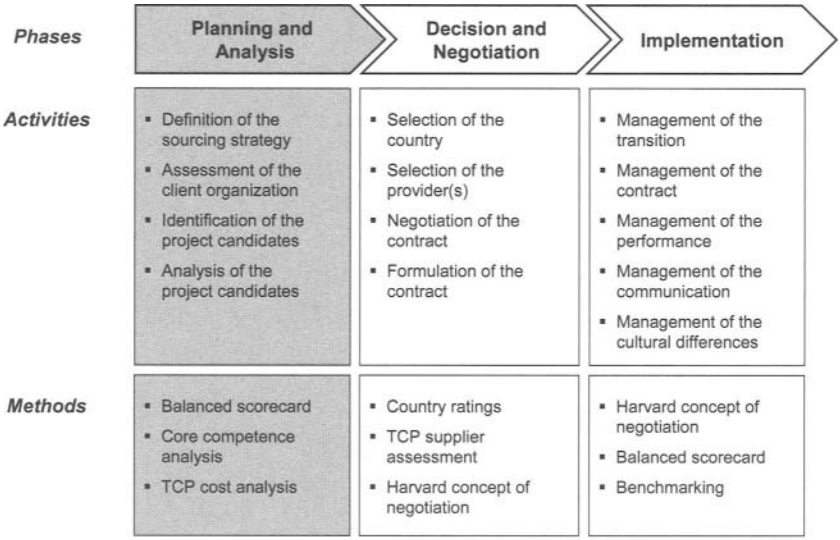


Figure 18: Planning and analysis phase

4.3.1 Definition of the Sourcing Strategy

Before engaging in an OSD project, the client company should define a company-specific sourcing strategy. Here, as a starting point, the company should aim to develop a **vision** associated with the relocation of software services abroad. Depending on the developed vision, the company is able to derive the **objectives** of its OSD initiative. Finally, based on the derived objectives, the company is in the position to define its sourcing **strategy**.

Particularly in the case of IT offshoring, the definition of a sourcing strategy can be considered as a key success factor. According to Buchta et al. (2004), 80 percent of the companies, which were able to reach between 80 and 99 percent of the expected cost savings within their IT offshoring projects, had defined an offshoring strategy beforehand and also implemented this strategy.

In an effort to support the definition and the monitoring of the objectives associated with its engagement in OSD, a company can develop a **balanced scorecard**.

4.3.1.1 Vision

As a basic requirement for all upcoming steps, the client company has to elaborate the vision connected with engaging in OSD. Within this process, particularly the inclusion and the support of the top management are required.

In line with Aalders (2001), we define the term "*vision*" as an ideal in regard to the future development of the company. For instance, by relocating software services abroad, the company could aspire to reach a cost or a technical leadership within its market segment in the next five years. It has to be mentioned that, when developing a vision, it first plays a secondary role if the implementation of this vision is realistic (Aalders, 2001).

The formulation of a vision particularly aims to facilitate the process of defining a company-specific sourcing strategy, and, therefore, can be regarded as an intermediate step towards the development of such a strategy.

4.3.1.2 Objectives

After having developed the company vision associated with OSD, a company should break down this vision into more specific objectives. Concerning this process, Aalders (2001) proposes checking each of the defined objectives against the following criteria:

- **Coherence:** Is the objective closely connected with OSD?
- **Measurability:** Is the objective measurable and bound by time?
- **Reachability:** Is the objective achievable?

In an effort to examine the derived objectives in more detail, Cullen and Willcocks (2003) recommend to differentiate between the following objective categories:

- **Short-term objectives:** "*Benefits from outsourcing desired to occur almost immediately.*" (p. 54)
- **Long-term objectives:** "*Benefits for outsourcing expected to occur over time and may need management to ensure that they do materialize.*" (p. 54)

The definition of short- and long-term objectives plays a crucial part within an OSD initiative as these objectives provide a basis for numerous subsequent activities. For instance, these objectives influence the selection of the software services, the extent and the organization of the OSD project, as well as the selection of the offshore country and provider(s). In addition, the objectives provide the basis for the evaluation of the success of an OSD project (Sparrow, 2003). For these reasons, the knowledge of the precise objectives can be considered as a basic requirement for the definition of the sourcing strategy (Söbbing, 2002).

4.3.1.3 Strategy

Already when defining the sourcing strategy, the client company has to deal with the realization of the developed vision and the derived objectives. In this context, Söbbing (2002) recommends preparing a list of questions, comprising the following issues:

- **Country:** *Which offshore countries come into question?* (e. g., existence of former experiences with offshore destinations)
- **Extent:** *To what extent shall software services be offshored?* (e. g., offshoring of individual development activities or offshoring of the entire software lifecycle)
- **Legislation:** *Which legal aspects have to be taken into account?* (e. g., preponderance of restrictions on the transfer of data)
- **Organization:** *How shall the OSD project be organized?* (e. g., cooperation with a third-party vendor or establishment of a foreign joint venture or subsidiary respectively)
- **Provider:** *Which offshore providers offer the required software services?* (e. g., existence of providers with industry-specific know-how)
- **Service:** *Which software services are generally suitable for offshoring?* (e. g., offshoring of software components not critical to business)

According to Söbbing (2002), based on the answers to the questions listed above, a company should be in the position to define a company-specific sourcing strategy. In this context, Cullen and Willcocks (2003) accentuate the need for considering this strategy as an integral part of the overall corporate strategy.

4.3.1.4 Methods

With regard to the definition of the short- and long-term objectives associated with the engagement in OSD, Aalders (2001) suggests the development of a **balanced scorecard**, proposed by Kaplan and Norton (1996). Here, according to Aalders (2001), a company should take into consideration the following four perspectives: Finance, customers, internal business processes, as well as learning and growth. A major advantage of the development of such a balanced scorecard can be seen in the fact that the different perspectives and the associated objectives are integrated into an overall perspective (Holtbrügge, 2005).

In addition, in an attempt to monitor the defined objectives, Aalders (2001) recommends the definition of CSF for each individual objective. The identification of such factors can also be supported by the developed balanced scorecard.

4.3.2 Assessment of the Client Organization

Before planning an OSD project, a client company should check whether the organization itself is ready for the implementation of such a project. In this context, based on the results of our research cooperation as well as the offshore readiness assessment tools of two consulting firms (Induslogic, 2004; Lionbridge, 2005), we were able to derive the assessment categories and criteria presented in the following table.

Table 14: Offshore readiness assessment categories and criteria

Category	Criteria
Communication	Change management, corporate and document language, internal communication structures, reporting, reviewing, etc.
Infrastructure	Change request tools, configuration management tools, multi-site tools, project management tools, specific hard- and software, video conference equipment, etc.
Management	Risk aversion, top management support, etc.
Processes	Change request process, development process, documentation process, escalation process, monitoring process, pilot projects, process owners, process standardization, quality certifications (CMM, ISO, and ITIL), release process, etc.
Project experience	Distributed (software development) projects, international projects, IT outsourcing/offshoring projects, offshore cooperation models, etc.
Project planning	Core competence definition, cost planning, quality assurance, resource planning, risk analysis, sourcing strategy, time planning, etc.
Software products	Development platform, product structure, software architecture, etc.
Staff	Intercultural experience, intercultural training, language skills, standard trainings, etc.

Based on the categories and criteria listed in Table 14, a client company can assess its internal maturity in terms of readiness for an OSD project and identify existing weaknesses within its organization, which might hamper the successful implementation of such a project.

4.3.3 Identification of the Project Candidates

Based on the defined sourcing strategy, first, a company has to identify software projects, suitable for relocation abroad (Cullen and Willcocks, 2003). Here, in an attempt to ensure a well-structured identification process, we were able to derive five essential **identification criteria**.

In support of the identification of the project candidates, a client company can conduct a **core competence analysis**. Here, a company can fall back on five types of models for analyzing core competences.

4.3.3.1 Identification Criteria

With regard to the pre-selection of project candidates, a company should focus on the identification criteria presented in Table 15 (Sparrow, 2003; Mayer and Söbbing, 2004).

Table 15: Project identification criteria

Criterion	Description
Complexity	Does the software project require a high level of business know-how and interaction?
Criticality	Is the software (project) business critical?
Differentiation	Does the software (project) contribute to a competitive advantage?
Intensity	Does the software project require a high amount of resources?
Modularity	Is the software (project) clearly definable?

In the following, the criteria presented in the table above will be described in more detail.

Complexity: Software projects which require only a limited know-how in regard to business- or industry-specific processes as well as a low level of interaction between the project partners are particularly suitable for relocation abroad. Many a case, such projects possess a technical focus, e. g., the migration of a software system from a mainframe- to a client-server-based solution (Mayer and Söbbing, 2004).

In regard to the complexity of a software project, Beeler (2004) adds that the complexity of such a project greatly depends on the internal documentation of the corresponding software system.

Criticality: When analyzing software projects in regard to their offshore suitability, companies should take into account the business criticality of these projects (Lacity and Willcocks, 2001). Here, particularly projects dealing with software components or systems, not critical to the company's business operations, represent typical offshore candidates. In contrast, the offshoring of projects, encompassing software components or systems which possess a considerable impact on the business operations, requires additional analyses and should only be implemented in individual cases.

Differentiation: In general, software projects which make a contribution to differentiate a company from its competitors should not be part of an offshore project (e. g., Mayer and Söbbing, 2004). In this context, Hamel and Prahalad (1990) introduced the concept of core competences in strategic management. They define core competences as "*the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies.*" (p. 82). To identify core competences, they propose to check the following three characteristics:

- "*First, a core competence provides potential access to a wide variety of markets.*" (p. 83)
- "*Second, a core competence should make a significant contribution to the perceived customer benefits of the end product.*" (p. 84)
- "*Finally, a core competence should be difficult for competitors to imitate.*" (p. 84)

A major risk in regard to the relocation of core competences can be seen in the insufficient transparency and the limited control over these competences (Mayer and Söbbing, 2004). In contrast, by keeping the development and the maintenance of core-competence-related software components and systems in-house, a company can react more flexibly to changing market conditions.

If a software component or system is both critical to business operations and contributes to a competitive advantage, a company should decide against the relocation in either case. In this context, Lacity and Willcocks (2001, p. 188) refer to so-called "*critical differentiators*".

Intensity: Due to the considerable labor cost differences between high- (e. g., Germany) and low-wage countries (e. g., India), particularly labor intensive software services, for instance, the testing of software applications, are subject to OSD projects (Kalakota and Robinson, 2004). In line with Kalakota and Robinson (2004), Mayer and Söbbing (2004) discourage from the relocation of data center operations abroad, due to the low labor intensity.

Modularity: In principle, the development of software is well suitable for offshore projects. Here, according to Mayer and Söbbing (2004), it proves to be beneficial that a software development project represents a project with a clear scope and limited interdependencies to other business areas.

In case, a company aims to outsource a complete software system to a foreign service provider, the re-integration of the system and, therewith, the management of the interfaces gains in importance (Mayer and Söbbing, 2004). For this reason, the software system should exhibit well defined interfaces in order to facilitate the re-integration process.

With regard to the identification criteria presented above, it can be summarized that particularly technical focused, business uncritical, labor intensive, and modular software projects which do not make a contribution to a company's competitive advantage are suitable for offshoring (Rack, 2001).

4.3.3.2 Methods

The identification of OSD project candidates can be supported by the conduction of a **core competence analysis** (Mayer and Söbbing, 2004). By means of this analysis method, a company can examine if a software component or system belongs to or directly influences the core competences of the company, and, therefore, contributes to a competitive advantage.

Concerning the analysis of a company's core competences, manifold models exist which attempt to structure the analysis process. In this context, we distinguish between the model categories presented in the table below (compare Amberg, Schröder, and Wiener, 2005c).

Table 16: Models for analyzing core competences

Model category	**Characteristics**	**Models (examples)**
Indicator-based models	• Intention is to describe and to operationalize theoretical phenomena • Definition of indicators for analyzing core competences	• Evaluation of Innovative Technologies by Pfeiffer and Weiss (1995) • Model by Faix and Kupp (2002)
Knowledge-based models	• Assumption that knowledge is the most valuable source of competitive advantage • Differentiation between implicit and explicit knowledge	• Model by Boos and Jarmai (1994) • Model by Homp and Krüger (1997)

Portfolio-based models	• Standardized model for strategic decisions • Consideration of internal and external information within the analysis	• Business Factors Matrix by Lacity and Willcocks (2001) • Model by Hinterhuber and Stuhec (1997) • Portfolio of Competences by Friedrich, Handlbauer, Hinterhuber, and Stuhec (1996)
Predetermined lists	• Recommendation of predetermined core IT capabilities • Direct reference to specific IT functions and processes	• Core IS Capability Domain by Feeny and Willcocks (1998) • Core IT Capabilities Framework by Lacity and Willcocks (2001)
Resource-based models	• Assumption that different resources and their combination result in competitive advantage • Analysis of internal strengths and weaknesses	• Skill Mapping and Skill Cluster Analysis by Edge, Hiscocks, Klein, and Plasonig (1995) and Edge, Kass, and Klein (1991) • VRIO Framework by Barney (2002)

4.3.4 Analysis of the Project Candidates

In an effort to examine the identified project candidates in more detail, each of these candidates should be analyzed in consideration of the following five aspects: The **costs** associated with the project candidate, the **feasibility** of the candidate, the services offered at the IT service **market** in regard to the candidate, as well as the **requirements** and the **risks** of the project candidate. As a basis for these more advanced analyses, a company should first conduct a comprehensive as-is analysis. Finally, for each project candidate, the analysis results should be summarized in a business case.

Supporting the analysis of the project candidates, the **TCP cost analysis** describes a structured approach for analyzing the costs of an OSD project.

4.3.4.1 Analysis Aspects

Primarily, the analysis of each project candidate should comprise the aspects presented in the figure below (Aalders, 2001; TransCrit, 2004). These analysis aspects also represent the fundamental categories of the business case.

In the following, each individual analysis aspect outlined in Figure 19 will be described in more detail.

Costs: In an effort to analyze the costs associated with an individual project candidate, the client company needs to calculate the total costs of offshoring for this candidate. In this context, according to Overby (2003a), particular attention must be drawn to the so-called "*hidden costs*" of an OSD project (e. g., additional costs due to geographical and cultural differences).

With regard to the cost analysis, in a first step, the company usually determines the total costs for the internal service provision of the identified project candidate, the so-called "*base case*" (Cullen and Willcocks, 2003, p. 63). Here, in an effort to calculate the base case, companies frequently use the total cost of ownership (TCO) approach (Söbbing, 2002). In a second step, the total costs of offshoring are compared to the TCO (Cullen and Willcocks, 2003). This comparison is complicated by the estimation of improvement potentials on the part of the client (Lacity and Willcocks, 2001), the inclusion of an efficiency factor (Amberg, Herold, Kodes, Kraus, and Wiener, 2005a), as well as the consideration of markups on the part of the provider (Grebe, Kottmann, and Nettesheim, 2003).

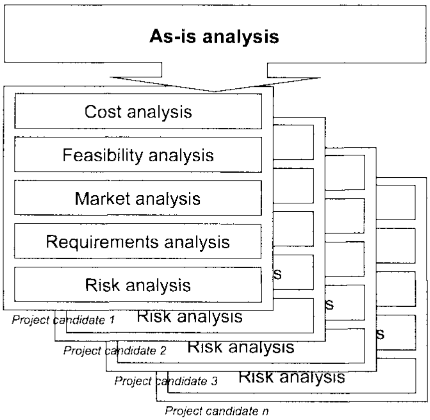


Figure 19: Analysis aspects

Feasibility: When analyzing the feasibility of a project candidate, the client company examines the transferability of each individual project candidate identified (TransCrit, 2004). In this context, according to Cullen and Willcocks (2003), particularly the internal IT infrastructure, the internal processes, and the internal employees are under examination.

Regarding the internal IT infrastructure, the capability of the communication network is of particular importance, due to the considerable geographical distance between the project partners (TransCrit, 2004). Concerning the internal processes, attention must be paid to the maturity, and, therewith, to the standardization and the documentation of these processes. Here, in terms of the Capability Maturity Model (CMM), Overby (2003b) recommends a maximal difference of two CMM levels between the project partners. Otherwise, the synchronization between the client- and the provider-specific processes is too costly and time-consuming. With regard to the internal employees, the resistance of these employees to implement an OSD project needs to be taken into account (TransCrit, 2004).

As a result of the feasibility analysis, the identified project candidates can be classified into three categories: Ideal, suitable, and not suitable for offshoring (Kobayashi-Hillary, 2004).

Market: By collecting information on the offshore IT service market, the client company aims to get a general idea of the particularities of potential offshore destinations and providers. Additionally, the company can verify that the desired services are available in the market.

Many a time, the analysis of the offshore service market heavily depends on publicly available information (e. g., provider websites). In an effort to obtain more detailed market information, Aalders (2001) recommends commissioning a market research institute or a consulting agency to conduct an additional competition analysis.

Requirements: This analysis aspect deals with the claims of the client company in regard to the external service provision of a project candidate. In this context, first of all, the current quality of the internal service provision has to be granted. Therefore, existing requirements have to be analyzed and documented. Furthermore, numerous companies aspire to reach a quality improvement through the external service provision. In this case, additional requirements have to be examined and added to the already compiled documentation. The prepared documentation can serve as a basis for the contract negotiations and/or can be included in the contract.

According to Sparrow (2003), in an effort to analyze the requirements of a project candidate, a company can use internal (e. g., discussion rounds, employee surveys, internal benchmarks) and external information sources (e. g., customer surveys, expert interviews, external benchmarks).

Risks: Already in the analysis phase, a client company should attempt to identify potential risk factors associated with a project candidate. According to TransCrit (2004), due to the cultural and geographical differences between the project partners, the major risk factor in connection with an OSD project can be seen in the non- or bad-fulfillment of the contract through the service provider. However, this risk factor, like most other risk factors, cannot be completely eliminated; rather, a company can only attempt to minimize the occurrence probability of these factors through an adequate planning and preparation effort.

Other major risk factors in regard to IT offshoring in general are presented in the figure below.

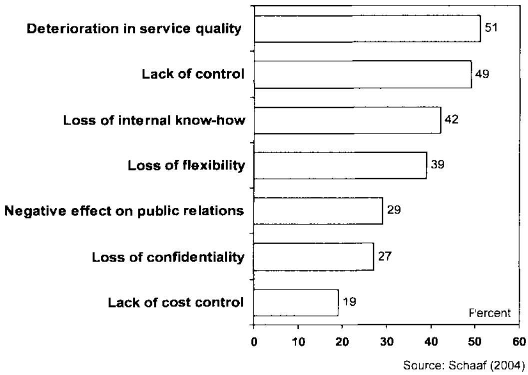


Figure 20: Major risk factors

On the basis of the conducted analyses, a client company should be in the position to decide which project candidates will be offshored to a foreign service provider, which will be outsourced to a domestic provider, and which will remain in-house (Söbbing, 2002). In this context, it has to be added that a company should scrutinize its decision(s) in regular intervals (Bräutigam, 2004).

4.3.4.2 Methods

The relocation of software services to an offshore provider is often justified by the existing cost saving potentials. For this reason, the cost analysis can be regarded as one of the most important components of the analysis phase.

In an effort to facilitate this type of analysis, we developed the so called **TCP cost analysis method** (compare Amberg et al., 2005a). This method describes a structured approach for analyzing the costs of an OSD project. Here, relevant cost factors are classified along the following three perspectives:

- **Technical perspective:** Costs related with the bridging of know-how gaps, and other technical-related expenses.
- **Commercial perspective:** Costs related with the administration of the project and the remuneration of the provider.
- **Process-related perspective:** Costs related with the establishment of new processes, and the adjustment/improvement of existing processes.

In addition, within each perspective, the cost factors are differentiated into non-recurring and recurring costs (compare Albert and Thondavadi, 2004):

- **Non-recurring costs:** Costs which incur only once during the course of a project.
- **Recurring costs:** Costs which incur repeatedly during the course of a project.

Based on these two dimensions, relevant cost factors for OSD projects have been identified and classified within the classification framework presented in the table below.

Table 17: TCP cost analysis

	Technical perspective	**Commercial perspective**	**Process-related perspective**
Non-recurring costs	• Costs related to the selection of the project • Cost related to the transfer of know-how	• Costs related to the selection of the supplier(s) • Costs related to the preparation of the contract	• Costs related to the adjustment/improvement of internal processes • Costs related to the transfer of software and hardware
Recurring costs	• Costs related to the specification of the project	• Costs related to the management of the contract • Labor costs • Costs related to the management of risks	• Cooperation costs • Costs related to the monitoring of the provider performance

Furthermore, due to a lack of domain know-how, linguistical problems, as well as cultural and time zone differences, a foreign provider will usually perform the outsourced task(s) with a lower efficiency than an internal business would (e. g., Overby, 2003a). For this reason, the TCP method also takes into account an efficiency factor. This factor helps to quantify differences in efficiencies, hereby supporting the realistic assessment of the potential costs of an OSD project.

4.4 Decision and Negotiation Phase

In regard to the decision and negotiation phase, Figure 21 shows the major management activities which need to be executed within this phase. The corresponding activities as well as methods supporting these activities will be presented in more detail within the following sections.

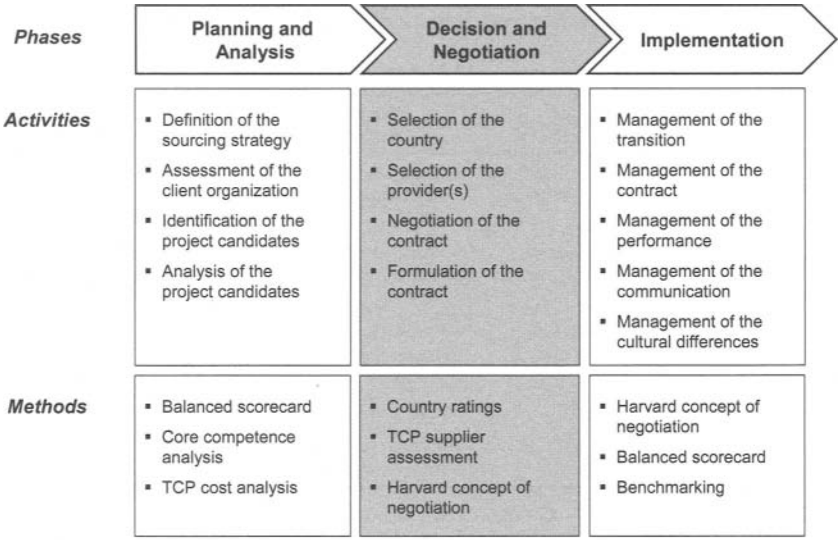


Figure 21: Decision and negotiation phase

4.4.1 Selection of the Country

Before selecting an offshore provider, a client company should conduct a comprehensive analysis of potential offshore destination countries. In an effort to select an offshore country, a great variety of **selection criteria** can be taken into account. Out of this criteria pool, a client company has to identify and evaluate relevant criteria. In this context, beside geographical, administrative, and economical aspects, Ghemawat (2001) emphasizes the need to consider the cultural distance between the client and the offshore country.

In support of the country selection, a company can also fall back on so-called **country ratings**. Even though, these ratings are not IT-offshoring-specific, they can provide the company with valuable information on an offshore country.

4.4.1.1 Selection Criteria

In many offshore countries (e. g., India, Russia), significant growth potentials are expected in regard to the export of IT services. In an effort to strengthen their market position in the global IT service market, these countries founded national associations (e. g., NASSCOM in India, RUSSOFT in Russia), representing the interests of local IT service providers (Mayer and Söbbing, 2004). These associations can considerably facilitate the collection of information on an offshore country (Böhm, 2003b).

Based on the collected information on potential offshore destination countries, a company should conduct a profound analysis of these countries. In this context, Kalakota and Robinson (2004) as well as Kobayashi-Hillary (2004) recommend a differentiation between the people- and the location-related attractiveness of an offshore country (compare Table 18).

Table 18: Country selection criteria

	Category	Criteria (examples)
People attractiveness	**Culture**	Compatibility of business practices, understanding of other cultures, etc.
	Education	Quality of colleges and universities, etc.
	Labor	Size of labor pool, wages, etc.
	Language	Proficiency in English and German, etc.
Location attractiveness	**Geographical position**	Geographical difference, time difference, travel convenience, etc.
	Infrastructure	Airports, electricity, roads, telecommunication, etc.
	Legal stability	Copyright protection, intellectual property (IP) rights, etc.
	Political and economic stability	Government, strikes, terrorism, war, etc.

With regard to the selection of an offshore country, it has to be noted that this decision is also heavily influenced by the quality of the IT service providers located within the countries under examination.

4.4.1.2 Methods

In an effort to identify country-specific benefits and risks, a client company can use **country ratings**. These ratings represent external information sources which aim to point out economical, legal, and political benefits and risks, generally associated with a country. The result of a country rating is a ranking of the countries examined.

According to Krystek and Walldorf (2002), one major country rating is the **Business Environment Risk Index (BERI)**. This rating will be briefly described in the following (compare Figure 22).

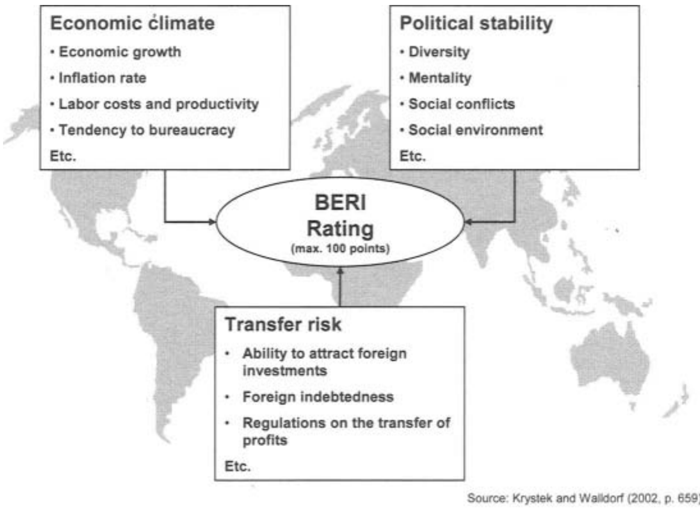


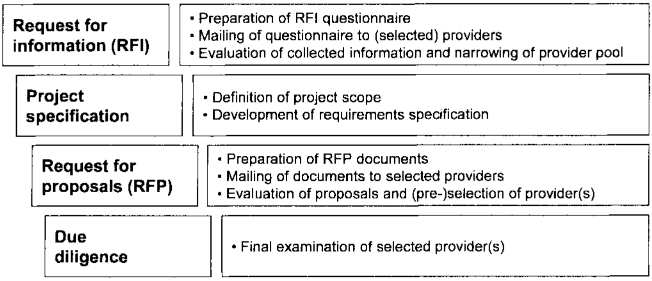
Figure 22: BERI

BERI was developed by the eponymous institute in Geneva (Switzerland) in 1968. The primary objective of this country rating is the early recognition of country-specific risks. In order to express the risk associated with a country, BERI uses both qualitative and quantitative methods to calculate a risk index. This index arises from the single indices of each of the three risk areas presented in Figure 22 (economic climate, political stability, and transfer risk).

4.4.2 Selection of the Provider(s)

In line with Aalders (2001), Cullen and Willcocks (2003), Kalakota and Robinson (2004), as well as Söbbing (2002), the selection process typically runs from the collection of information on potential offshore IT service providers to the final examination of the selected provider(s) (compare Figure 23).

In the following sections, the four essential steps of the provider selection process (the **request for information (RFI)**, the **project specification**, the **request for proposals (RFP)**, and the **due diligence**) will be described in more detail. In this context, it has to be added that these individual steps are not necessarily carried out in the presented sequence.



Source: Kalakota and Robinson (2004, p. 244)

Figure 23: Provider selection process

In attempt to support the selection of an offshore provider, we developed the **TCP supplier assessment**. In an effort to provide a comprehensive basis for decision, this method particularly aims to gather comprehensive information on potential offshore providers, as well as to evaluate and compare the collected information.

4.4.2.1 Request for Information (RFI)

Before sending out an RFP, the client company should first request basic information from potential offshore service providers. In order to minimize the effort involved, Sparrow (2003) recommends sending out an RFI to no more than twelve service providers. The pre-selection of these providers could be based on the market analysis, implemented within the analysis phase.

By means of the RFI, a company aims to gain more detailed information on potential offshore providers. For this purpose, the company sends out a questionnaire to pre-selected providers. According to Kalakota and Robinson (2004), this questionnaire should primarily cover the information categories presented in Table 19. In addition, the questionnaire should also include a rough description of the planned OSD project as well as the company objectives associated with this project (Sparrow, 2003).

Based on the evaluation of the questionnaires, the client company can narrow down the list of potential service providers. The pre-selected service providers should be invited to personal interviews by the company. Furthermore, in order to obtain more objective information, the company should get in contact with reference customers of these providers (Aalders, 2001).

Table 19: Content of the RFI questionnaire (exemplarily)

Information category	Information requested (examples)
Company	Business model, capabilities, company size, financial stability, locations, etc.
Customers	Long-term customers, reference projects, etc.
Infrastructure	Facilities, hardware, network, software, redundancy plans, telecommunication, etc.
Management	Escalation procedures, experience, management attention, participation of senior management, etc.
Processes	Industry knowledge, project management methodology, quality certifications, quality control measurements, reporting guidelines, etc.
Security	Data protection, IP protection, backup strategies, etc.
Staff	Educational requirements, ramp-up capabilities, retention initiatives, training programs, etc.

At this project stage, before providing an offshore provider with more detailed information on the planned OSD project, Bräutigam (2004) recommends that the company asks the potential project partners to sign a non-disclosure agreement (NDA).

4.4.2.2 Project Specification

Having narrowed down the provider list, the client company needs to develop a specification of the OSD project (either self-dependent or in cooperation with a potential service provider). This project specification is normally included within the RFP (Söbbing, 2002), and, particularly in the case of OSD, plays a crucial role for the successful project implementation (NetSkill, 2002).

Regarding the specification of the OSD project, Söbbing (2002) suggests the introduction of a requirements specification, which contains the deliverables on the part of the provider. In DIN 69901, a requirements specification is defined as a comprehensive description of the services which need to be performed by the provider. Primarily, these services can be related to technical, commercial, and organizational aspects.

According to Söbbing (2002), the requirements specification facilitates the comparison of proposals from different providers, the prevention of misunderstandings, and the minimization of cost-related risks both on the part of the client and the provider. These functions of a requirements specification reemphasize the importance of this instrument within an OSD project.

4.4.2.3 Request for Proposals (RFP)

Regarding the RFP, the client company can choose between two options: The open and the restricted RFP (Aalders, 2001). In both cases, the RFP represents an invitation to submit proposals within a specified period of time. Here, the company first sends tender documents to all interested (open RFP) or pre-selected offshore providers (restricted RFP). These documents usually contain the developed project specification, the general terms of cooperation, as well as a questionnaire (Bräutigam, 2004). In contrast to the RFI questionnaire, the RFP questionnaire is more detailed and, according to Kalakota and Robinson (2004), should primarily deal with company-, infrastructure-, process-, and staff-related aspects (compare Table 20).

Table 20: Content of the RFP questionnaire (exemplarily)

	Information category	Information requested (examples)
Company	Contract	Conflict resolution, payment, pricing, etc.
	Culture	Company vision and values, flexibility, openness, etc.
	Expertise	Areas of expertise, reference customers, etc.
	Location	Country, language, time zones, etc.
	Management	Escalation procedures, experience, management attention, participation of senior management, etc.
	Stability	Company growth, company size, project experience, year of establishment, etc.
Infrastructure	Electricity	Backup strategies, power backup resources, etc.
	Hardware	Desktops, servers, etc.
	Software	Application servers, databases, operating systems, etc.
	Technology	Applications, domain, and infrastructure expertise, communication, Internet, etc.
Processes	Project management	Communication, project planning, reporting, risk management, etc.
	Quality	Certifications, reviews, standards, testing, etc.
	Security	Access control, data protection, IP protection, network security, etc.
Staff	Language	Corporate and document language, English and German skills, etc.
	Quality	Education, experience, hiring policy, etc.
	Retention	Average employee tenure, satisfaction surveys, policies for keeping employees, retention rate, etc.
	Scalability	Depth and knowledge of employees, manpower abundance, subcontractors, etc.
	Training	Documentation, training programs, etc.

The evaluation of the proposals and the selection of the provider(s) are usually executed in a three-step process: In a first step, the client company determines a uniform list of evaluation criteria and an evaluation scale. With regard to the latter, Aalders (2001) recommends to not only differentiate between "*applies*" and "*applies not*", but to use a more sophisticated scoring system, for instance, the one proposed by Cullen and Willcocks (2003). In this system, each criterion is given a score from 0 ("*Did not respond, non-compliant*") to 4 ("*Superior response to other bids*"). In a second step, the company further narrows down the provider list, resulting in a short list. Here, according to Aalders (2001) and Dubey (2003), not all evaluation criteria have to be taken into account; rather, a company should focus on key criteria. In a third and last step, the client company selects the preferred provider(s) (Cullen and Willcocks, 2003). Within this final step, the level of detail of the evaluation procedure, and, herewith, the administration and time efforts should be disproportionately higher (Sparrow, 2003).

4.4.2.4 Due Diligence

In an effort to ensure that the selected offshore provider(s) are in the position to perform the desired services, Aalders (2001) recommends the conduction of a final examination of the provider(s), the so-called due diligence. Alternatively, the due diligence can also be conducted with several offshore providers during the selection process (Bräutigam, 2004). On the one hand, this procedure means a considerably higher effort on the part of the client company, but, on the other hand, has the advantage that the company can gather more accurate information on the corresponding providers.

According to Bräutigam (2004), in general, a due diligence can address business-related, financial, HR-related, legal, and technical aspects. However, in the case of an OSD project, the due diligence usually focuses on the technical equipment and the processes on the part of the provider.

4.4.2.5 Methods

In an effort to facilitate the assessment of potential offshore providers, we developed the partially tool-supported **TCP supplier assessment method**. This method describes a structured approach for assessing the suitability of an offshore provider with regard to technical, commercial, and process-related aspects (compare Figure 24).

The procedure of the TCP supplier assessment is divided into three phases. In the first phase, technical, commercial, and process-related information on the client and the software product to be outsourced are gathered in a workshop. After having pre-selected potential offshore providers in respect to general assessment criteria (compare section 4.4.2.1), the second phase of the TCP assessment focuses on collecting corresponding information on the preselected providers. Within the third phase of the TCP assessment, the client requirements collected in the first phase and the provider capabilities collected within the second phase are compared to one another. By doing this, existing gaps between the internal requirements and the external capabilities can be identified within each perspective. In addition, based on the identified gaps, adequate countermeasures (e. g., cultural training or process synchronization) can be proposed.

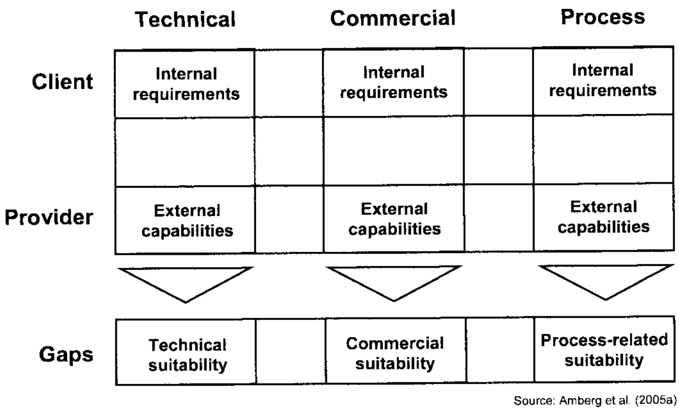


Figure 24: TCP supplier assessment

4.4.3 Negotiation of the Contract

According to Söbbing (2002), in regard to the negotiation of the contract, particular attention must be drawn to the **preparation** of the negotiations with the offshore provider. In this context, the company should familiarize its negotiators with the cultural-specific negotiation principles of the provider(s).

In an effort to support the contract negotiations between the project partners, reference can be made to the **Harvard concept of negotiation**.

4.4.3.1 Preparation

In regard to the preparation of the contract negotiations, numerous aspects should be taken into consideration. Therefore, Cullen and Willcocks (2003, p. 148) suggest that a company, before starting with the negotiation of the contract, compiles a list of relevant questions. In this context, basically, it can be differentiated between logistic (e. g., "*Who will be negotiating?*") and tactical questions (e. g., "*How will (...) packages of compromise be addressed?*").

Furthermore, Aalders (2001) recommends the formulation of a position paper as well as the preparation of contract clauses. In addition, already in the forefront of the contract negotiations, the negotiating partners should agree upon the documentation procedure and the time frame of the negotiations.

Within the position paper, the participating companies describe their individual negotiating position (Aalders, 2001). The formulation of the position papers aims to ensure that both negotiating partners are familiar with the essential questions of the contract. Through this, both partners can develop fall-back strategies and define to what extent they are willing to compromise.

With regard to the preparation of contract clauses, Aalders (2001) proposes that, in a first step, all internal departments of the client company, which are affected by the OSD project, collect their requirements. In a second step, these requirements have to be transferred to predefined contract clauses with support of the internal and/or external legal advisers.

Western Europe / USA	Asia
Nontask sounding	
Quick meetings	Long courting process
Informal	Formal
Make cold calls	Draw on intermediaries
Information exchange	
Full authority	Limited authority
Direct	Indirect
Proposals first	Explanations first
Means of persuasion	
Aggressive	Questioning
Impatient	Enduring
Terms of agreement	
Forging a „good deal"	Forging a long-term relationship

Source: Graham and Lam (2003, p. 84)

Figure 25: Cultural differences in regard to the negotiation style

Particularly in the case of OSD, an important aspect in regard to the preparation of the contract negotiations is the familiarization of the negotiators with the negotiation style of the offshore provider(s). Their style of negotiating a contract usually differs considerably from the one of Western European or U.S. companies (Davies, 2004). According to Graham and Lam

(2003), particularly when conducting negotiations with Asian providers, remarkable differences in terms of the negotiation style can be observed (compare Figure 25).

4.4.3.2 Methods

In an effort to prepare for the negotiations of the contract, a company can refer to the **Harvard concept of negotiation**. According to Bräutigam (2004), this concept encompasses the following four basic principles:

- Concentrate on interests, not on positions!
- Develop decision options which provide a mutual benefit!
- Insist on the application of objective criteria!
- Treat people and problems separately!

Based on the Harvard concept of negotiation, Bräutigam (2004) derived the following basic principles of professional negotiating: The interest-based negotiating (e. g., discussion of interests with the negotiating partner), the proper communication (e. g., utilization of closed- and open-ended questions), the proper preparation (e. g., utilization of proven routines), and the willingness to compromise (e. g., development of a shared solution).

In this context, it has to be noted that the presented principles do not only apply to the negotiation phase. Rather, these principles can also be useful in regard to the management of the contract (e. g., the management of change requests) within the implementation phase (compare section 4.5.2.3).

4.4.4 Formulation of the Contract

In the course of an OSD project, manifold problems can arise. In the best case, the majority of these possible problems are addressed within the contract between the project partners (Söbbing, 2002). According to Kobayashi-Hillary (2004), the contract plays a crucial role for the successful implementation of such a project.

According to Bräutigam (2004), many a time, the project partners use the standard contract provided by the provider to specify the scope of the project. However, Cullen, Seddon, and Willcocks (2001) recommend that the client company uses its standard contract or drafts an individual contract.

The following sections go into the typical **categories** of an outsourcing contract, the **internationalization** of such a contract, and the different **pricing models** used within such a contract.

4.4.4.1 Contract Categories

In practice, companies prefer the modular to the fixed contract structure (Söbbing, 2002). By means of this structure, particularly the adaptation of the contract to additional requirements and change requests is facilitated (Bräutigam, 2004). For this reason, in the following, we will focus on the modular contract structure.

According to Söbbing (2002), the modular structure of an outsourcing contract consists of four basic categories:

- **Master agreement:** Regulates the basic rights and duties of the contracting parties (Bräutigam, 2004).
- **Service level agreement(s):** Specify the services which need to be performed by the provider (Bräutigam, 2004).
- **Takeover agreement(s):** Regulate the transfer of assets, data, and staff between the contracting parties (Söbbing, 2002).
- **Other agreements:** Comprise, for instance, leasing contracts, data protection concepts, etc. (Söbbing, 2002).

In contrast to the master agreement, the service level, the takeover, and the other agreements are also referred to as single agreements.

In an effort to prevent conflicts and misunderstandings, the contracting partners should specify a hierarchy of the individual agreements within the master agreement. In this context, according to Bräutigam (2004), more specific agreements (e. g., single agreements) take priority over more general agreements (e. g., general terms and conditions).

The formulation of the outsourcing contract should be carried out by the internal legal department or an external law firm respectively. According to Söbbing (2002), depending on the contract category, the contract formulation should be supported by the internal departments affected by this category (e. g., the creation of the SLA by the IT department, the creation of the takeover agreement(s) by the controlling and the HR department).

Particularly in the case of OSD, the contracting parties should specify the law applicable within the master agreement (Haeberlein, 2004). If an OSD contract does not contain a corresponding clause, it has to be determined if the contract is more closely connected to the client or the provider country. According to Bräutigam (2004), this task belongs to one of the most challenging in international private law.

4.4.4.2 Internationalization of the Contract

In an effort to internationalize an outsourcing contract, Söbbing (2002) highlights two options: The conclusion of a global contract and the conclusion of a country-specific contract.

Global contract: In general, a contract which was concluded in Germany is also effective abroad (this does not apply to countries in which the contract offends against national laws). However, Söbbing (2002) stresses that the formulation of a contract, which is valid at home and abroad, represents a quite demanding task. For instance, while contracts do not require a specific form in Germany, contracts which reach a particular minimum value must be in writing in the United States and the UK.

Regarding the formulation of a global contract, it must be noted that a company is generally free in its choice of law, which means that the contracting parties can agree upon any national law. In theory, the parties can also choose the national law of a country which is not involved in the project (Söbbing, 2002).

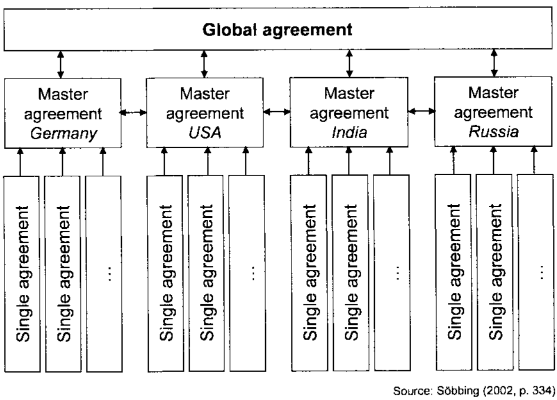


Figure 26: Country-specific contract

Country-specific contract: With regard to OSD, Söbbing (2002) recommends the conclusion of a country-specific contract. This contract contains a single agreement for each country involved in the project, the so-called local country agreements. These agreements (each comprising a master and several single agreements) are connected through a global agreement, which represents the commercial and organizational frame of the project, and, in addition, regulates the interfaces among the national agreements (compare Figure 26).

Regarding the contractual language of an OSD contract, the contracting parties can agree upon a uniform language (e. g., English). This procedure has the advantage that the content of the contract is relatively easy to understand for all participants. However, problems can occur with regard to the translation of legal terms. For this reason, Söbbing (2002) recommends formulating the local country agreements in the national language and the global agreement in the language primarily used by the project management.

4.4.4.3 Pricing Models

Within the OSD contract, the contracting parties have to determine the pricing model used for the payment of the delivered services. Here, the parties can also decide to combine different pricing models. In this context, Cullen and Willcocks (2003) as well as Bräutigam (2004) differentiate between the pricing models presented in Table 21.

Table 21: Pricing models

Model	Description
Fixed price	Price is fixed for the services specified within the contract.
Value-based price	Price is figure-based (e. g., cost savings on the part of the client company).
Variable price	Price is unit-based (e. g., number of provider employees, working hours fulfilled).

The **fixed price** represents the easiest pricing model. Choosing this model, the client company can widely protect itself against unexpected costs, occurring during the course of an OSD project. However, it has to be mentioned that, in the case of changing requirements or moving targets, the fixed price model can be associated with significant additional costs.

In the first instance, a **value-based price** is independent of the service provision through the offshore provider. Here, the provider only benefits from the added-value created through the delivered services on the part of the client. For instance, this pricing model could be tied to the realized cost savings or quality improvements within the client company.

Agreeing upon a **variable price**, the contractual partners should pay particular attention to the selection of the units underlying the calculation of the price. Examples for such units are the number of project managers and software developers on the part of the provider and/or the working hours fulfilled by these employees in order to perform the agreed services.

4.5 Implementation Phase

The implementation phase primarily deals with the management activities listed in Figure 27. Within the following sections, these activities as well as corresponding methods will be described in more detail.

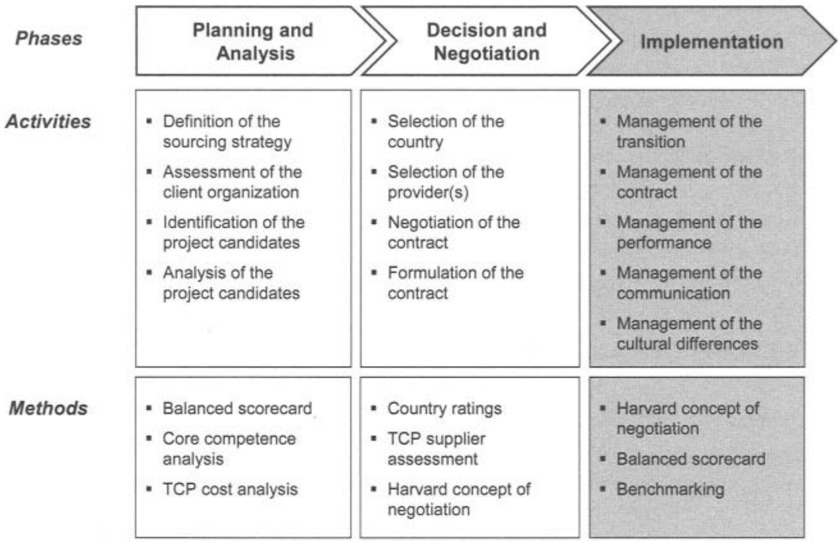


Figure 27: Implementation phase

4.5.1 Management of the Transition

In regard to the transition phase of an OSD project, the client company transfers required assets, data, and know-how to the offshore IT service provider(s). Additionally, in individual cases, internal employees are also passed over to the service provider (Söbbing, 2002). At the end of the transition phase, particularly in order to ensure the functionality of the transferred hardware and software components, a company should carry out comprehensive tests (Fischer and Schumacher, 2004).

In the following sections, in line with Cullen and Willcocks (2003), the three major transition processes (the transfer of **assets**, the transfer of **data and know-how**, as well as the transfer of **staff**) will be considered in more detail.

4.5.1.1 Transfer of Assets

Regarding the transfer of assets, it can be differentiated between the transfer of hardware and software.

Hardware: Some OSD projects require the transfer of hardware components to the location of the offshore provider. Beside the transport of these components, the hardware must be integrated into the existing hardware infrastructure on the part of the provider. In an effort to ensure the functionality of the transferred components, comprehensive functionality tests need to be carried out (Bräutigam, 2004).

Software: Analogous to the hardware transfer, the transferred software components need to be integrated into the provider's IT infrastructure and tested in regard to their functionality (Bräutigam, 2004). Additionally, in the case of the transfer of software, the project partners have to deal with licensing rights. Here, the partners have to verify the transferability of the corresponding software licenses (Sparrow, 2003).

4.5.1.2 Transfer of Data and Know-how

According to Bräutigam (2004), the data transfer between the project locations represents a sophisticated task which cannot be equated with the simple exchange of data. In this context, particularly, the preponderance of different data formats can cause significant problems.

In addition, the offshore provider can also be commissioned to revise the transferred data. Here, for instance, the provider could be responsible for checking the data consistency and integrity, identifying and eliminating data redundancies, or adding additional data (Bräutigam, 2004).

In regard to the know-how transfer, Kalakota and Robinson (2004) recommend to first define which knowledge should be transferred to the offshore provider and which knowledge should be kept in-house. The actual know-how transfer can be carried out either offshore (at the provider location) or onsite (at the client location). In the latter case, selected employees of the provider visit the client and collect relevant information in regard to the relocated services. These employees then spread the collected information among the offshore employees (Albert and Thondavadi, 2004).

4.5.1.3 Transfer of Staff

According to Cullen and Willcocks (2003), there are two general approaches in regard to the transfer of staff:

- **Clean break:** The client company signs off the corresponding employees and these employees negotiate their contracts with the provider self-dependently.
- **Negotiated transfer:** The client company and the provider agree upon the employees to be transferred as well as the terms and conditions of their employment.

In this context, it has to be noted that the transfer of staff can only be observed sporadically within an OSD project (Kobayashi-Hillary, 2004).

4.5.2 Management of the Contract

According to Bräutigam (2004), IT outsourcing contracts are generally characterized by a high complexity. In the case of OSD, this complexity is further fortified by the rapid technological progress within the software industry and the ever changing environment of the companies involved in such a project (e. g., the introduction of new legal regulations in the corresponding countries). For these reasons, the management of an OSD contract requires significant administration effort. Here, according to Bräutigam (2004), particular attention must be drawn to the management of **change requests** and the resolution of **conflicts**.

To support the change request and the conflict management, again, reference can be made to the **Harvard concept of negotiation**.

4.5.2.1 Change Request Management

The change request management deals with the adaptation of the contract to changing conditions. According to Cullen and Willcocks (2003), change requests may arise when the client company aims to change the internal IT infrastructure (e. g., the introduction of a new operating system), to incorporate further services (e. g., services that were not foreseen), to rectify defects in the contractual agreement (e. g., the introduction of contract penalties), to revise the pricing arrangement (e. g., the introduction of fixed prices instead of variable prices or vice versa), etc.

Due to these manifold reasons for change requests, a regular adaptation of the contract is necessary. However, this adaptation can bring forth significant problems. Therefore, in an effort to ensure the mutual satisfaction with the OSD contract, the contracting partners should define a change process at an early stage of the project (Sparrow, 2003). This process should also include the responsibilities of the contracting parties (Söbbing, 2002).

To facilitate the management of change requests, Bräutigam (2004) recommends the installation of a steering committee, consisting of employees and managers from both the client and the provider company. The primary task of this committee is to examine if a change request should be considered, and, if so, how this request could be integrated into the existing contract.

4.5.2.2 Conflict Management

Due to the high complexity of an OSD contract, many a time, the contracting partners cannot fall back on the typical conflict resolution mechanisms, which would be used in the case of a simple exchange agreement (Bräutigam, 2004). Here, due to the well-defined rights and duties of the contractual parties, a professional resolution of the conflict can also be reached by the decision of a court. However, in regard to an OSD project, the project partners should aspire to reach a consensus out of court in either case (e. g., by the inclusion of a mediator). This is particularly important if the partners aim to continue their cooperation.

If the contracting partners cannot resolve the conflict amicably, the partners have no other chance than to bring the conflict to law. This is usually connected with the abnormal termination of the project. Therefore, according to Bräutigam (2004), it is recommendable to incorporate a clause in the contract which forces the partners to endeavor an amicable solution.

4.5.2.3 Methods

Concerning the introduction of the **Harvard concept of negotiation**, we refer to section 4.4.3 (Negotiation of the Contract).

4.5.3 Management of the Performance

Having completed the transition phase, the client company needs to manage the performance rendered by the offshore provider(s). Here, the company should aim to introduce effective **performance measurements** (e. g., key performance indicators) in order to continuously monitor and to regularly evaluate the provider performance.

In regard to the continuous monitoring of the provider performance, Cullen and Willcocks (2003) suggest the introduction of a **balanced scorecard**. With regard to the regular evaluation of the provider performance, Söbbing (2002) recommends the conduction of internal and external **benchmarks**.

4.5.3.1 Performance Measurement

In an effort to ensure the definition of meaningful performance measures, Sparrow (2003, p. 138) recommends checking each potential measure in regard to the SMART criteria:

- **Specific:** "*Is the measure clear and focused to avoid misinterpretation?*"
- **Measurable:** "*Can the measure be quantified and used in meaningful statistical analysis?*"
- **Attainable:** "*Is the measure achievable, reasonable, and credible?*"
- **Relevant:** "*Does the measure reflect [the] organization's objectives and is it cost effective?*"
- **Timely:** "*Is the measure collectible within a given framework?*"

In consideration of the SMART criteria, a company is in the position to define meaningful performance measures, often referred to as key performance indicators (KPI). To define KPI, Cullen and Willcocks (2003, p. 81) propose the following process:

1. **Set scope parameters** (e. g., "*Confirm in-scope services*")
2. **Define stakeholders** (e. g., "*Identify who cares about each service*")
3. **Define KPI** (e. g., "*Generate performance measures for each stakeholder group and service*")
4. **Set thresholds** (e. g., "*Set bottom and top lines for each KPI*")
5. **Design measurement/reporting system** (e. g., "*Prototype performance reports*")
6. **Walkthrough the system** (e. g., "*Predict desired and undesired behaviors*")
7. **Build commitment** (e. g., "*Develop results communication plan*")

On the basis of the developed measurement and reporting system, the client company should be in the position to continuously monitor the provider performance (Aalders, 2001).

Beside the development of a KPI-based measurement and reporting system, the company should provide for comprehensive acceptance and functionality tests during the course of the entire OSD project. Herewith, the company can ensure that the current status of the software complies with the developed software specification and that the end-users are satisfied with the software. In this context, Fischer and Schumacher (2004) recommend agreeing upon the regular delivery of software prototypes through the offshore provider.

4.5.3.2 Methods

In an effort to continuously monitor the provider performance over the entire course of an OSD project, Cullen and Willcocks (2003) recommend the development of a **balanced scorecard** with the following four perspectives: Service, relationship, price, and strategy (compare Figure 28).

Service	**Relationship**
• Consistency (across geographies, customer bases) • Quality Etc.	• Proactivity • Responsiveness • Values Etc.
Price	**Strategy**
• Competitiveness • History against baseline • TCO (Total Cost of Ownership) • Transparency Etc.	• Business contribution • Innovation • Objectives achievement • Society contribution Etc.

Source: Cullen and Willcocks (2003, p. 82)

Figure 28: Balanced scorecard for monitoring the provider performance

Furthermore, already during the implementation phase of an OSD project, the client company should make an effort to regularly evaluate the performance delivered by the offshore provider. In this context, Söbbing (2002) proposes the **benchmarking** method, which can either be used to compare a service internally (internal benchmarking) or to compare a service externally (external benchmarking).

Internal benchmarking: With regard to the internal benchmarking, a company compares a particular service with similar services, which are performed in-house (Söbbing, 2002). If such a comparison is not possible (e. g., the company does not render comparable services), the company is forced to conduct an external benchmarking. Due to the complex data collection, this type of benchmarking is associated with a disproportionately higher effort in regard to time and resources.

External benchmarking: With regard to the external benchmarking, a company compares a particular service with similar services within other companies. If these services are also performed by an offshore provider initially takes on a secondary role (Söbbing, 2002).

Based on a conducted benchmarking (internal or external), a client company can evaluate the performance of the offshore provider and decide if the selected provider is the right cooperation partner, or if the company should switch to another provider, or if it should insource the benchmarked services (Söbbing, 2002; Sparrow, 2003).

It has to be added that, particularly in the case of an external benchmarking, companies frequently commission a research institution or a consulting agency to benchmark their services (Cullen and Willcocks, 2003; Söbbing, 2002).

4.5.4 Management of the Communication

Cooperating with a foreign provider, a company has to cope with new requirements in regard to the internal IT infrastructure. Particularly in German-speaking countries, the infrastructure is often aimed at local providers. In addition, a client company may have to deal with different time zones, which restrict the communication with the offshore provider. Many a time, a company attempts to compensate these issues by reinforced travel activities, which, in turn, result in increasing costs (Behrendt, 2002).

With regard to the communication management, Kalakota and Robinson (2004) differentiate between the strategic and the operational communication. While the **strategic communication** focuses on the definition of a communication strategy, the **operational communication** concerns the day-to-day-communications between the client and the provider.

4.5.4.1 Strategic Communication

The cooperation with an offshore service provider requires both a higher communication effort within the client company and between the client and the provider. According to Cullen and Willcocks (2003), this effort is often underestimated by companies. In an effort to ensure an appropriate internal and external communication, the authors recommend the development of a clear communication strategy, which, in turn, requires the knowledge of the diverse communication needs of the different stakeholder groups involved in the OSD project. Here, Cullen and Willcocks (2003, p. 47) differentiate between internal and external stakeholders (compare Table 22).

With regard to the internal stakeholders, Cullen and Willcocks (2003) propose the regular scheduling of meetings, the installation of a working party, and the involvement in the steering committee. Regarding the external stakeholders, the authors suggest the publishing of press releases and the conduction of interviews, as well as the mailing of newsletters and the conduction of mutual company visits.

Table 22: Internal and external communication needs

	Stakeholder	Communication needs (examples)
Internal	**Finance/accounting department**	• *“How will the supplier be paid for different services?”* • *“What is the budget for the project?”*
	HR department	• *“Which employees will be affected?”* • *“Who will remain, transferred, made redundant, etc.?”*
	Legal department	• *„What are the applicable laws?”* • *“What sort of contract will be signed?”*
	Management	• *„What is the schedule?”* • *„What risks are present and how will [the company] manage them?”*
	Staff	• *„What are [the] options?”* • *„What assistance will (...) be given?”*
	Users	• *„How can [be] ensure[d] needs will be met?”* • *„How will this affect service?”*
External	**Media**	• *„How much is [the contract] worth?”* • *„Will there be job losses?”*
	Provider	• *„What (...) services are desired?”* • *„What sort of relationship is desired?”*

Based on the knowledge of the communication needs of the different stakeholder groups, a company is able to develop a comprehensive communication strategy in regard to each group. According to Cullen and Willcocks (2003, p. 49), such a strategy incorporates the following components:

- **Audience** (e. g., “*Who needs to be contacted?*”)
- **Delivery** (e. g., “*Who should deliver each message?*”)
- **Feedback** (e. g., “*How will [be] track[ed] that the message is getting through?*”)
- **Key messages** (e. g., “*What (...) knowledge (...) needs to be communicated (...)?*”)
- **Preparation** (e. g., “*Who is most appropriate to prepare the message?*”)
- **Purpose/objective** (e. g., “*Why are (...) these communications [initiated]?*”)
- **Timing** (e. g., “*When should each message be conveyed?*”)

- **Vehicle** (e. g., "*What form of communication does each audience respond to be best?*")

In regard to the development of the communication strategy, Cullen and Willcocks (2003) place emphasis on the fact that the strategy should particularly address those stakeholders, critical for the success of the OSD project.

4.5.4.2 Operational Communication

The success of an OSD project is heavily influenced by the efficiency of the communication between the project partners. In this context, particularly, the selection of appropriate communication media plays a crucial role. According to Behrendt (2002), the appropriateness of a communication media depends on the structure of the communication task. For this reason, when selecting a media, the author recommends answering the following three questions:

1. Which tasks have to be supported by communication media?

2. How complex are the identified tasks?

3. Which media can support the identified tasks?

The last question represents the actual selection of a communication media for a particular task. In order to facilitate the mapping between a communication task and a media, Figure 29 shows which media is generally suitable for which level of task complexity.

As illustrated in the figure below, rather easy communication tasks (e. g., the transmission of short messages) can be well supported by media like e-mail or voice mail. In contrast, more complex tasks (e. g., the resolution of a conflict) cannot or only rather conditionally be supported by these media. For such tasks, Behrendt (2002) recommends the conduction of face-to-face meetings.

Not all communication-related problems within an international cooperation can be solved by the selection of appropriate communication media. Due to the high geographical distance and the different working hours, the interaction between the cooperation partners is often limited to communication via phone, fax, e-mail and video conferences. However, these media only partially fulfill the requirements of efficient communication. In this context, particularly, the availability of the desired communication partners (e. g., the delay of important project decisions), the language skills of the offshore employees, and the insufficient communication infrastructure in many offshore countries can cause significant problems (Litke, 2002). In an effort to address these problems, many offshore providers appoint an onsite project coordinator (working permanently at the client location), who coordinates the entire communication between the client and the provider company.

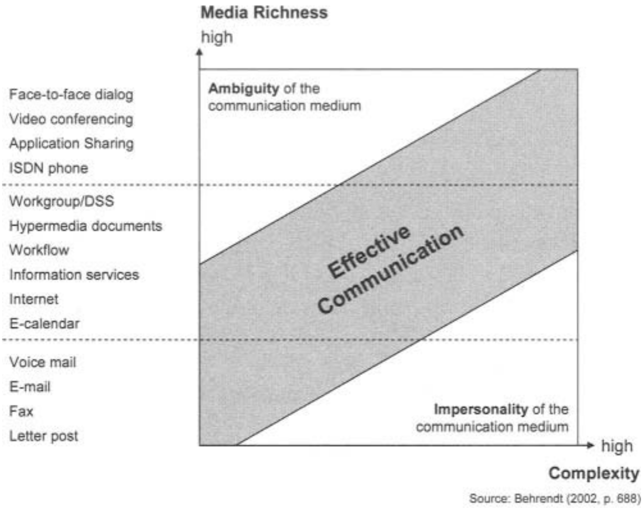


Figure 29: Selection of an appropriate communication medium

4.5.5 Management of the Cultural Differences

According to Litke (2002), culture-related issues within an OSD project particularly result from differences in regard to the management approaches and the general mentality of the project partners. In line with Holtbrügge (2005), these differences can be traced back to the cultural dimensions, proposed by Hofstede (1982). Based on Hofstede's (1982) ideas, Litke (2002) differentiates between the following three cultural dimensions:

- Individualism vs. collectivism
- Power distance
- Uncertainty avoidance

Independent of the precise attributes of an offshore country in regard to these dimensions, a considerable challenge can be seen in the management of the cultural differences within an OSD project (Litke, 2002). In this context, a company should particularly aim to prepare the organization and the internal employees for such a project (**change management**) as well as to foster the relationship with the foreign service provider (**relationship management**).

4.5.5.1 Change Management

The cultural differences between the project partners represent a significant risk factor in regard to the successful implementation of an OSD project. In an effort to anticipate negative consequences resulting from this risk factor, Böhm (2003b) recommends initiating respective countermeasures at an early stage (compare Figure 30).

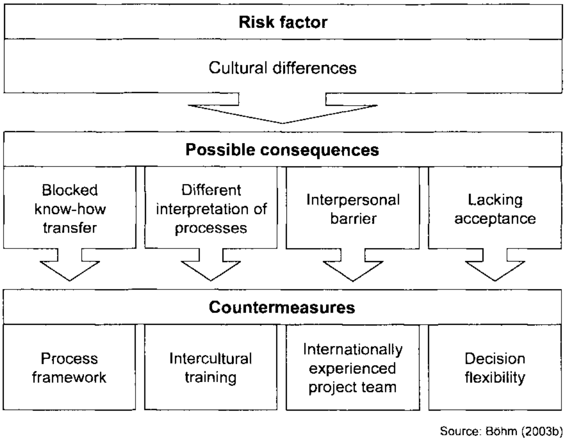


Figure 30: Countermeasures in regard to cultural differences (exemplarily)

Generally, the cultural differences between the project partners can lead to manifold issues. According to Litke (2002), two main reasons for these issues can be seen in the lack of intercultural competence of the project employees and the absence of intercultural communication. Therefore, the client company should attempt to create a cultural sensibility among its employees. This can, for instance, be achieved by the conduction of intercultural trainings.

Beside the specific knowledge of the foreign culture, cultural sensibility also refers to the development of a cultural awareness. As an example, according to Bittner (2002), the project manager on the part of the client should keep in mind that the internal demands of a software application may considerably differ from those perceived by the offshore provider (e. g., with regard to the user interface). If both partners succeed in establishing such a cultural sensibility, this can be regarded as a key success factor for the implementation of an OSD project.

4.5.5.2 Relationship Management

Cullen and Willcocks (2003, p. 195) differentiate between two essential types of relationship between the client and the provider company: The power-based and the partnership-based relationship. According to the authors, the fundamental characteristics of these relationship types are presented in the following table.

Table 23: Power- vs. partnership-based relationship

	Power-based relationship	**Partnership-based Relationship**
Communication orientation	Coercive and secretive	Collaborative and open
Conflict resolution orientation	Blaming and manipulating	Sharing and learning
Relationship orientation	Short term gain	Long term investment
Strategic orientation	Getting more for less	Quality, service, fairness
Value orientation	Independence, self interest	Interdependence, mutual benefit

Many a time, the client company aspires after a hybrid form of the two relationship types presented in Table 23. In either case, the quality of the relationship depends on the management of the relationship between the project partners. Here, a great variety of influencing factors need to be taken into consideration, which, according to Cullen and Willcocks (2003), can be divided into superficial and deep drivers of behavior (compare Figure 31). In this context, one indicator for a good relationship is if the project partners do not use the contract as a pressurizing medium.

Superficial drivers of behavior (observable characteristics)	• Contractual documents • Two separate enterprises
Deep drivers of behavior (values and attitudes)	• Attitudes orientation • Communication orientation • Conflict resolution orientation • Relationship orientation • Strategic orientation • Values orientation

Source: Cullen and Willcocks (2003, p. 197)

Figure 31: Factors influencing the behavior within a business relationship

It has to be added that, the term "partnership" is often used as a synonym for an ideal relationship. However, Cullen and Willcocks (2003, p. 195) point out that "*the concept of partnering means different, and often conflicting, things to each party*". For instance, while the provider defines a partnership as a relationship which is based on trust, the client refers to a partnership in terms of risk transfer.

Part B:

Critical Success Factors of Offshore Software Development Projects

Based on the results of the more general first part, the **second part** of the doctoral thesis at hand focuses on the identification, the analysis, and the management of CSF for OSD projects (compare gray highlighted area in Figure 32).

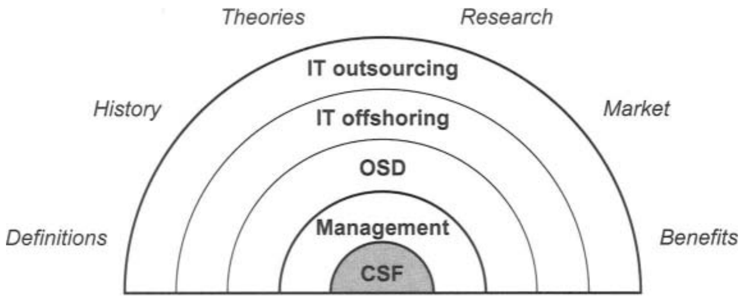


Figure 32: Classification of part B in the research context

Despite the numerous benefits OSD has to offer (e. g., cost reduction, time-to-market reduction), media reports of German-speaking companies, whose OSD projects could not live up to their expectations, were abundant (BITKOM, 2005). These negative headlines can be traced back to structural, cultural, and linguistical issues, which complicate the cooperation of German-speaking companies with offshore providers (Buchta et al., 2004), as well as the increasing complexity of OSD projects in general (Adelakun and Jennex, 2003). However, the major reason for the unsatisfactory results of many German-speaking companies' OSD projects can be found in poor project management (Moczadlo, 2002). Against this background, the questions, which factors determine the success of an OSD project and how these factors can be influenced, arise. Therefore, in an effort to support German-speaking companies with the successful implementation of OSD projects, the second part of the doctoral thesis examines the CSF of such projects in more detail.

This second part is organized as follows: First, chapter 5 (**CSF Identification**) identifies CSF for OSD projects from the perspective of German-speaking clients, resulting in a two-dimensional CSF model. Second, chapter 6 (**CSF Analysis**) analyzes the identified CSF of OSD projects in regard to three analysis aspects: Relevance, phase specificity, and level of influence. Beside a general examination of these aspects, the chapter also analyzes the CSF relevance, phase specificity, and level of influence with regard to different OSD project contexts. Finally, chapter 7 (**CSF Management**) examines the relevance and the management of the identified CSF in practice. Here, the results of two case studies are presented and compared to one another in an effort to identify similarities and differences in regard to the relevance and the management of the 29 CSF between the organizations under study.

Chapter 5

Identification of Critical Success Factors

Chapter Contents: This chapter defines a CSF model for OSD projects from a German-speaking client perspective. The model was developed through a comprehensive literature research, the conduction of 22 interviews with experts in the field of OSD, and the comparison of the developed CSF list with the content of related studies. Within the chapter, we first detail our research design (*5.1 Research Design*), present the results of the conducted literature review (*5.2 Literature Review*), as well as provide company-, project-, and person-related information on the interviewees (*5.3 Research Context*). Afterward, we introduce the two-dimensional CSF model, describe each of the identified CSF in more detail, and extend the initially developed CSF model by comparing it with similar models in related fields (*5.4 CSF Model*). Finally, we summarize our findings (*5.5 Discussion*).

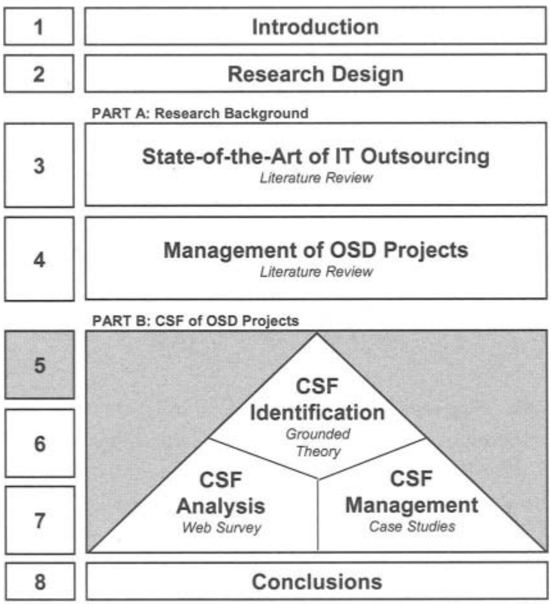


Figure 33: Thesis roadmap – CSF Identification (chapter 5)

5.1 Research Design

Within the following sections, we first outline the **research objectives** of the chapter at hand. Then, we introduce the **research methodology** applied and describe the **research process** implemented in order to reach these goals.

5.1.1 Research Objectives

In German-speaking countries, OSD still represents a relatively new and emerging area of research. As a result, barely any research studies exist, which focus solely on the CSF of OSD projects (compare with the conducted literature review in section 5.2). For this reason, the main objective of this chapter is the **identification** of those factors which significantly influence the successful implementation of an OSD project. In this context, we focus on the perspective of German-speaking clients of software services. In doing so, primarily the following research question will be addressed: "Which CSF do companies have to consider when implementing OSD projects?"

5.1.2 Research Methodology

In order to identify CSF, a wide array of research methods is used. Among them are, for instance, the realization of case studies (e. g., Sumner, 1999), group interviews (e. g., Khandewal and Miller, 1992), structured interviews (Rockart and Van Bullen, 1986), as well as the analysis of relevant literature (e. g., Esteves and Pastor, 2000). According to Shah and Siddiqui (2002), the most frequently used method to identify CSF is the realization of a questionnaire.

In order to create a deeper understanding of the CSF of OSD projects, we decided to use a **qualitative research design**. Due to the fact that important influencing factors currently still remain unknown (Creswell, 2003) and that existing theories and models cannot be applied to the precisely examined topic (Morse, 1991), we felt this was an appropriate approach.

For the qualitative research design, we selected the so called **Grounded Theory** in accordance with Glaser and Strauss (1967). According to Pandit (1996), this method is particularly suitable when a theory cannot or should not be established deductively. Rather, a theory developed in line with this type of research method is "*inductively derived from the study of the phenomenon it represents. That is, discovered, developed, and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis, and theory should stand in reciprocal relationship with each other.*

One does not begin with a theory, then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge." (Corbin and Strauss, 1990, p. 23)

The fact that, when applying the Grounded Theory method, a theory is not defined in the front end and then continuously verified, but instead developed over the course of time, allowed for an impartial approach during the investigation of the different CSF.

For us, another important attribute of the Grounded Theory method was that it simplifies "*the generation of theories of process, sequence, and change pertaining to organizations, positions, and social interactions*" (Glaser and Strauss, 1967, p. 114). This proved to be of importance, especially regarding the investigation of CSF for OSD projects, as these are many a time influenced in great deal by organizational aspects. This assumption is confirmed by both the results of respective CSF studies in English-speaking countries (e. g., Delmonte and McCarthy, 2003) as well as the results of the chapter at hand.

In regard to the collection of relevant data, we came to the decision that the conduction of **expert interviews** was the most appropriate method for examining the CSF of OSD projects. According to Gläser and Laudel (2004), the conduction of expert interviews is a specific research method which aims to access the knowledge of experts about certain circumstances. This method is particularly used in social sciences and is characterized by two important attributes:

1. *Experts are a medium by which researchers want to obtain knowledge about relevant issues.* Here, experts are not themselves the object of study, rather they are or were witnesses of important processes which refer to the object under study.

2. *Experts have an outstanding and sometimes exclusive position in the context under investigation.* For instance, employees are interviewed in order to collect information on the internal structure and processes of their companies.

In consideration of these two attributes, the authors define expert interviews as the reconstruction of situations or processes in an effort to find scientific explanations. In this context, the role of the experts is to make specific knowledge accessible. For this reason, according to Gläser and Laudel (2004), expert interviews are the method of choice when specific circumstances should be reconstructed.

For data analysis within the scope of the Grounded Theory method, the so called **coding process** can be used. This process can be composed of up to three consecutive types of coding, namely open, axial, and selective coding (Corbin and Strauss, 1990). According to Pandit (1996), these types must neither be executed in a particular succession, nor must all three be executed completely: "*There are three types of coding: open coding, axial coding, and selec-*

tive coding. These are analytic types and it does not necessarily follow that the researcher moves from open through axial to selective coding in a strict, consecutive manner." (Pandit, 1996)

By means of *open coding*, usually the first step of the coding process, various concepts and categories are developed from the collected data. Hereby, data is compared, and identical or similar statements are combined to form specific concepts. Closely related concepts are then pooled once more to form categories (Pandit, 1996). According to Pandit (1996), the formulation of the various concepts proves to be of the highest importance in this context, as they represent "*the basic building blocks in grounded theory construction*". *Axial coding* is responsible for the structured assembly of the newly formed data. Thereby, categories and their subcategories are connected and set in relation to one another (Pandit, 1996). Through *selective coding*, the identified categories are connected to one another. Here, one category is defined as the core category and the others are connected to this one core category (Esteves, 2004).

It must be noted that, in the course of our data analysis, only open and axial coding was used.

5.1.3 Research Process

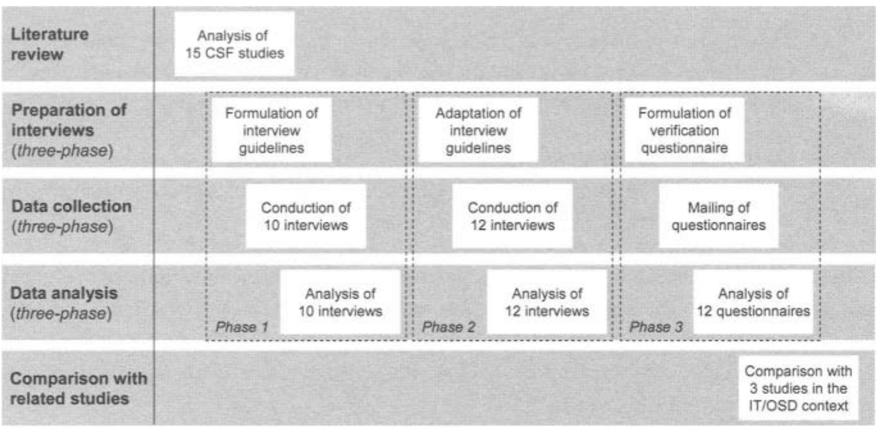


Figure 34: Iterative research process implemented

The implementation of the Grounded Theory method is characterized by an iterative process (Pandit, 1996). This is reflected particularly in our selected procedures for the preparation of the interviews as well as for the data collection and analysis. A total of three iterative loops, all building up on one another, were run through these pivotal research steps (compare Figure 34).

Regarding the research process, Table 24 outlines the five major research steps.

Table 24: Description of research steps

Research step	Short description
Literature review	Analysis of studies dealing with CSF for IT outsourcing, IT off-shoring, and OSD projects
Preparation of interviews (three-phase)	(1) Formulation of general and specific questions for interview guidelines (2) Adaptation of specific questions from interview guidelines following a first data evaluation (3) Formulation of the verification questionnaire after a second data evaluation
Data collection (three-phase)	(1) Conduction of ten interviews (2) Conduction of twelve more interviews (3) Mailing of questionnaires for verification purposes
Data analysis (three-phase)	(1+2) Iterative analysis of interview data by means of open and axial coding (3) Evaluation of the verification questionnaires
Comparison with related studies	Extension of the preliminary CSF list by comparing this list with similar lists of CSF (in the IT context) and a list of issues and problems (in the OSD context)

In the following, the research steps mentioned above will be described in more detail.

5.1.3.1 Literature Review

Regarding the procedure used in analyzing the state-of-the-art of CSF research in the field of IT outsourcing, reference can be made to section 5.2.

5.1.3.2 Preparation of Interviews

Phase 1

During the conception of the interview guidelines, an effort was made to consider all of the relevant aspects previously identified with the help of the literature review.

Generally, the interview guidelines consisted of two parts: The more general first part relied on a variety of both open- and close-ended questions and was responsible for the collection of general information on the interview partners. On the contrary, the second part of the questionnaire was more specific and focused on the CSF of OSD projects. Here, open-ended questions were used primarily to prevent the manipulation of the interviewees and to ensure that the statements made possessed a certain grade of authenticity.

Phase 2

After having finished and evaluated the first ten interviews, a modification of the interview guidelines, which affected exclusively the more specific part, was carried out. In the process, frequently mentioned CSF were added to the compiled list. This resulted in a partially structured questionnaire which meant to motivate future participants to extend the preliminary list with the addition of not yet mentioned CSF.

Phase 3

In order to verify the evaluation results, we developed a questionnaire in a MS-EXCEL format during the second analysis phase. The basic reason for this was to confirm that the interview partners accepted the identified list of CSF. Here, the participants also had the opportunity to either comment on the individual CSF and/or suggest additional ones.

5.1.3.3 Data Collection

Within the framework of the survey, a total of 22 participants were interviewed. When selecting the interview partners, it was taken into consideration that, in order to create a most comprehensive understanding of the successful implementation of OSD projects, a variety of company perspectives (client, provider, and consultancy) needed to be taken into account. Additional requirements, which influenced the selection of the participants, were their position in a company and an OSD project respectively as well as their personal experience with OSD.

Phase 1

The first round of questioning consisted of ten 30 to 60 minute interviews, all of which were conducted by phone within a time span of two weeks. In order to reduce the loss of information, two members of the research team took part in the interviews at all times. In an effort to ensure the open nature and the authenticity of the statements, we decided to keep written records of the relevant contents, rather than to record them (Urquhart, 2001).

Phase 2

After having finished and evaluated the first phase of interviews, twelve further interviews took place within the following three weeks. Eight of these were carried out by phone, while the other four were face-to-face interviews.

What really stood out in this second round of questioning was the fact that a certain saturation regarding the suggestion of not previously mentioned CSF was able to be observed. Especially towards the end of the second round, hardly any new insight was gained from the interviews. This resulted in the finalization of the collected data after 22 individual interviews. According to Carvalho, Esteves and Ramos (2002), this particular procedure is typical for the implementation of the Grounded Theory method as soon as saturation is observed.

Phase 3

In order to complete and verify the first results of the analysis, the interviewed participants were confronted with the developed list of CSF, sent to them via e-mail in the form of a questionnaire.

5.1.3.4 Data Analysis

Phase 1

Due to the iterative nature of the Grounded Theory method (Pandit, 1996), a temporary analysis was conducted after the first ten interviews in order to give way to possibly necessary changes within the research design.

Orlikowski (1993) applies a similar iterative procedure in her studies on CASE-Tools, and, in doing so, emphasizes the advantages of such a procedure: „*Data collection, coding, and analysis proceeded iteratively (Glaser and Strauss, 1967) with the early stages of the research being more open-ended, and later stages being directed by the emerging concepts, and hence involving more strategic selection of informants and more structured interview protocols.*" (Orlikowski, 1967, p. 313)

It must be noted that this initial data evaluation was partially influenced by the perceptions made within the literature review.

PHASE 2

The evaluation of the collected data took place in accordance with the Grounded Theory's coding process. This process "*represents the operations by which data are broken down, conceptualised, and put back together in new ways. It is the central process by which theories are built from data.*" (Corbin and Strauss, 1990, p. 57)

First, all of the 466 statements made in the 22 interviews were entered in a MS-ACCESS database. Next, the CSF list was derived from the collected data by means of open and axial coding. The implementation of open and axial coding allowed for the conversion of the collected data into a categorized CSF list (compare example in Table 25). Here, in a first step, the collected statements, which varied only slightly in regard to their syntax, were aggregated (first aggregation level). Thereby, a list of 250 different statements was gained. This list, in turn, was used as a basis for further evaluation. In a second step, the list was reduced even more through the aggregation of semantically identical statements (second aggregation level). The result was a list of 90 statements, which again was scaled down in a third and last step to a list of 28 CSF (third aggregation level).

Table 25: Example for the implementation of the coding process

No.	Aggregation level 1	Aggregation level 2	Aggregation level 3
1	*„Control of project progress"*	Regular control of project progress	**Continuous controlling of project results**
2	*„Maintenance of the requirements specification"*		
3	*„Project monitoring"*		
4	*„Controlling mechanisms essential"*		
5	*„Quality assurance through controlling"*		
6	*„Prototyping: Reduction of mistakes resulting from cultural differences"*	Early testing of software	
7	*„Continuous project planning at customer site (testing of software versions)"*		
8	*„Integrated quality management"*	Continuous quality control	
9	*„Prioritize quality over costs"*		

As was the case during the first data evaluation process, the perceptions made within the literature review were also considered during the second and final evaluation of the interview data.

PHASE 3

The questionnaire, sent to the various interview partners in an effort to verify the initial list of CSF, was meant to give insight into whether or not the participants considered the list to be representative or if they felt important factors were missing from the list.

Twelve of the 22 interview partners filled out the questionnaire and sent it back to us. This equals a return rate of 54.54 percent. Due to additional information gained from this feedback, the list of CSF was adjusted and individual formulations were modified.

5.1.3.5 Comparison with Related Studies

Based on the analysis of similar studies, which dealt with the CSF of IT projects and the issues and problems of OSD projects, three contrastable studies were first selected. Second, the content of these studies was directly compared to our CSF list. Third, due to the additional insight gained, one further CSF was added to our original list.

5.2 Literature Review

Based on the results of the annotated bibliography (compare section 3.4), a comprehensive literature research focusing on CSF research in the field of IT outsourcing was carried out. Here, beside the already examined key IS conferences and journals, books on the subject of IT outsourcing (in a broad sense) as well as scientific online databases were scanned in an effort to find studies dealing with the (critical) success factors of relevant outsourcing projects. For the identification of respective studies, the mentioned data sources were searched for key words like "success", "(critical) success factor(s)", "IT outsourcing", "IT offshoring", and "offshore software development".

On the basis of the conducted literature research a total of 15 articles and literary contributions, which explicitly concentrate on the (critical) success factors of relevant projects in the IT outsourcing context, were able to be identified (listed alphabetically): 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), Mani and Rajkumar (2001), Oecking and Westerhoff (2005), Rao (2004), Raval (1999), Sparrow (2003), and Stephan (2005). A brief description of these 15 studies can be found in section 5.2.2.

In a first step, the identified studies were classified into research fields, perspectives, and research methods applied. Next, the individual studies were briefly described and then compared to one another in regard to their specific content. Here, it became apparent that, at present, only a few studies exist which focus on the CSF of OSD projects, and that the majority of these studies concentrate on U.S. companies (e. g., Delmonte and McCarthy, 2003). In contrast, we do not know of any studies which focus on the examination of CSF for OSD projects in regard to German-speaking companies. In this context, a number of studies dealing with the (critical) success factors of related subject areas such as IT outsourcing (e. g., Berger et al., 2004) and IT offshoring (e. g., BITKOM, 2005) exist. Although, the (critical) success factors introduced in these studies can in part be transferred to OSD, none of them addresses the more specific challenges this modified form of IT outsourcing/offshoring presents.

5.2.1 Classification

In Table 26, a classification of the identified studies is carried out. In regard to the research fields, the table distinguishes between studies dealing with the (critical) success factors of IT outsourcing, IT offshoring, and OSD projects. Further classification criteria include the perspective from which the (critical) success factors are examined (client or provider), the specific research method applied in the identification process (literature research, interviews, case studies, experience), as well as the total number of (critical) success factors mentioned within the individual studies.

Table 26: Classification of identified (critical) success factor lists in the IT outsourcing context

List	Research field	Perspective	Identification technique	Number of factors
Adelakun and Jennex (2003)	OSD	Client/ Provider	Interviews and Literature Review	6
Berger et al. (2004)	IT outsourcing	Client	Experience	12
BITKOM (2005)	IT offshoring	Client	Experience	35
Brown and Wilson (2005)	IT outsourcing	Client	Experience	9
Cullen and Willcocks (2003)	IT outsourcing	Client/ Provider	Case Studies	11
Delmonte and McCarthy (2003)	OSD	Client	Literature Review	5
Gupta and Raval (1999)	IT offshoring	Client	Experience and Case Studies	7
Kobayashi-Hillary (2004)	IT offshoring	Client	Experience	4
Laabs (2004)	IT offshoring	Client	Experience	5
Mani and Rajkumar (2001)	OSD	Provider	Experience	21
Oecking and Westerhoff (2005)	IT outsourcing	Client	Experience	5
Rao (2004)	IT offshoring	Client	Experience and Literature Review	5
Raval (1999)	OSD	Client	Experience	7
Sparrow (2003)	IT outsourcing	Client	Experience	10
Stephan (2005)	IT offshoring	Client/ Provider	Experience	6
Our CSF list	OSD	Client	Interviews and Literature Review	29

The classification shows that four of the identified studies focus explicitly on the (critical) success factors of OSD. While two of these studies examine the (critical) success factors from a client's perspective, the other two studies represent a provider's point of view. Out of the remaining eleven studies, six focus on the (critical) success factors of IT offshoring and five on the (critical) success factors of IT outsourcing projects.

Furthermore, the majority of the (critical) success factor studies are based upon the experience of the authors themselves (ten studies). In contrast, only three authors confirm that their list of (critical) success factors relies on literature research, while only two authors mention interviews or case studies as their primary source of information in developing their respective (critical) success factor lists.

The length of the individual lists of (critical) success factors ranges from four to 35 factors. However, the majority of these lists include less than ten (critical) success factors. Only two studies contain more than 20 factors.

Our CSF list focuses on OSD and primarily reflects a client's point of view. In identifying the 29 CSF, a comprehensive literature research as well as the realization of expert interviews served as sources of information (compare Table 26).

5.2.2 Description

The contents of the 15 (critical) success factor lists related to the field of IT outsourcing (in a broad sense), which were identified within the literature review, will be described briefly in the following (in alphabetical order according to the name of the first author).

Adelakun and Jennex (2003) examine the CSF of small and medium-sized service providers, which offer OSD services, in a survey. After an evaluation of 31 initial factors, six CSF were able to be identified.

The authors **Berger et al. (2004)** mention a total of twelve factors which determine the success or the failure of an IT outsourcing project from a client's point of view.

The study from **BITKOM (2005)** lists a total of 35 factors which can be regarded as critical for the successful implementation of IT offshoring projects. These were identified with the support of previous experiences with both successful as well as aborted projects. The 35 factors are divided into the categories "Planning", "Decision Process", "Partner Selection Criteria", "Implementation and Controlling", and "Project Conclusion or Reintegration".

The authors **Brown and Wilson (2005)** submit a number of different proposals for the successful execution of IT outsourcing projects in their book. The proposals mentioned were transferred into a list of nine success factors.

Cullen and Willcocks (2003) state that the success of an IT outsourcing project depends significantly on the actions of the parties involved. Based on a multitude of case studies, the authors derived eleven CSF.

On the basis of a publication analysis which focused on the advantages and risks of OSD as well as on the discussion of the individual factors which influence the decision to engage in OSD, **Delmonte and McCarthy (2003)** identified five CSF.

Gupta and Raval (1999) assume that the first offshoring project implemented by a company only in very few cases proves to be successful. In line with their experience and case studies in the field of IT offshoring, the authors propose seven key factors for the success of such a project.

In his book, **Kobayashi-Hillary (2004)** mentions four critical areas which are, from his point of view, essential for the successful implementation of an IT offshoring project. It has to be added that the author regards India as the relevant offshore destination.

Laabs (2004) examines the advantages and disadvantages of using offshore resources as well as the transfer of IT activities to foreign companies. In doing so, he refers to five CSF.

Based upon their own experiences and interviews with IT offshoring providers, **Mani and Rajkumar (2001)** list a total of 21 key success factors in regard to OSD projects. These factors can be divided into four categories: Management, project, client, and personal factors.

In their publication, the authors **Oecking and Westerhoff (2005)** focus on the success of long-term outsourcing relationships. From their point of view, a company should consider five fundamental factors when developing a long-term IT outsourcing partnership.

Rao (2004) examines the challenges global IT outsourcing poses to managers, thereby determining five key factors from a client's point of view. These factors primarily focus on the destination country of an IT offshoring initiative as well as on the employees deployed within the course of an offshore project.

Independent of the various forms of IT offshoring and their respective advantages and disadvantages, **Raval (1999)** aims to create an understanding of the essential factors which influence the success of an OSD project. In doing so, the author compiles a list of seven key factors.

In her book, **Sparrow (2003)** examines the effective management of IT outsourcing projects. The implications made in this context are summarized by the author in a list of ten CSF.

Stephan (2005) concentrates on the communication and the know-how transfer within an IT offshoring project. In this context, the author identifies six key factors for the success of such a project.

5.2.3 Comparison

The (critical) success factors mentioned in the 15 studies are, in part, very heterogeneous and not sufficiently described, allowing for a certain number of different interpretations. For this reason, we decided to compare the areas of content which are covered by the individual factors in the respective studies, rather than to compare the actual factors themselves.

Regarding the areas of content, reference can be made to the eight **content categories**, introduced in section 3.4. In the following, these categories are again briefly introduced (in alphabetical order) and an exemplary CSF for each category is given:

1. **Contract:** Aspects related to the agreement on the project contents (e. g., "*Good contract management skills*").
2. **Culture:** Aspects related to cultural similarities and differences between the project partners (e. g., "*Creation of cultural sensibility*").
3. **Decision:** Aspects related to the selection of the provider, the project, the project location, etc. (e. g., "*Selection of a modular software component*").
4. **Environment:** Aspects related to political and legal regulations (e. g., "*Compliance with legal regulations of the offshore destination*").
5. **Organization:** Aspects related to the coordination of the project (e. g., "*Scheduling of regular status meetings*").
6. **Performance:** Aspects related to the controlling of the services rendered by the provider (e. g., "*Implementation of benchmarks*").
7. **Relationship:** Aspects related to the interaction between the project partners (e. g., "*Establishment of trust between partners*").
8. **Strategy:** Aspects related to the development of a vision, the setting of goals, the definition of a strategy, etc. (e. g., „*Definition of a clear strategy*").

For each of the identified studies, the following table displays the distribution of the respective (critical) success factors in regard to the eight content categories listed above.

Table 27: Comparison of identified (critical) success factor lists in regard to their content

List	Number of factors	Contract	Culture	Decision	Environment	Organization	Performance	Relationship	Strategy
Adelakun and Jennex (2003)	**6**			2	2	1		1	
Berger et al. (2004)	**12**			2		6	3	1	
BITKOM (2005)	**35**	1	1	5		20	1	2	5
Brown and Wilson (2005)	**9**		1		1	6	1		
Cullen and Willcocks (2003)	**11**	2		2		4	2	1	
Delmonte and McCarthy (2003)	**5**		1		1	1	1		1
Gupta and Raval (1999)	**7**		1			5		1	
Kobayashi-Hillary (2004)	**4**					1	2	1	
Laabs (2004)	**5**		1			3			1
Mani and Rajkumar (2001)	**21**		1	2	1	15	1		1
Oecking and Westerhoff (2005)	**5**				1	1	1	1	1
Rao (2004)	**5**		1		3	1			
Raval (1999)	**7**			2		3	1		1
Sparrow (2003)	**10**	1	1			5	2	1	
Stephan (2005)	**6**		1			5			
Our CSF list	**29**	1	2	8	1	13	2	1	1
Total	**177**	**5**	**11**	**23**	**10**	**90**	**17**	**10**	**11**

When comparing the content of the 15 studies, (critical) success factors in regard to the organization of an outsourcing project are reflected in all of these studies. In addition, the majority of the identified studies contain (critical) success factors regarding the performance (ten studies), the cultural differences (nine studies), as well as the relationship between the project partners (eight studies). In contrast, (critical) success factors related to the outsourcing agreement are only mentioned sporadically within the studies (three studies).

Concerning the number of (critical) 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 (critical) success factors mentioned within the identified studies.

Analogous to the results of the literature review, our CSF list is dominated by the categories "organization" (13 factors) and "decision" (8 factors). However, in contrast to the identified CSF lists, our list covers all eight content categories (compare Table 27).

In accordance with Esteves (2004), the (critical) success factors mentioned in the individual studies can also be classified and compared along the following **CSF dimensions**:

- **Internal vs. external factors**: Is the CSF related to the client (*internal factor*) or is it related to the provider and the cooperation between the provider and the client respectively (*external factor*)? (Arce and Flynn, 1997)
- **Static vs. dynamic Factors**: Does the CSF represent a characteristic or status (*static factor*) or does it express an activity (*dynamic factor*)?
- **Tactical vs. strategic factors**: Is the CSF of a short- or mid-term nature (*tactical factor*) or is it of a long-term nature (*strategic factor*)? (Ward, 1990)
- **Organizational vs. technical factors**: Does the CSF primarily address aspects on an organizational (*organizational factor*) or a technical level (*technical factor*)?

The total number of (critical) success factors per study and their classification into the different dimensions is displayed in the following table.

Table 28: Comparison of identified (critical) success factor lists in regard to different CSF dimensions

List	Number of factors	Internal	External	Static	Dynamic	Tactical	Strategic	Organizational	Technical
Adelakun and Jennex (2003)	**6**	1	5	5	1	4	2	4	2
Berger et al. (2004)	**12**	9	3	9	3	7	5	12	0
BITKOM (2005)	**35**	27	8	34	1	18	17	31	4
Brown and Wilson (2005)	**9**	4	5	0	9	5	4	7	2
Cullen and Willcocks (2003)	**11**	11	0	5	6	7	4	10	1
Delmonte and McCarthy (2003)	**5**	2	3	2	3	3	2	4	1
Gupta and Raval (1999)	**7**	1	6	2	5	4	3	7	0
Kobayashi-Hillary (2004)	**4**	3	1	1	3	3	1	4	0

Laabs (2004)	**5**	2	3	3	2	3	2	5	0
Mani and Rajkumar (2001)	**21**	8	13	9	12	17	4	17	4
Oecking and Westerhoff (2005)	**5**	0	5	0	5	2	3	5	0
Rao (2004)	**5**	0	5	1	4	3	2	4	1
Raval (1999)	**7**	5	2	0	7	5	2	7	0
Sparrow (2003)	**10**	1	9	0	10	6	4	10	0
Stephan (2005)	**6**	0	6	0	6	4	2	5	1
Our CSF list	**29**	13	16	14	15	16	13	21	8
Total	**177**	**87**	**90**	**85**	**92**	**107**	**70**	**153**	**24**

Regarding the first two dimensions (internal vs. external and static vs. dynamic factors) the total of 148 (critical) success factors mentioned within the 15 studies are equally balanced between the two corresponding dimension values. Concerning the third dimension, the tactical factors appear to have a slight edge over the strategic factors. In contrast to the first three, relatively balanced dimensions, the last dimension (organizational vs. technical factors) is clearly dominated by organizational factors.

The division of our compiled list of CSF into the four dimensions verifies the results of the literature review (compare Table 28): While the identified CSF are relatively balanced in regard to the first three dimensions, a clear dominance of the organizational factors over the technical factors can be seen when examining the fourth dimension.

In conclusion, it can be summarized that, up to now, only little research has been carried out in regard to the CSF of OSD projects. In total, we found only four CSF studies which focus explicitly on OSD, primarily from a U.S. perspective. However, in these studies, the CSF are either insufficiently described or reflect a provider perspective. For this reason, we were not able to examine if and, if so, to what extent the CSF for U.S. clients can be transferred to German-speaking clients. In addition, with regard to the applied identification technique, it became apparent that only two of the four CSF studies rely on literature research, while only one study mentions interviews as its primary source of information. Furthermore, only one of the four studies examines the relevance of the identified CSF, and none of these studies provides a more sophisticated management analysis in regard to the proposed CSF.

5.3 Research Context

The first part of the interviews focused on general information in regard to the 22 interview partners and consisted of **company-related information** (information on the interview partner's company), **project-related information** (information on the interview partner's experience with OSD projects), and **person-related information** (information on the current position fulfilled by the interview partner).

5.3.1 Company-related Information

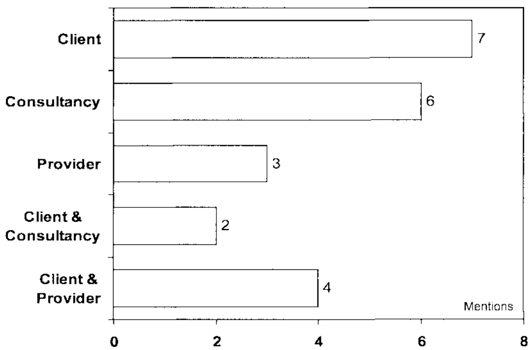


Figure 35: Company perspective

Out of the 22 participants interviewed, three worked for an offshore provider, six within a consulting firm, and seven for an OSD client (compare Figure 35). Furthermore, two of the interviewees worked for an internal consulting firm situated within an OSD client company (client & consultancy), while four participants confirmed that their companies fulfill the role of both provider and client of OSD services (client & provider).

5.3.2 Project-related Information

In regard to the interview partners' project experience, we particularly focused on their experience with different organizational forms of OSD projects, different company sizes on the part of the client, as well as different offshore regions of destination.

In the context of IT offshoring, Schaaf (2004) differentiates between offshore outsourcing, where the relevant services are rendered by an external provider abroad, and captive offshore outsourcing, where company subsidiaries or joint ventures in a foreign country deliver the respective services. In addition to Schaaf's (2004) classification, a differentiation can be made between exclusive offshore providers and providers which possess an IT subsidiary or branch office in the client's country.

The evaluation of the interview data showed that the majority of the participants (17 mentions) already gained experience with exclusive offshore providers (compare Figure 36). The second most popular organizational form was the cooperation with an offshore provider, which possesses an office in the client's home country (eleven mentions). Furthermore, experiences with self-owned IT subsidiaries abroad were mentioned by eight participants, while experiences with OSD projects carried out with a foreign joint venture were only confirmed by one of the interview partners.

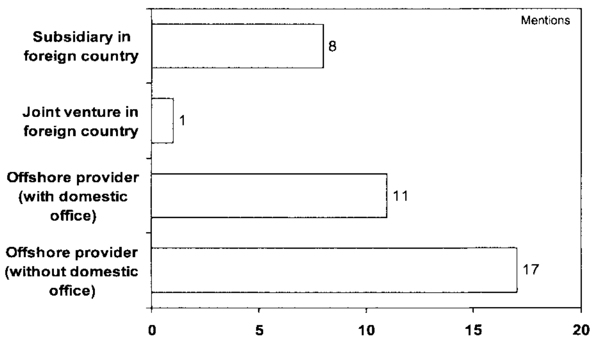


Figure 36: Experience of interview partners with different organizational forms[7]

When examining the predominant company size on the part of the client (compare Figure 37), the results are relatively balanced. A slight majority (54.54 percent) of the interview partners represented either large-scale clients (LE clients) or providers/consultancies which delivered services to LE clients. The remaining 45.46 percent were employed by small or medium-sized clients (SME clients) or by providers/consultancies, which cooperated primarily with SME clients in the context of OSD projects

Regarding the exact requirements for the separation of small and medium-sized enterprises (SME) from large-scale enterprises (LE), we refer to the definition for SME proposed by the Federal Ministry of Education and Research (2004) [FMER]. According to this definition, a SME is a company which has less than 250 employees as well as maximum annual sales of 40 million euros or maximum total yearly assets of 27 million euros. Furthermore, 25 percent or

[7] Multiple answers possible.

more of the enterprise may not be held by one or more enterprises, which do not fulfill the definition of a SME.

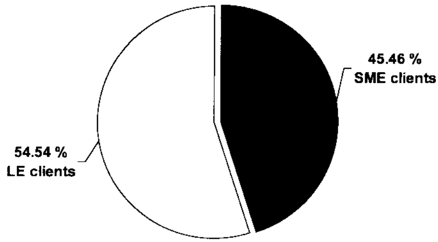


Figure 37: Experience of interview partners with SME and LE clients

Regarding the various suitable regions of destinations for OSD projects, nearly half of the participants (45.46 percent) confirmed having already carried out projects in either Asia or Eastern Europe. One of the interview partners even exhibited experience with three different continents: Africa, Asia, and Europe (compare Figure 38).

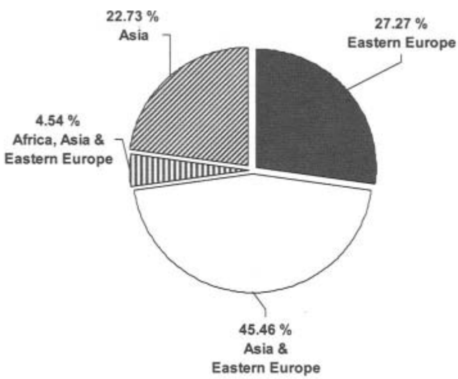


Figure 38: Experience of interview partners with different regions of destination

With regard to the precise countries of destination for OSD projects, India was mentioned a total of 14 times by the respondents, thereby dominating the list (compare Figure 39). However, further destination countries in Asia such as China (mentioned five times) or the Philippines (mentioned three times) prove to be of lesser importance. Focusing on Eastern Europe, the Czech Republic tends to be the most frequently referred to country of destination for OSD (mentioned seven times), followed by Slovakia and Belarus (both mentioned five times).

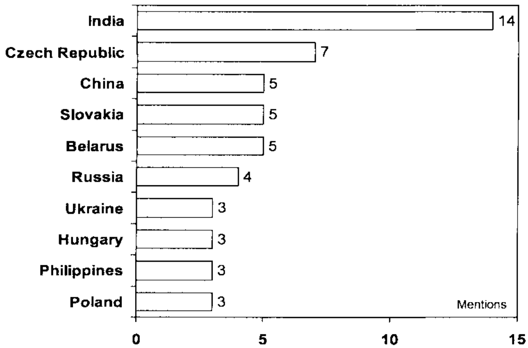


Figure 39: Experience of interview partners with different countries of destination (Top 10)[8]

At large, when evaluating the country-related data, it was surprising that our respondents tended to grant Eastern Europe a small edge over Asia. Nevertheless, the dominant country of destination for OSD projects remains to be India: 14 of the 22 participants have already conducted or accompanied OSD projects there.

5.3.3 Person-related Information

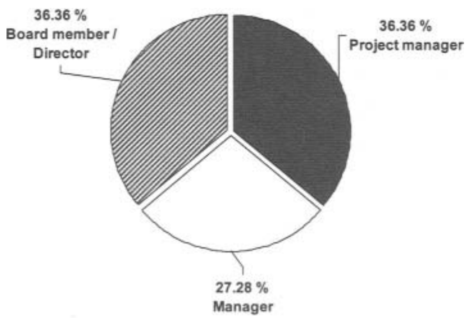


Figure 40: Position of interview partners

All of the interview partners are, at least temporarily, taking on leading roles in their companies (compare Figure 40). Around one third of the participants (eight of the 22 interview partners) are members of the board or head of their company (strategic level), while six of the participants take on manager positions (tactical level). The eight participants remaining fulfill

[8] Multiple answers possible.

the roles of project managers in their companies (tactical level), at least for the duration of the project, thereby taking on a leading position.

5.4 CSF Model

Within the following sections, we first present the developed CSF list and derive a **unified CSF model** from this list by classifying the identified CSF within a two-dimensional matrix. Next, we describe each CSF in more detail. Finally, we compare the developed CSF list with similar lists in related fields, resulting in an **extended CSF model.**

5.4.1 CSF List

Based on the conducted literature review, the evaluation of the data related to the personal interviews, and the subsequent verification of the compiled results, we were able to derive a list of 28 CSF for OSD projects. These factors are assorted in Table 29 in descending order according to the number of times they were mentioned in the expert interviews.

Table 29: Initial CSF list for OSD projects

CSF	Mentions	Confirmatory studies
Creation of a partnership-like relationship	40	Adelakun and Jennex (2003), Cullen and Willcocks (2003), Gupta and Raval (1999), Kobayashi-Hillary (2004), Oecking and Westerhoff (2005), Sparrow (2003)
Ensuring of a continuous communication flow	21	BITKOM (2005), Cullen and Willcocks (2003), Gupta and Raval (1999), Laabs (2004), Mani and Rajkumar (2001), Sparrow (2003), Stephan (2005)
Face-to-face meetings with the offshore provider on a regular basis	16	Berger et al. (2003), Mani and Rajkumar (2001), Sparrow (2003)
Preparation of a detailed project specification	16	Mani and Rajkumar (2001)
Creation of a cultural sensibility among employees	15	BITKOM (2005), Brown and Wilson (2005), Delmonte and McCarthy (2003), Gupta and Raval (1999), Mani and Rajkumar (2001), Rao (2004), Stephan (2005)
Good language abilities of the offshore employees in German and English	12	Rao (2004), Stephan (2005)

Continuous controlling of project results	9	Berger et al. (2003), Kobayashi-Hillary (2004), Oecking and Westerhoff (2005), Sparrow (2003)
Definition of an accurate contract	9	Cullen and Willcocks (2003)
Development of a comprehensive business case	9	BITKOM (2005), Brown and Wilson (2005), Delmonte and McCarthy (2003)
Geographical closeness of the offshore provider	9	Mani and Rajkumar (2001)
Selection of a suitable software component	9	Mani and Rajkumar (2001)
Definition of clear project goals	8	BITKOM (2005), Delmonte and McCarthy (2003), Mani and Rajkumar (2001), Oecking and Westerhoff (2005)
Definition of project standards	7	-
Efficient internal organizational structure	6	-
High quality of offshore employees	6	Adelakun and Jennex (2003), Cullen and Willcocks (2003)
Ensuring of a bilateral know-how transfer	5	Berger et al. (2003), Brown and Wilson (2005), Stephan (2005)
Standardized and documented processes on provider side	4	Delmonte and McCarthy (2003)
Comprehensive experience with IT outsourcing projects	3	Berger et al. (2003)
Comprehensive industry knowledge of the offshore provider	3	BITKOM (2005)
International corporate culture	3	-
Legal and political stability in the offshore country	3	Adelakun and Jennex (2003), Delmonte and McCarthy (2003), Mani and Rajkumar (2001), Rao (2004)
Standardized and documented processes	3	-
Establishment of an efficient IT infrastructure	2	Adelakun and Jennex (2003), Stephan (2005)
Financial stability of the offshore provider	2	BITKOM (2005), Cullen and Willcocks (2003)
Suitable company size of the offshore provider	2	BITKOM (2005)
Appropriate internal technical knowledge	1	Adelakun and Jennex (2003), Brown and Wilson (2005)
Early internal change management	1	Raval (1999)
Sustained management support	1	Berger et al. (2003), Mani and Rajkumar (2001)

Due to the nature of the aggregation concept introduced in section 5.1.3.4, the number of times a particular CSF (concept) was mentioned can exceed the number of interview partners. For a precise classification of the concepts and the respective concept elements see Table 95 in the appendix.

5.4.2 Unified CSF Model

According to Esteves (2004), Arce and Flynn (1997), as well as Ward (1990), a classification of the CSF can be carried out in regard to the four dimensions introduced in section 2.2.3: "Internal vs. external", "static vs. dynamic", "tactical vs. strategic", and "organizational vs. technical" factors. The classification of the CSF along these dimensions is displayed in Table 30. Here, a bullet indicates that a CSF represents a corresponding factor. Within this table, the CSF are again sorted in accordance with the total number of mentions by the interviewees (in brackets).

Table 30: Classification of developed CSF list

CSF	**Internal**	**External**	**Static**	**Dynamic**	**Tactical**	**Strategic**	**Organizational**	**Technical**
Creation of a partnership-like relationship (40)		●		●		●	●	
Ensuring of a continuous communication flow (21)		●		●	●		●	
Face-to-face meetings with the offshore provider on a regular basis (16)		●		●	●		●	
Preparation of a detailed project specification (16)	●			●	●			●
Creation of a cultural sensibility among employees (15)	●			●		●	●	
Good language abilities of the offshore employees in German and English (12)		●	●		●		●	
Continuous controlling of project results (9)		●		●	●		●	
Definition of an accurate contract (9)		●		●		●	●	
Development of a comprehensive business case (9)	●			●	●		●	
Geographical closeness of the offshore provider (9)		●	●			●	●	
Selection of a suitable software component (9)	●			●	●			●
Definition of clear project goals (8)	●			●		●	●	

Definition of project standards (7)	●			●	●			●
Efficient internal organizational structure (6)	●		●			●	●	
High quality of offshore employees (6)		●	●		●			●
Ensuring of a bilateral know-how transfer (5)		●		●		●	●	
Standardized and documented processes on provider side (4)		●	●		●			●
Comprehensive experience with IT outsourcing projects (3)	●		●		●		●	
Comprehensive industry knowledge of the offshore provider (3)		●	●		●		●	
International corporate culture (3)	●		●			●	●	
Legal and political stability in the offshore country (3)		●	●			●	●	
Standardized and documented processes (3)	●		●		●			●
Establishment of an efficient IT infrastructure (2)		●		●	●			●
Financial stability of the offshore provider (2)		●	●			●	●	
Suitable company size of the offshore provider (2)		●	●			●	●	
Appropriate internal technical knowledge (1)	●		●		●			●
Early internal change management (1)	●			●		●	●	
Sustained management support (1)	●		●			●	●	

The most frequently used dimensions when classifying CSF are "tactical vs. strategic" as well as "organizational vs. technical" factors (compare, for instance, Esteves, 2004, and Remus, 2006). However, in connection with our developed CSF list, a classification of the CSF into "internal vs. external" and "static vs. dynamic" factors is more suitable as these dimensions enable the classification of the identified CSF into four groups:

1. **Internal suitability factors:** CSF related to the offshore readiness on the part of the client.
2. **Internal management factors:** CSF related to the planning of an OSD project.
3. **External suitability factors:** CSF related to the selection of an offshore provider.
4. **External management factors:** CSF related to the implementation of an OSD project.

The resulting unified CSF model is displayed in Table 31 below. Within each of the four individual quadrants, the CSF are again listed in descending order, in line with the number of times they were mentioned by the interview partners (in brackets).

Table 31: Unified CSF model

	Static	Dynamic
	Internal suitability factors	**Internal management factors**
Internal	Efficient internal organizational structure (6)	Preparation of a detailed project specification (16)
Internal	Comprehensive experience with IT outsourcing projects (3)	Creation of a cultural sensibility among employees (15)
Internal	International corporate culture (3)	Development of a comprehensive business case (9)
Internal	Standardized and documented processes (3)	Selection of a suitable software component (9)
Internal	Appropriate internal technical knowledge (1)	Definition of clear project goals (8)
Internal	Sustained management support (1)	Definition of project standards (7)
Internal		Early internal change management (1)
	External suitability factors	**External management factors**
External	Good language abilities of the offshore employees in German and English (12)	Creation of a partnership-like relationship (40)
External	Geographical closeness of the offshore provider (9)	Ensuring of a continuous communication flow (21)
External	High quality of offshore employees (6)	Face-to-face meetings with the offshore provider on a regular basis (16)
External	Standardized and documented processes on provider side (4)	Continuous controlling of project results (9)
External	Comprehensive industry knowledge of the offshore provider (3)	Definition of an accurate contract (9)
External	Legal and political stability in the offshore country (3)	Ensuring of a bilateral know-how transfer (5)
External	Financial stability of the offshore provider (2)	Establishment of an efficient IT infrastructure (2)
External	Suitable company size of the offshore provider (2)	

As already indicated above, the **internal factors** are related to intraorganizational aspects from a client's point of view, whereas the **external factors** refer to interorganizational or intraorganizational aspects on the part of the provider. The static factors can be seen as **suitability factors**, while the dynamic factors can be interpreted as **management factors**. In consequence, for instance, the CSF listed in the upper left quadrant of the model refer to internal suitability factors, while those listed in the lower right quadrant reflect external management factors.

5.4.3 CSF Description

The following sections give a brief introduction of the different CSF in regard to the four respective groups displayed in Table 31. Within the individual sections, the CSF are assorted according to the number of times they were mentioned in the course of the interviews.

5.4.3.1 Internal Suitability Factors

Efficient internal organizational structure: As a requirement, a company engaging in OSD activities should possess an efficient internal organizational structure. This particularly includes a qualified and professional project organization.

Furthermore, the OSD client should exhibit efficient internal communication structures. Here, the focus is primarily on the comparison and the alignment of information between the strategic and operational levels (for instance, to keep both levels informed about changes and modifications to the project implementation plan).

Comprehensive experience with IT outsourcing projects: A client company's previously gained know-how in national outsourcing projects as well as software development projects can prove to be helpful in the context of OSD. This applies particularly to companies in German-speaking countries, where the offshoring of software services still holds a significant amount of potential.

Problematical is the fact that, when compared to the United States and the UK, companies in German-speaking countries tend to have little experience with outsourcing projects in general. One indication for this is, for instance, the broad orientation, which German-speaking companies fostered in the 80s and early 90s (e. g., the diversification strategy of the Daimler Benz corporate group at that time).

International corporate culture: The cooperation with foreign company partners within the framework of an OSD project can be considerably simplified through the existence of an internationally orientated corporate culture on the part of the client. In this context, the designation of the English language as the official corporate and document language could be a possible measure, assuming the company's employees possess sufficient English skills. However, within the conducted interviews, especially offshore providers cooperating with small and medium-sized enterprises in German-speaking companies reported having run into language barriers.

It can be generally noted that companies which have gained experience with foreign partners in the past (e. g., marketing subsidiary overseas) tend to have less trouble cooperating with offshore providers. This applies particularly to international conglomerates (e. g., IBM, Siemens), whose employees are confronted with foreign colleagues on a daily basis.

Standardized and documented processes: A strict process orientation was described by the interview partners as beneficial for the implementation of an OSD project. In order to ensure efficient development processes, the client company should execute an internal process optimization before commencing such a project.

Process standards (especially, CMM and ISO 9000) on the part of the provider also have an effect on the clients. Since many offshore providers are certified according to these quality standards, the client should also pursue the highest possible certification in order to ensure the compatibility of the development processes. As a rule of thumb concerning the CMM levels, a maximum difference of two quality levels between client and provider was suggested.

Appropriate internal technical knowledge: Many a time, the major reason why German-speaking companies engage in OSD projects is solely cost-driven. However, these companies often underestimate the complexity of such a project. Therefore, the successful implementation of an OSD project calls for the understanding or at the least the awareness of the technical complexity of the project on the part of the client.

In addition, an adequate understanding of the technical difficulties can have significant influence on the selection of the appropriate software project. Furthermore, contract negotiations with the offshore provider as well as the definition of the specific project requirements can benefit from a client's comprehensive technical understanding.

Sustained management support: Like with many other complex, high-risk projects, the success of an OSD project is determined in great deal by the amount of support it receives from the company's management. In order to define appropriate goals and ensure the support of the operational level, the management should gain a reasonable amount of understanding of the processes by being sustainably integrated into the OSD activities of its company.

The existence of a "project champion" within the management level can prove to be beneficial, especially when problems arise during the implementation of the OSD project. This can be very helpful when attempting to overcome internal resistance on the part of the client. A frequently mentioned example of a project champion is Jack Welch, who was accountable for the establishment and the expansion of offshore activities by the North American conglomerate General Electric in India.

5.4.3.2 Internal Management Factors

Preparation of a detailed project specification: To prevent misunderstandings and obscurities, the preparation of a detailed project specification is essential. The need for such a measure results primarily from the vast distances between the cooperation partners within an OSD project. In this case, the project specification should include a comprehensive description of responsibilities and interfaces.

In addition, the project specification should pursue a certain balance between required precision and necessary flexibility. Under particular circumstances, it may make sense to split up the project into multiple subprojects, in an effort to gain a better overview of the individual duties and responsibilities.

Creation of a cultural sensibility among employees: Many of the interview partners named the creation of a cultural sensibility among employees a significant CSF for the implementation of an OSD project. In this context, employees involved in the project should be informed at an early stage about cultural differences, for instance, the different perceptions of hierarchy structures. In this way, culturally linked misunderstandings can be prevented or at least weakened.

A general requirement for the creation of a cultural sensibility among employees is the communication of know-how related to the development partner's foreign culture, for example by means of intercultural trainings. Here, the precise goal should be to establish a certain level of tolerance and respect for the opposite culture.

Development of a comprehensive business case: An OSD project should, in any case, be considered as a well defined business case. Here, cost advantages should not be overestimated and high initial investments should be taken into account (start-up costs). Furthermore, costs of administration, regulatory expenses, as well as "hidden costs" in regard to the project coordination need to be considered.

Within the framework of the business case, the client should already consider possible problems and risks, which may arise from different levels of efficiency. In addition, a feasibility analysis can be applied, in order to verify if the demands, for instance, on the part of the management, can even be realized.

Selection of a suitable software component: Not every software development project can be handed over to an offshore provider smoothly. Therefore, it is of great importance to exercise adequate care when selecting the software component for offshoring. In this context, the planned OSD project itself should exhibit a certain critical project size in the first place, as very small projects often cannot justify the additional investments and efforts which flow into OSD projects on the part of the management.

In order to minimize the complexity of the integration process, it is recommended that only modular components with clearly defined interfaces and consistent system architecture are considered for OSD. This way, the client can ensure that potential upgrades and progressive development tasks as well as a possible change of the offshore provider can be handled more easily.

Definition of clear project goals: In order to execute an evaluation of the success of an OSD project, it is important that the client determines well-defined goals (e. g., cost savings, time-to-market reduction), which he plans to pursue through the respective project. Here, breaking down project objectives into further sub-objectives has been proven to be useful. Another useful measure is the definition of project milestones, which particularly supports the monitoring of the achievement of the defined objectives.

Furthermore, the offshore provider should be informed in detail about the specific goals related to the individual project. Only then, can the development partner align its activities with these goals.

Definition of project standards: The definition of project standards has proven to be of importance when implementing an OSD project. In this context, particularly the specification of standardized interfaces between the project partners' processes and the determination of project guidelines (regarding the annotation of source code as well as the format of the project documentation) facilitate the implementation of such a project.

In order to create a general understanding of the various standards on the part of both the client and the provider, the relevant standards should be defined conjointly during the beginning of the project. The compiled definitions should then be stored in a project handbook.

Early internal change management: A relocation of software development activities to a foreign country is often linked to the threat of job losses combined with the fear and worries of the company's employees. In an effort to prevent any negative effects of a forthcoming OSD initiative on the motivation and the commitment of the internal employees, a company should inform their employees at an early stage about current plans, thereby directly aiming to reduce fears on the part of the employees by showing them new perspectives.

Possible measures in this context could be, for instance, personal interviews with the employees involved in the project, the establishment of a website with up-to-date information in regard to the project status, as well as discussion rounds between both employees and management representatives on a regular basis.

5.4.3.3 External Suitability Factors

Good language abilities of the offshore employees in German and English: In order to ensure an efficient communication between the project partners and minimize loss of information, good English skills on the part of the provider are essential. Poor language skills pose a common threat for the success of OSD projects, as interpersonal barriers are often built up. The interview partners confirmed this, especially in regard to SME providers.

When comparing Eastern Europe and India, it can be stated that, from the point of view of German-speaking companies, the German language skills evident in many eastern European countries are appreciated, while in India particularly the high level of English language skills are viewed positively.

Geographical closeness of the offshore provider: The geographical closeness of the offshore provider can also have a positive effect on the implementation of an OSD project. Several advantages such as short journeys and minor time differences are beneficial to the communication during the course of the project.

Providers situated in Asian regions can make up for their large geographical distances to the clients by establishing a subsidiary in the client's country and/or forming a interface team located on the client site. For instance, some interview partners mentioned that a number of providers implement software maintenance services exclusively with the support of onsite teams, thereby ensuring a quick intervention as soon as problems arise.

High quality of offshore employees: According to the interview results, the success and the failure of an OSD project is in great deal determined by the quality of the employees on the part of the provider. In this context, the quality standard P-CMM (People Capability Maturity Model) is continuously gaining in importance. This quality standard is linked especially to the administration and the development of employees.

Alongside their technical know-how, the provider's employees should exhibit reliability and commitment. However, closely related to these qualities, the problem of insufficient performance continuity on the part of the provider can often be observed. Most of the time, this is the result of insufficient labor continuity caused by fluctuation on the provider side.

In addition, it must be noted that the quality of the provider employees can be influenced in part by the selection of the specific offshore destination. In accordance with our interview partners, Russia and India possess a well developed educational system, which generates a considerable amount of highly qualified manpower.

Standardized and documented processes on provider side: The subsistence of standardized and documented processes on the part of the provider can make a significant contribution to the successful execution of an OSD project. In this context, particularly the certification of the provider in compliance with quality standards such as CMM or ISO 9000 plays an important role. Another quality-orientated approach related to process management are ITIL and Six Sigma, which in reference to OSD projects, are becoming more and more important.

Many of the foreign providers are already certified in accordance with the quality standards mentioned above. In India, for example, the ten largest providers all exhibit a CMM Level 5 certification, the highest level of the CMM standard. In addition, all but one of the providers are certified in compliance with ISO 9000 (NASSCOM, 2005).

Comprehensive industry knowledge of the offshore provider: The provider should exhibit comprehensive experience as well as an adequate number of reference projects within the client's industry. This ensures that the provider possesses industry-specific know-how as well as a reasonable amount of knowledge concerning industry-specific standards, processes, and software applications.

The selection of a provider with comprehensive industry knowledge is intended to bring forth additional economies of scale and scope, thereby contributing to a further increase in efficiency and quality regarding the performance of the offshore provider. For this reason, a multitude of providers have made the move to focus on certain industries.

Legal and political stability in the offshore country: According to the respondents, a sufficient level of political and legal security within the offshore destination country is a further CSF tied to the implementation of an OSD project. In many cases, this particularly influences the selection of the specific offshore project location.

In terms of legal security, the project partners must primarily agree on a location which offers a fair and secure court of justice. This is of particular importance in regard to the possible demand for guarantee claims or the protection of IP and patents.

Financial stability of the offshore provider: In an effort to prevent a termination of the offshore relationship due to bankruptcy on the part of the provider, the client should pay close attention to the financial stability of the offshore provider. This becomes even more important if the client is planning a long-term cooperation with the provider.

In order to gain a better understanding of the provider's financial stability, it is useful to conduct a comprehensive due diligence at the provider site. Even though, such an examination normally concentrates on technical issues, it can help create a clearer picture of the company's financial situation.

Suitable company size of the offshore provider: The interview partners generally considered it to be reasonable to select a project partner of a comparable corporate size. In line with our interview results, this is particularly true for SME clients. Such companies receive more attention from the management level of a smaller offshore provider as they would from a larger provider.

On the contrary, representatives of LE clients reacted rather indifferently when asked if they would prefer cooperating with a smaller or a larger provider. According to these respondents, merely the benefit of economies of scale would steer their decision towards the cooperation with a larger provider.

5.4.3.4 External Management Factors

Creation of a partnership-like relationship: In the interviews conducted, the creation of a partnership-like relationship between client and provider proved to be the most important CSF for OSD projects. Based upon the selection of a suitable partner, a long-term cooperation as well as a beneficial win-win-situation for both sides should be pursued.

In order for a partnership-like relationship to function smoothly in the long run, both business partners should be able to handle criticism as well as exhibit candidness and flexibility. In doing so, a certain level of trust can be created between the business partners, which in turn can contribute to risk reduction on both the client and the provider side.

Ensuring of a continuous communication flow: In order to allow a continuous communication flow between the project partners, the various project tasks should not be spread out over too many different locations. Furthermore, client and provider should determine an appropriate communication concept. In doing so, many of the misunderstandings often linked to OSD projects can be prevented in advance. In addition, it was recommended that the project partners define a common communication strategy.

Even though, a great part of the project-related communication takes place on the phone, most of the interview partners prefer the use of e-mail or instant messaging for communication purposes. Primarily, this can be reasoned by the fact that these media automatically document the communicated information.

Face-to-face meetings with the offshore provider on a regular basis: A further CSF, closely related to both the continuous communication flow and the partnership-like relationship between client and provider, is the emphasis on face-to-face contact between the project partners. This can take on a major role, particularly in the beginning of an OSD project, when carrying out a project kickoff event, or in the course of the project, as problems may come up.

The face-to-face contact between internal and external employees particularly allows for experiences to be exchanged more easily as well as technical and cultural discrepancies to be reduced.

Continuous controlling of project results: An integrated quality management is essential for reaching the target results pursued by the OSD project. In this context, the monitoring of the project progress on a regular basis plays a pivotal role. Such continuous control may be supported by the definition of a detailed project plan.

Concerning the adaptation of the project results, the development of a prototype in the early project stages has shown to be of particular value. A prototype allows a timely testing of the specific look and feel of the developed software, thereby preventing misunderstandings in the remaining development process.

Definition of an accurate contract: Regarding the composition of the contract, it is beneficial if the client company already possesses experience with the arrangement of international contracts. However, especially in regard to SME clients, this is often not the case.

With regard to the content of the contract, on the one hand, the specific contents should be formulated in great detail, leaving little room for interpretations. On the other hand, the individual contents need to be adjustable to changing requirements, emerging during the course of the project.

Many of the interview partners addressed the fact that the contract itself should serve as a type of prevention towards possible conflicts. Consequently, the contract can be regarded as a pivotal document which brings forth a certain sense of security and takes on a leading role if problems between the project partners arise.

Ensuring of a bilateral know-how transfer: In order for the offshore provider to be in the position to implement the OSD project, the client must impart the necessary and relevant know-how to the provider in the beginning of the project. Here, for instance, special trainings, both onshore and offshore, can be arranged.

However, to remain independent from the offshore provider, the know-how collected in the course of the project must, in turn, be transferred back to the client. If this is neglected, an advanced development of the software, initially developed offshore, can run into considerable problems.

Establishment of an efficient IT infrastructure: According to our interviews, an identical IT infrastructure on the side of both client and provider can contribute significantly to the successful implementation of an OSD project. As an alternative to an identical infrastructure, the offshore provider can be equipped with a direct network connection to the client's infrastructure (direct link). This allows the provider to develop the software directly within the client's infrastructure, simplifying the testing and integration process of the software.

In regard to the software infrastructure, ideally, the same applications are run in the same versions on both provider and client side. If this is not possible, at least the compatibility of the software programs used by the client and the provider should be ensured.

5.4.4 Comparison with Related Studies

Based upon the conducted literature reviews (compare sections 3.4 and 5.2) as well as the examination of related studies which focus on CSF for other IT projects, we selected a total of three studies and compared the CSF and the issues/problems respectively mentioned in these studies to our developed list of CSF. This particular procedure was meant to generate a most comprehensive list of CSF for OSD projects.

Concerning the comparison with CSF related to IT projects, we selected one study within the **ERP context** (Esteves, 2004) and another study within the **portal context** (Remus, 2006). Both of the studies are built up from a client's point of view and focus on the identification of CSF for the respective project types, thereby giving an in-depth description of the individual CSF. Concerning the comparison with issues and problems occurring in the **OSD context**, we selected a study by Dawley and Rajkumar (1998).

The following sections describe the comparison of our CSF list with the content of the selected studies in more detail. Within these sections, the lists of CSF and issues/problems respectively displayed in the left column of the comparison tables are sorted in alphabetical order. The factors listed in the right column reflect the CSF, identified by us, which best covers the respective factor in the left column. If none of the factors identified by us is able to reflect the CSF mentioned in the left column, it is labeled with a dash (-).

5.4.4.1 CSF for ERP Projects

On the basis of a broad literature research, **Esteves (2004)** was able to identify eleven relevant studies, all of which primarily deal with the successful implementation of ERP projects. In reference to the CSF mentioned in these studies, he defined a list of 23 CSF. This particular list considers the successful project implementation from a client's point of view (that is, from the perspective of the company which plans to introduce the ERP software).

Table 32: Comparison of our CSF list with related studies: CSF for ERP implementation projects

CSF (Esteves, 2004)	Corresponding CSF
Adequate data migration process	-
Adequate ERP version	-
Adequate infrastructure and interfaces	Establishment of an efficient IT infrastructure
Adequate legacy systems knowledge	Appropriate internal technical knowledge
Adequate project manager role	Sustained management support
Adequate project sponsor role	-
Adequate project team composition	-
Adequate training program	Ensuring of a bilateral know-how transfer
Adequate ERP implementation strategy	Definition of clear project goals
Appropriate usage of consultants	-
Avoid ERP customization	-
Comprehensive business process reengineering	Standardized and documented processes
Dedicated staff and consultants	-
Effective organizational change management	Early internal change management
Empowered decision makers	-
Formalized project plan/schedule	Continuous controlling of project results
Formalized testing plan	Continuous controlling of project results
Good project scope management	Preparation of a detailed project specification
Preventive trouble shooting	-
Strong communication inwards and outwards	Ensuring of a continuous communication flow
Sustained management support	Sustained management support
Trust between partners	Creation of a partnership-like relationship
User involvement and participation	Early internal change management

The comparison of the two CSF lists shows that about two thirds of the CSF mentioned by Esteves (2004) (14 of the 23 factors) are also included in our list. Furthermore, the comparison reveals that especially aspects related to the construction of an adequate project team fall short in our list of CSF (e. g., "Adequate project manager role", "Adequate project team composition", "Appropriate usage of consultants"). These aspects can be combined to the CSF "Composition of an appropriate project team". The importance of this factor for the success of an OSD project is also confirmed by Mani and Rajkumar (2001).

Other factors which were not considered in our CSF list (e. g., "Adequate data migration process", "Adequate ERP version") are, from our perspective, irrelevant in the OSD context.

5.4.4.2 CSF for Portal Projects

By means of interviews conducted with experts, working in the field of portal integration, **Remus (2006)** identified a list of 21 CSF for portal development projects. This specific study examines the success of such projects from a client's point of view, thereby concentrating on companies located in Germany.

Table 33: Comparison of our CSF list with related studies: CSF for portal development projects

CSF (Remus, 2006)	Corresponding CSF
Business process reengineering	Standardized and documented processes
Change management	Early internal change management
Clear goals and objectives	Definition of clear project goals
Dedicated resources	-
Defining the portal architecture	-
Flexible project structure	Creation of a partnership-like relationship
Organizational culture	International corporate culture
Portal design	-
Portal engineering Roadmap	-
Portal strategy	Definition of clear project goals
Process and application integration	-
Project management	-
Project monitoring and controlling	Continuous controlling of project results
Prototyping	Continuous controlling of project results
Requirement analysis	Development of a comprehensive business case
Selection of the appropriate portal package	Selection of a suitable software component
Strong communication inwards and outwards	Ensuring of a continuous communication flow
Team competences and skills	High quality of offshore employees
Top management support	Sustained management support
User acceptance	Early internal change management
User training and education	Ensuring of a bilateral know-how transfer

Three fourths of the CSF mentioned by Remus (2006) (15 of the 21 factors) are also incorporated in our list. The CSF „Project management", mentioned by Remus (2006), is quite general. With regard to our CSF list, this factor is covered by a number of CSF; particularly by the CSF classified as external management factors within our CSF model (compare Table 31 in section 5.4.2).

The rest of the CSF listed can either be assigned to the composition of an adequate project team ("Dedicated resources") or cannot be reasonably linked to OSD projects (e. g., "Process and application integration", "Defining the portal architecture").

5.4.4.3 CSF as Perceived Issues and Problems for OSD Projects

Based upon an analysis of relevant literature, **Dawley and Rajkumar (1998)** identified seven issues and problems respectively, which both client and provider companies face within the scope of an OSD project.

Table 34: Comparison of our CSF list with related studies: Issues and problems for OSD projects

Issue/Problem (Dawley and Rajkumar, 1998)[9]	Corresponding CSF
High number of user interactions and project locations	Ensuring of a continuous communication flow
High project complexity	Selection of a suitable software component
Inadequate Total Quality Management (TQM)	Continuous controlling of project results
Lack of face-to-face contact	Face-to-face meetings with the offshore provider on a regular basis
Non-existence of uniform data formats	Definition of project standards
Selection of an unfamiliar technology	Appropriate internal technical knowledge
Unclear project specification	Preparation of a detailed project specification

As displayed in Table 34, our list of CSF addresses all of the problems/issues mentioned by Dawley and Rajkumar (1998).

5.4.5 Extended CSF Model

Based on the comparison of the initially compiled list of CSF with similar lists within the context of IT or OSD, the CSF "Composition of an appropriate project team" was added to our original list. Although this CSF indirectly influences several of the factors already included in the list, it was not directly mentioned in any of the conducted interviews.

Composition of an appropriate project team: Studies in the field of IT in general (e. g., Esteves, 2004) and OSD in particular (e. g., Mani and Rajkumar, 2001) confirm that the composition of the project team can have a significant influence on the success of an OSD project. In this context, a suitable project manager, an adequate deployment of consultants, as well as a reasonable combination of offshore and onshore resources need to be determined.

[9] Partially, the problems and issues mentioned by the authors are extracted from a study by McFarlan (1981).

In addition, the efficiency of the project team can be increased by providing project members with the authority to make specifically designated decisions or assigning dedicated resources to the OSD project.

Table 35: Extended CSF model

	Static	Dynamic
Internal	**Internal suitability factors**	**Internal management factors**
	Efficient internal organizational structure (6)	Preparation of a detailed project specification (16)
	Comprehensive experience with IT outsourcing projects (3)	Creation of a cultural sensibility among employees (15)
	International corporate culture (3)	Development of a comprehensive business case (9)
	Standardized and documented processes (3)	Selection of a suitable software component (9)
	Appropriate internal technical knowledge (1)	Definition of clear project goals (8)
	Sustained management support (1)	Definition of project standards (7)
		Early internal change management (1)
External	**External suitability factors**	**External management factors**
	Good language abilities of the offshore employees in German and English (12)	Creation of a partnership-like relationship (40)
	Geographical closeness of the offshore provider (9)	Ensuring of a continuous communication flow (21)
	High quality of offshore employees (6)	Face-to-face meetings with the offshore provider on a regular basis (16)
	Standardized and documented processes on provider side (4)	Continuous controlling of project results (9)
	Comprehensive industry knowledge of the offshore provider (3)	Definition of an accurate contract (9)
	Legal and political stability in the offshore country (3)	Ensuring of a bilateral know-how transfer (5)
	Financial stability of the offshore provider (2)	Establishment of an efficient IT infrastructure (2)
	Suitable company size of the offshore provider (2)	**Composition of an appropriate project team (0)**

In reference to the classification of the CSF introduced in section 5.4.2, the newly added CSF is classified in the matrix as an external, dynamic factor, due to the fact that it represents a management activity and reflects an interorganizational aspect. Table 35 shows the extended CSF model for OSD projects (added CSF "Composition of an appropriate project team" in bold), consisting of 29 factors in the end.

5.5 Discussion

Based on a comprehensive literature research, 22 interviews with experts in the field of OSD, and the comparison of the developed CSF list with the content of related studies, a **CSF model**, comprising 29 CSF for the successful implementation of OSD projects, was able to be developed from the perspective of German-speaking companies. Within this model, the CSF are assigned to four CSF groups: Internal suitability, internal management, external suitability, and external management factors.

When analyzing the aggregated numbers of mentions within the various CSF groups, the management factors (dynamic factors) were mentioned a total of 167 times by the interview partners (compare Table 36). This number corresponds to approximately three fourths of all mentions. Within the management factors, external management factors (external, dynamic factors) received nearly two thirds of the number of mentions (102 mentions).

Table 36: Aggregated mentions of CSF (classified by CSF dimensions)

		CSF	Mentions		
Internal	Static	**Internal suitability factors**		17	82
		Efficient internal organizational structure	6		
		Comprehensive experience with IT outsourcing projects	3		
		International corporate culture	3		
		Standardized and documented processes	3		
		Appropriate internal technical knowledge	1		
		Sustained management support	1		
	Dynamic	**Internal management factors**		65	
		Preparation of a detailed project specification	16		
		Creation of a cultural sensibility among employees	15		
		Development of a comprehensive business case	9		
		Selection of a suitable software component	9		
		Definition of clear project goals	8		
		Definition of project standards	7		
		Early internal change management	1		
External	Static	**External suitability factors**		41	143
		Good language abilities of the offshore employees in German and English	12		
		Geographical closeness of the offshore provider	9		
		High quality of offshore employees	6		
		Standardized and documented processes on provider side	4		
		Comprehensive industry knowledge of the offshore provider	3		
		Legal and political stability in the offshore country	3		
		Financial stability of the offshore provider	2		
		Suitable company size of the offshore provider	2		

	Dynamic	**External management factors**		102	
		Creation of a partnership-like relationship	40		
		Ensuring of a continuous communication flow	21		
		Face-to-face meetings with the offshore provider on a regular basis	16		
		Continuous controlling of project results	9		
		Definition of an accurate contract	9		
		Ensuring of a bilateral know-how transfer	5		
		Establishment of an efficient IT infrastructure	2		
		Composition of an appropriate teams	0		

With regard to the number of times the individual CSF were mentioned, Table 36 shows that the five most frequently mentioned CSF all represent management factors. These are the "Creation of a partnership-like relationship" (mentioned 40 times), the "Ensuring of a continuous communication flow" (mentioned 21 times), the conduction of "Face-to-face meetings with the offshore provider on a regular basis", the "Preparation of a detailed project specification", as well as the "Creation of a cultural sensibility among employees" (all three mentioned 16 times). Two of these CSF are related to internal aspects on the part of the client ("Preparation of a detailed project specification" and "Creation of a cultural sensibility among employees"), while three of them address external aspects in regard to the cooperation between the client and the provider ("Creation of a partnership-like relationship", "Ensuring of a continuous communication flow", and "Face-to-face meetings with the offshore provider on a regular basis"). In this context, the dominance of the CSF „Creation of a partnership-like relationship" is remarkable, as it was mentioned almost twice as often as the second most frequently mentioned factor.

In conclusion, it can be summarized that the CSF for OSD projects can be classified into internal and external factors as well as suitability and management factors. In this context, the (external) management factors seem to be of particular importance for the successful implementation of an OSD project. Among other analysis aspects, the relevance of this particular CSF group will be examined in more detail within the following chapter.

Chapter 6

Analysis of Critical Success Factors

Chapter Contents: This chapter analyzes the relevance, the phase specificity, as well as the level of influence of the identified CSF for OSD projects by means of an online survey with 103 representatives of German-speaking companies. Within the chapter, we first detail our research design (*6.1 Research Design*). Second, we provide company-, project-, and person-related information on the participants of the online survey (*6.2 Research Context*). Third, we present the analysis results of our online survey, hereby focusing on the relevance, the phase specificity, and the level of influence in regard to our list of 29 CSF (*6.3 CSF Analysis*). Finally, we close the chapter with a summary of our findings (*6.4 Discussion*).

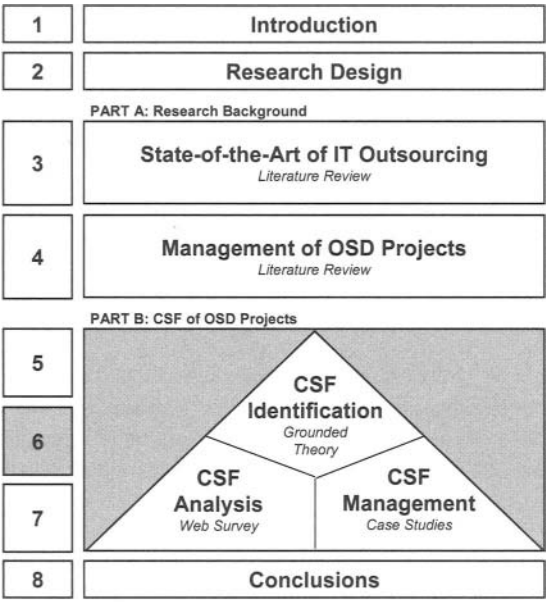


Figure 41: Thesis roadmap – CSF Analysis (chapter 6)

6.1 Research Design

In the following sections, we first present the **research objectives** of the chapter at hand. Next, we introduce the **research methodology** applied and outline the **research process** implemented in order to reach the defined goals.

6.1.1 Research Objectives

The majority of CSF studies are limited to the identification and the description of CSF (Esteves, 2004). Within the conducted literature review on CSF research in the field of IT outsourcing (compare section 5.2), we were able to identify only one CSF research paper (Adelakun and Jennex, 2003) which also analyzes the relevance of the presented CSF. In contrast, with regard to a more advanced CSF analysis, we do not know of any studies. The doctoral thesis at hand aims to close this gap. Therefore, the main objective of this chapter is to create a deeper understanding in regard to the **relevance**, the **phase specificity**, and the **level of influence** of the identified 29 CSF for OSD projects (compare chapter 5). In an effort to reach this goal, particularly the following research questions will be addressed: "Which of the identified CSF are particularly relevant in which OSD project contexts, which of these CSF are specific for which OSD project phases, and in which time frame can these CSF be influenced?"

6.1.2 Research Methodology

According to Esteves (2004), researchers apply both qualitative and quantitative research methods, and here, primarily case studies and surveys (both based on interviews), to analyze the relevance of CSF. In this context, the interview partners are usually asked to compile a list of the most relevant CSF or to assess the relevance of each individual CSF by means of a *Likert scale*.

In an effort to analyze the identified CSF in more detail, we decided to apply a predominantly **quantitative research design**. Crucial for this decision was the fact that we aimed to numerically measure the collected data and to employ statistical procedures (Creswell, 2003).

As a quantitative research method, we decided to conduct an **online survey** (also referred to as *web survey*). The reasons for using an online survey were that it was the easiest, fastest, and least expensive way to access experts in the field of OSD (Esteves, 2004). However, beside these advantages of an online survey compared to a classical survey (using a "paper-pencil-approach"), the technique possesses the disadvantages that a systematic selection of the participants is not or rather conditionally possible and statements on "non-participants" cannot be made (Hauptmanns, 1999).

In the process of designing the questionnaire, we further decided to exclusively formulate **close-ended questions**. This can be reasoned by the fact that we did not aim to identify additional CSF, but focused on the quantitative examination of the already identified CSF.

In literature, several different guidelines on how to design an online questionnaire are discussed. However, according to Krcmar, Leimeister, and Sidiras (2004), all of these guidelines (e. g., Büning, Haedrich, Kleinert, and Kuß, 1981) include the following three basic principles: **Accuracy**, **neutrality**, and **simplicity**. These principles also served as design criteria for the preparation of our online questionnaire. In an effort to comply with these criteria, we paid particular attention to the formulation of clear and non-redundant questions (*accuracy*), the ensuring of the impartiality of the participants, e. g., by listing the CSF in alphabetical order, (*neutrality*), and the logical structuring of the questions (*simplicity*).

6.1.3 Research Process

Regarding the research process, Table 37 outlines the four research steps implemented.

Table 37: Description of research steps

Research step	Short description
Literature review	Analysis of the CSF studies found in the literature review in order to gain first insights into the relevance, the phase specificity, and the level of influence of the identified CSF as well as to prepare the online survey
Preparation of the online survey	(1) Formulation of general and specific questions for the survey (2) Testing of the survey (3) Adaptation of both general and specific questions from the survey (4) Announcement of the survey in the BITKOM newsletter and a press release by the University of Erlangen-Nuremberg
Data collection	(1) Making contact with OSD experts by e-mail, openBC and phone (2) Activation of the survey on the Internet over a time period of two months
Data analysis	(1) Analysis of the relevance of the identified CSF and the significance of existing assessment differences between different participant groups by means of statistical methods (2) Analysis of the phase specificity and the level of influence of the CSF by means of frequency tables

In the following, the research steps mentioned above will be described in more detail.

6.1.3.1 Literature Review

On the basis of a comprehensive literature review, we were able to identify 15 CSF studies in the field of IT outsourcing (compare section 5.2). The analysis of these studies provided us with first insights in regard to the relevance, the phase specificity, and the level of influence of our list of 29 CSF. These insights particularly influenced the determination of the concrete analysis aspects as well as the formulation of the survey questions.

6.1.3.2 Preparation of the Online Survey

In the style of the interview guidelines used for the identification of the 29 CSF (compare section 5.1.3.2), the online questionnaire was divided into two parts: While the first part focused on the quantitative analysis of the identified CSF, the second part aimed to collect general information on the participants. With regard to the second part, the implementation of an Internet-based survey enabled an automatical adaptation of questions depending on the information provided by the participants. For instance, dependent on the specified company perspective (client, provider, or consultancy), the number and the formulation of the subsequent questions varied.

In regard to the formulation of both parts of the questionnaire, we first proposed questions and answer options, and refined these in an iterative process. Second, we tested the online survey with 20 test persons. Based on the feedback of these persons, we further refined the survey. Here, we paid particular attention to the adequate usage of mandatory questions.

Within the test phase, we also examined the capability of the underlying hard- and software infrastructure. In addition, we already tested the data import to MS Excel and the data evaluation with SPSS in this phase. The design of the online survey was carried out with support of the software tool "PHP Surveyor", which was already successfully deployed in numerous research projects by our department.

After having completed the test phase, we announced the online survey within the monthly online newsletter of the German Association of Information Economy, Telecommunication, and New Media (BITKOM). Further, we published a press release in different media, hereby requesting representatives of German-speaking companies to participate in the research project.

6.1.3.3 Data Collection

Our research focus on OSD projects required a careful selection of potential participants. In this context, we made contact with company representatives, possessing OSD experience, via the Internet communication platform openBC (http://www.openbc.com). By means of this platform, we were able to identify as well as directly contact 247 persons, working in the field of OSD. In addition, we sent e-mails to 813 German-speaking companies, which were 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. For this purpose, the online survey was made available on the Internet pages of the University of Erlangen-Nuremberg over a period of two months (October and November 2005).

6.1.3.4 Data Analysis

In total, 103 persons participated in the online survey. Due to the comprehensive usage of mandatory questions within the online survey, all of the 103 data records were able to be included within the data analysis process. This process was carried out with the help of SPSS.

Table 38 gives an overview of the three fundamental analysis aspects of the online survey as well as the corresponding assessment values and assignment classes respectively.

Table 38: Overview of analysis aspects

Analysis aspect	Assessment values / Assignment classes
Relevance	Assessment of the relevance of each individual CSF by means of a *Likert scale* with values from 1 to 5: 1 equivalent to „not relevant" and 5 equivalent to „significantly relevant".
Phase Specificity	Assignment of each individual CSF to one of the following *project phases*: "Planning and analysis", "Decision and negotiation", "Implementation", or "Cross-phase".
Level of Influence	Assignment of each individual CSF to one of the following *levels of influence*: „Short-term ", „Medium-term", „Long-term", or „Not / rather conditional".

Regarding the analysis of the **relevance** of the identified CSF, we compiled an overall CSF ranking on the basis of the calculation of the arithmetic mean for each individual CSF. Corresponding CSF rankings were developed for both the entirety of the participants and 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").

In an effort to examine the statistical significance of identified assessment differences, dependent on the number of dimension values of a specific dimension, we either conducted a t-test (in the case of two values) or an ANOVA-test (in the case of three or more values) with an alpha value of 0.05. That means that an alpha error (that is, the identification of a difference within the sample which does not exist in reality) occurs with a probability of 5 percent. To perform the mentioned tests, we defined the following difference hypothesis: "*The arithmetic means of the CSF differ between the individual dimension values.*" The corresponding null hypothesis reads as follows: "*The arithmetic means of the CSF do not differ between the individual dimension values.*"

According to Kähler (2004), parametric test procedures (e. g., variance analyses) assume normal variables. Therefore, before implementing the t-test and the ANOVA-test respectively, we verified the normal distribution of the variables by means of histograms.

With regard to the analysis of the **phase specificity** and the **level of influence** of the 29 CSF, we were not able to calculate the arithmetic means due to the usage of nominal assessment scales. Instead, we compiled frequency tables which indicated how often each CSF was assigned to a specific project phase or level of influence respectively. Corresponding frequency tables were again created for both the entirety of the participants and individual participant groups.

6.2 Research Context

The second part of the online survey dealt with general information on the participants and comprised **company-related information** (information on the participants' companies), **project-related information** (information on the OSD projects implemented by the participants and their companies respectively), and **person-related information** (information on the current position of the participants within their companies).

6.2.1 Company-related Information

With regard to company-related information, the perspective and the corporate size of the participants' companies as well as the objectives of the respective companies associated with the engagement in OSD are considered.

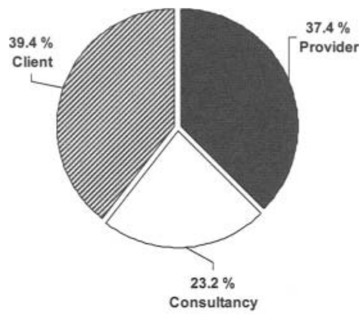


Figure 42: Company perspective

Regarding the company perspective, the number of participants of the online survey was almost balanced between the different perspectives (compare Figure 42). However, while the majority of the participants are employed by OSD clients (39.4 percent) and providers (37.4 percent), only 23.2 percent of the participants work for consultancies in the field of OSD.

In regard to the company size, we differentiated among micro, small and medium-sized (SME), as well as large-scale enterprises (LE). In line with the definition proposed by the FMER (2004), a micro enterprise represents a company with less than ten employees and annual revenues of up to two million euros. Further, the FMER (2004) defines a SME as a company which has less than 250 employees and maximum annual revenues of 40 million euros. All other companies are classified as LE.

Based on the presented company classification, it became apparent that almost half of the participants work for LE (49.5 percent). Approximately one third of the participants are on the payroll of SME (32.0 percent). In contrast, only 18.5 percent of the participants are employed by micro enterprises (compare Figure 43).

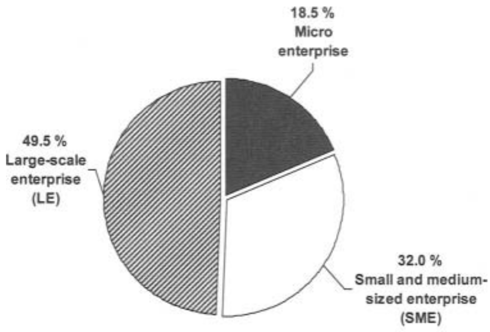


Figure 43: Company size

In consideration of the industries of the participants' companies, we only differed between companies within the IT industry and within other industries. Here, again, a good balance among the participants was able to be observed: While 54.4 percent of the participants work in the IT industry, 45.6 percent of the participants are employed in other industries.

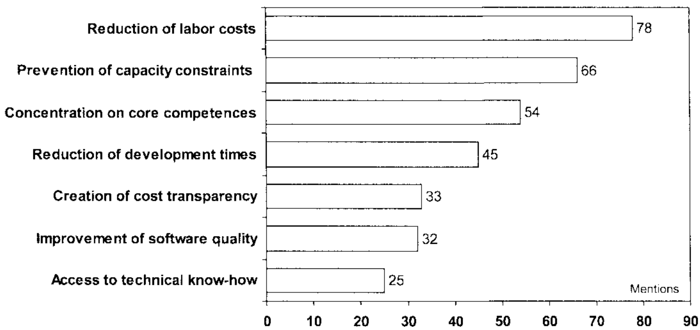


Figure 44: Company objectives[10]

Regarding the objectives associated with the engagement of the participants' companies or their clients respectively in OSD, the objective most frequently mentioned by the respondents was the reduction of labor costs (78 of 103 possible mentions). Other frequently mentioned

[10] Multiple answers possible.

objectives were the prevention of capacity constraints (66 mentions) as well as the concentration on core competences (54 mentions) (compare Figure 44).

6.2.2 Project-related Information

The project-related information deals with the offshore destination regions, the organizational forms, the types, and the size of the OSD projects implemented by the participants and their companies respectively as well as the participants' experience with OSD projects.

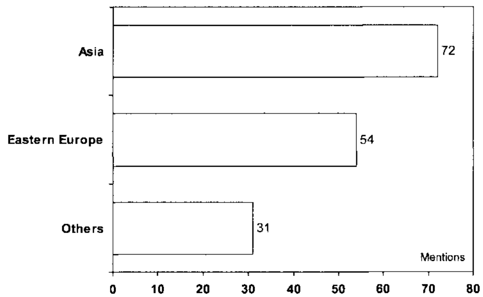


Figure 45: Experience of participants with different regions of destination[11]

With regard to the offshore regions of destination, we combined the offshore countries Estonia, Latvia, and Lithuania (Baltic States) as well as the Czech Republic, Poland, Romania, Russia, Slovakia, and the Ukraine in the region "Eastern Europe", and the countries China and India in the region "Asia". Ireland and other countries were assigned to the category "Others" (compare Figure 45).

On the basis of the presented country classification, it became apparent that the participants primarily implemented OSD projects in Asia. 72 of the 103 participants possessed experience with OSD in this region. 54 participants exhibited corresponding experience in Eastern Europe. In addition, 31 participants already gained experience with other offshore regions of destination.

In regard to the participants' experience with different organizational forms of OSD projects, particularly the cooperation with an exclusive offshore provider was mentioned by the participants (48 mentions). 37 and 34 participants respectively stated that they have already implemented OSD projects with support of an offshore provider, which possesses a domestic

[11] Multiple answers possible.

office, or an IT subsidiary respectively. On the contrary, only 20 participants have cooperated with a joint venture in the OSD context (compare Figure 46).

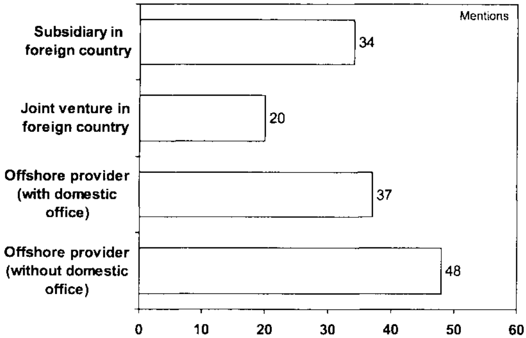


Figure 46: Experience of participants with different organizational forms[12]

Regarding the software services relocated to offshore countries, a clear dominance of the development of individual and standard software became apparent. 95 of the 103 survey participants were in possession of experience with this type of OSD projects. Experience with OSD projects, concerning the maintenance/migration of software as well as the development of web applications, was stated by 65 and 51 participants respectively (compare Figure 47).

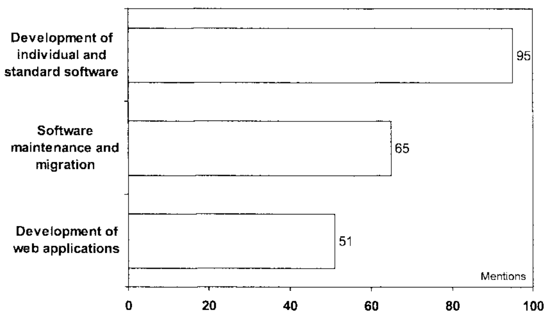


Figure 47: Experience of participants with different project types[12]

In consideration of the average size of the OSD projects implemented by the participants and their companies respectively, it is noticeable that the majority of these projects can be classified as medium-sized projects (42.4 percent), that is projects which either have a duration of more than six months and comprise less than 20 employees, or have a duration of less

[12] Multiple answers possible.

than six months and comprise more than 20 employees. The predominant implementation of small OSD projects (projects with a duration of less than six months and less than 20 employees) as well as large OSD projects (projects with a duration of more than six months and more than 20 employees) was quoted by 26.3 percent and 31.3 percent of the participants respectively.

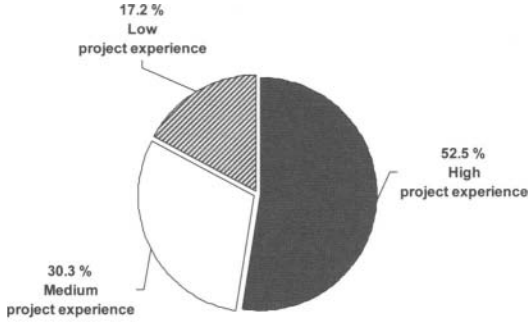


Figure 48: Project experience of participants

In respect of OSD project experience, more than half of the participants (52.5 percent) stated that their companies possess more than three years of experience with OSD and have implemented more than three of such projects within the last three years, which corresponds to a high project experience (compare Figure 48). 30.3 percent and 17.2 percent of the participants respectively categorize the OSD project experience of their companies as medium (more than three years of experience or, alternatively, more than five OSD projects) or as low (less than three years of experience and less than five projects).

6.2.3 Person-related Information

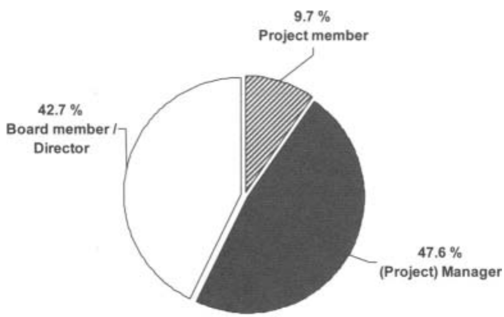


Figure 49: Position of participants

The person-related information refers to the participants' position within their companies and an OSD project respectively.

Figure 49 clarifies that more than 90 percent of the respondents take on a leading position (at least temporarily) within their company. While 42.7 percent of the participants are members of the management board or directors of their company (strategic level), 47.6 percent of the respondents take on (project) manager positions (tactical level). In contrast, less than ten percent of the participants work on the operational level of an OSD project (9.7 percent).

6.3 CSF Analysis

On the basis of the results of the conducted online survey, we analyzed the **relevance**, the **phase specificity**, and the **level of influence** of the identified CSF for OSD projects. Here, we examined all three analysis aspects both in general (incorporating the answers of all participants) and in regard to the analysis dimensions presented in Table 39 (only incorporating the answers of the respective participant groups).

Table 39: Overview of analysis dimensions

<table>
<tr><th>Dimension</th><th colspan="12">Dimension value</th></tr>
<tr><td>Company perspective</td><td colspan="4">Client</td><td colspan="4">Provider</td><td colspan="4">Consultancy</td></tr>
<tr><td>Company size</td><td colspan="4">Micro enterprise</td><td colspan="4">SME</td><td colspan="4">LE</td></tr>
<tr><td>Industry</td><td colspan="6">IT industry</td><td colspan="6">Other industries</td></tr>
<tr><td>Region of destination</td><td colspan="4">Asia</td><td colspan="4">Eastern Europe</td><td colspan="4">Others</td></tr>
<tr><td>Organizational form</td><td colspan="3">Offshore provider (without domestic office)</td><td colspan="3">Offshore provider (with domestic office)</td><td colspan="3">Joint venture in foreign country</td><td colspan="3">Subsidiary in foreign country</td></tr>
<tr><td>Project type</td><td colspan="4">Development of individual and standard software</td><td colspan="4">Software maintenance and migration</td><td colspan="4">Development of web applications</td></tr>
<tr><td>Project size</td><td colspan="4">Small</td><td colspan="4">Medium</td><td colspan="4">Large</td></tr>
<tr><td>Project experience</td><td colspan="4">Low</td><td colspan="4">Medium</td><td colspan="4">High</td></tr>
<tr><td>Position of employee</td><td colspan="4">Board member/ Director</td><td colspan="4">(Project) Manager</td><td colspan="4">Project member</td></tr>
</table>

The following sections present the CSF analysis results in regard to the mentioned analysis aspects (relevance, phase specificity, and level of influence). Here, if statistically possible, we also examined the significance of the assessment differences within an analysis dimension.

6.3.1 Relevance

First, the CSF are analyzed in regard to their general relevance. Here, we asked the participants of the online survey to assess the degree of relevance of each individual CSF. The assessment of the CSF was carried out by means of a *Likert scale* with values from 1 to 5, whereas 1 was equivalent to "not relevant" and 5 equivalent to "significantly relevant".

Table 40 ranks the 29 CSF by the arithmetic mean (AM) and the standard deviation (SD) of their relevance ratings in descending order. In line with our two-dimensional CSF model, the table also indicates for each CSF, if this factor represents an internal suitability (ISF), an internal management (IMF), an external suitability (ESF), or an external management factor (EMF).

In addition, Table 40 compares the relevance ratings of all participants with the respective ratings of those participants who possess a high experience with OSD projects. Through this, we aimed to find out, if it makes sense to focus on the answers of more experienced participants within the data analysis process.

Table 40: CSF relevance

			All participants		Participants with high experience	
Rank/ ID	**CSF**	**CSF Group**	**AM**	**SD**	**AM**	**SD**
1	Definition of clear project goals	IMF	4.75	0.537	4.73	0.564
2	Continuous controlling of project results	EMF	4.73	0.509	4.75	0.437
3	Ensuring of a continuous communication flow	EMF	4.69	0.524	4.71	0.457
4	High quality of offshore employees	ESF	4.67	0.493	4.65	0.520
5	Good language abilities of the offshore employees in German and English	ESF	4.55	0.763	4.56	0.639
6	Composition of an appropriate project team	EMF	4.54	0.623	4.52	0.577
7	Preparation of a detailed project specification	IMF	4.52	0.654	4.54	0.609
8	Creation of a partnership-like relationship	EMF	4.30	0.802	4.44	0.669
9	Sustained management support	ISF	4.29	0.859	4.40	0.846
10	Establishment of an efficient IT infrastructure	EMF	4.25	0.737	4.27	0.795
11	Ensuring of a bilateral know-how transfer	EMF	4.24	0.720	4.40	0.664
12	Definition of project standards	IMF	4.22	0.740	4.27	0.770
13	Financial stability of the offshore provider	ESF	4.21	0.695	4.21	0.667
14	Early internal change management	IMF	4.21	0.882	4.19	0.817
15	Standardized and documented processes	ISF	4.16	0.916	4.15	0.916
16	Standardized and documented processes on provider side	ESF	4.09	0.830	4.12	0.922
17	Definition of an accurate contract	EMF	4.06	0.927	4.00	0.840
18	Legal and political stability in the offshore country	ESF	3.95	0.922	3.98	0.939
19	Face-to-face meetings with the offshore provider on a regular basis	EMF	3.95	1.115	3.92	1.064

20	Selection of a suitable software component	IMF	3.93	1.182	3.90	1.241
21	Efficient internal organizational structure	ISF	3.83	0.864	3.81	0.817
22	Creation of a cultural sensibility among employees	IMF	3.67	1.033	3.69	1.001
23	Comprehensive industry knowledge of the offshore provider	ESF	3.59	1.004	3.65	1.046
24	Appropriate internal technical knowledge	ISF	3.59	1.175	3.46	1.128
25	Development of a comprehensive business case	IMF	3.42	1.133	3.58	1.177
26	Suitable company size of the offshore provider	ESF	3.28	1.033	3.15	1.036
27	Comprehensive experience with IT outsourcing projects	ISF	3.28	1.088	3.00	1.048
28	International corporate culture	ISF	3.22	1.093	2.92	0.987
29	Geographical closeness of the offshore provider	ESF	2.62	1.351	2.60	1.361
	Average	-	**4.03**	0.869	**4.02**	0.847

According to the results of our online survey, the „Definition of clear project goals" represents the most relevant CSF. With 4.75, the arithmetic mean of this CSF almost reaches the maximal relevance rating of 5.0. In addition, with 0.537, the CSF exhibits a low standard deviation, which makes clear that the high relevance of this CSF was confirmed by the great majority of the participants. Other CSF, which were rated as significantly relevant for the success of an OSD project, are the "Continuous controlling of project results", the "Ensuring of a continuous communication flow", the "High quality of offshore employees", the "Good language abilities of the offshore employees in German and English", the "Composition of an appropriate project team", and the "Preparation of a detailed project specification". All of these CSF dispose of an arithmetic mean of higher than 4.5.

Table 40 further clarifies that, apart from the lowest ranked CSF "Geographical closeness of the offshore provider", the arithmetic means of all CSF are above the median (3.0). This finding empirically confirms that these CSF can be regarded as relevant for the successful implementation of an OSD project. With regard to the relevance rating of the lowest ranked CSF, it is noticeable that this value possesses a relatively low significance, due to a high standard deviation of 1.351. Therefore, we decided to not remove this factor from our CSF list.

In addition, Table 40 points out that the assessment differences between all participants and those participants with a high OSD project experience are rather marginal. In this context, the difference of the average relevance ratings, granted by the corresponding participant groups, only amounts to 0.01. This finding is also supported by Table 100 in the appendix: Only in regard to three of the 29 CSF, significant assessment differences among participants with a low, a medium, and a high project experience were able to be identified (compare section 6.3.1.8). For this reason, we decided to incorporate the information provided by all of the participants within the data analysis process.

Table 41 ranks the 29 CSF by relevance within the four CSF groups of our CSF model.

Table 41: CSF relevance (classified by CSF dimensions)

	Static		Dynamic	
Internal	**ID**	**Internal suitability factors (AM)**	**ID**	**Internal management factors (AM)**
	9	Sustained management support (4.29)	1	Definition of clear project goals (4.75)
	15	Standardized and documented processes (4.16)	7	Preparation of a detailed project specification (4.52)
	21	Efficient internal organizational structure (3.83)	12	Definition of project standards (4.22)
	23	Appropriate internal technical knowledge (3.59)	14	Early internal change management (4.21)
	26	Comprehensive experience with IT outsourcing projects (3.28)	20	Selection of a suitable software component (3.93)
	28	International corporate culture (3.22)	22	Creation of a cultural sensibility among employees (3.67)
			25	Development of a comprehensive business case (3.42)
External	**ID**	**External suitability factors (AM)**	**ID**	**External management factors (AM)**
	4	High quality of offshore employees (4.67)	2	Continuous controlling of project results (4.73)
	5	Good language abilities of the offshore employees in German and English (4.55)	3	Ensuring of a continuous communication flow (4.69)
	13	Financial stability of the offshore provider (4.21)	6	Composition of an appropriate project team (4.54)
	16	Standardized and documented processes on provider side (4.09)	8	Creation of a partnership-like relationship (4.30)
	19	Legal and political stability in the offshore country (3.95)	10	Establishment of an efficient IT infrastructure (4.25)
	24	Comprehensive industry knowledge of the offshore provider (3.59)	11	Ensuring of a bilateral know-how transfer (4.24)
	27	Suitable company size of the offshore provider (3.28)	17	Definition of an accurate contract (4.06)
	29	Geographical closeness of the offshore provider (2.62)	18	Face-to-face meetings with the offshore provider on a regular basis (3.95)

When calculating the average arithmetic means for each CSF group, it becomes apparent that the external management factors represent the most relevant CSF group (average arithmetic mean of 4.35), followed by the internal management factors (average arithmetic mean of

4.10). This finding makes clear that these CSF groups are particular important for the success of an OSD project. In contrast, the participants of the online survey assessed the internal suitability factors (average arithmetic mean of 3.73) and the external suitability factors (average arithmetic mean of 3.87) as less relevant for the successful implementation of such a project.

In the following sections, we analyze the CSF relevance by means of the analysis dimensions presented in Table 39. Here, our analysis focuses on the five most relevant CSF within each dimension (ranked by the arithmetic mean and the standard deviation of the relevance ratings granted by the respective participant group). The order of analysis is based on the classification into company-, project-, and person-related information, introduced in section 6.2.

6.3.1.1 Company perspective

Table 42 shows the five most relevant CSF from the perspective of OSD clients, providers, and consultancies. 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 (e. g., the arithmetic mean of the most relevant CSF in the client ranking is lower than the arithmetic mean of the fifth ranked CSF in the provider ranking).

With regard to the assessment differences within the analysis dimension "company perspective", we found that the relevance ratings in regard to 13 of the 29 CSF differ statistically significantly from one another (compare gray highlighted fields in the row "Significance" in Table 96 in the appendix). In comparison to all other analysis dimensions, this is by far the highest number of significant assessment differences within one dimension. Hence, it can be assumed that the company perspective greatly influences the assessment of the CSF. For this reason, we decided to restrict the analysis of the CSF phase specificity and level of influence to this analysis dimension.

Table 42: CSF relevance by company perspective

Rank	Client		Provider		Consultancy	
	ID	CSF (AM)	ID	CSF (AM)	ID	CSF (AM)
1	3	Ensuring of a continuous communication flow (4.69)	1	Definition of clear project goals (4.84)	1	Definition of clear project goals (4.91)
2	5	Good language abilities of the offshore employees in German and English (4.67)	2	Continuous controlling of project results (4.81)	2	Continuous controlling of project results (4.87)

3	4	High quality of offshore employees (4.62)	4	High quality of offshore employees (4.78)	6	Composition of an appropriate project team (4.65)
4	1	Definition of clear project goals (4.56)	3	Ensuring of a continuous communication flow (4.73)	3	Ensuring of a continuous communication flow (4.61)
5	2	Continuous controlling of project results (4.56)	7	Preparation of a detailed project specification (4.73)	7	Preparation of a detailed project specification (4.57)

6.3.1.2 Company Size

Regarding the relevance rankings in dependency on the company size, 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 particular important by representatives of micro enterprises. In contrast, this factor is not among the top five CSF 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 the cooperation with foreign subsidiaries and joint ventures).

Table 43: CSF relevance by company size

Rank	Micro enterprise		SME		LE	
	ID	**CSF (AM)**	**ID**	**CSF (AM)**	**ID**	**CSF (AM)**
1	1	Definition of clear project goals (4.89)	1	Definition of clear project goals (4.76)	2	Continuous controlling of project results (4.76)
2	5	Good language abilities of the offshore employees in German and English (4.89)	3	Ensuring of a continuous communication flow (4.73)	1	Definition of clear project goals (4.69)
3	2	Continuous controlling of project results (4.84)	4	High quality of offshore employees (4.64)	3	Ensuring of a continuous communication flow (4.67)
4	4	High quality of offshore employees (4.84)	2	Continuous controlling of project results (4.61)	4	High quality of offshore employees (4.63)
5	3	Ensuring of a continuous communication flow (4.68)	7	Preparation of a detailed project specification (4.58)	6	Composition of an appropriate project team (4.57)

With regard to significant assessment differences between representatives of micro enterprises, SME, and LE, only one CSF "Efficient internal organizational structure" was able to be identified (compare Table 97 in the appendix).

6.3.1.3 Industry

Table 44 shows that the CSF „Definition of clear project goals" was rated as the most relevant CSF within the IT industry, while this CSF only ranked third within other industries. On the contrary, companies within other industries particularly emphasized the importance of the CSF "Continuous controlling of project results" and "High quality of offshore employees". These CSF only ranked third and fifth within the relevance rankings of IT companies.

Table 44: CSF relevance by industry

Rank	IT industry		Other industries	
	ID	**CSF (AM)**	**ID**	**CSF (AM)**
1	1	Definition of clear project goals (4.82)	2	Continuous controlling of project results (4.77)
2	3	Ensuring of a continuous communication flow (4.75)	4	High quality of offshore employees (4.70)
3	2	Continuous controlling of project results (4.70)	1	Definition of clear project goals (4.66)
4	5	Good language abilities of the offshore employees in German and English (4.68)	3	Ensuring of a continuous communication flow (4.62)
5	4	High quality of offshore employees (4.64)	7	Preparation of a detailed project specification (4.51)

As illustrated in Table 98 in the appendix, we were able to identify two CSF which exhibited significant assessment differences between the IT and other industries. These are: „Sustained management support" and „Definition of project standards".

6.3.1.4 Region of Destination

Table 45 compares the relevance ratings in regard to the regions of destinations, in which the participants or their companies have already implemented OSD projects respectively. In this context, a good balance between the different dimension values can be observed. 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 CSF.

Table 45: CSF relevance by region of destination

Rank	Asia		Eastern Europe		Others	
	ID	**CSF (AM)**	**ID**	**CSF (AM)**	**ID**	**CSF (AM)**
1	2	Continuous controlling of project results (4.78)	3	Ensuring of a continuous communication flow (4.72)	3	Ensuring of a continuous communication flow (4.71)

2	1	Definition of clear project goals (4.76)	2	Continuous controlling of project results (4.69)	1	Definition of clear project goals (4.71)
3	3	Ensuring of a continuous communication flow (4.68)	1	Definition of clear project goals (4.69)	2	Continuous controlling of project results (4.65)
4	4	High quality of offshore employees (4.65)	4	High quality of offshore employees (4.61)	4	High quality of offshore employees (4.65)
5	5	Good language abilities of the offshore employees in German and English (4.58)	5	Good language abilities of the offshore employees in German and English (4.57)	7	Preparation of a detailed project specification (4.61)

Due to the possibility of multiple answers through the participants in regard to the analysis dimension "Region of destination" (which means, a participant was allowed to specify several offshore regions of destination), we did not test the significance of existing assessment differences within this dimension.

6.3.1.5 Organizational Form

Table 46 sheds light on the CSF relevance in dependency on the organizational forms of an OSD project. Here, due to the similarities between the cooperation with a foreign joint venture and a foreign IT subsidiary, we decided to combine these organizational forms in one dimension value.

Table 46: CSF relevance by organizational form

Rank	Offshore provider (without domestic office)		Offshore provider (with domestic office)		Joint venture / Subsidiary in foreign country	
	ID	CSF (AM)	ID	CSF (AM)	ID	CSF (AM)
1	1	Definition of clear project goals (4.71)	1	Definition of clear project goals (4.70)	3	Ensuring of a continuous communication flow (4.80)
2	2	Continuous controlling of project results (4.69)	2	Continuous controlling of project results (4.70)	2	Continuous controlling of project results (4.77)
3	3	Ensuring of a continuous communication flow (4.69)	4	High quality of offshore employees (4.62)	1	Definition of clear project goals (4.68)
4	5	Good language abilities of the offshore employees in German and English (4.69)	3	Ensuring of a continuous communication flow (4.62)	4	High quality of offshore employees (4.64)
5	4	High quality of offshore employees (4.56)	7	Preparation of a detailed project specification (4.57)	5	Good language abilities of the offshore employees in German and English (4.61)

The comparison of the three dimension values in regard to the CSF relevance shows that the cooperation with a joint venture or a subsidiary in a foreign country particularly requires the "Ensuring of a continuous communication flow". In contrast, this CSF only ranks third and fourth respectively within the other two dimension values (provider with and without a domestic office).

Again, due to the possibility of multiple answers through the participants in regard to the analysis dimension "Organizational forms", we did not test the significance of existing assessment differences between the individual dimension values.

6.3.1.6 Project Type

Table 47 clarifies that the project type only has a minor 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 47: CSF relevance by project type

Rank	Development of individual and standard software		Software maintenance and migration		Development of web applications	
	ID	CSF (AM)	ID	CSF (AM)	ID	CSF (AM)
1	1	Definition of clear project goals (4.82)	1	Definition of clear project goals (4.77)	1	Definition of clear project goals (4.82)
2	2	Continuous controlling of project results (4.78)	2	Continuous controlling of project results (4.75)	2	Continuous controlling of project results (4.78)
3	3	Ensuring of a continuous communication flow (4.69)	3	Ensuring of a continuous communication flow (4.69)	3	Ensuring of a continuous communication flow (4.69)
4	7	Preparation of a detailed project specification (4.69)	4	High quality of offshore employees (4.63)	7	Preparation of a detailed project specification (4.69)
5	4	High quality of offshore employees (4.65)	6	Composition of an appropriate project team (4.55)	4	High quality of offshore employees (4.65)

Again, we did not test the significance of existing assessment differences between the individual dimension values, due to the possibility of multiple answers through the participants within this analysis dimension.

6.3.1.7 Project Size

Table 48 shows that particularly medium-sized and large OSD projects require the "Continuous controlling of project results". In contrast, with regard to small OSD projects, the participants of the online survey emphasized the importance of the "High quality of offshore employees".

Table 48: CSF relevance by project size

Rank	Small		Medium		Large	
	ID	CSF (AM)	ID	CSF (AM)	ID	CSF (AM)
1	4	High quality of offshore employees (4.81)	1	Definition of clear project goals (4.88)	2	Continuous controlling of project results (4.74)
2	3	Ensuring of a continuous communication flow (4.65)	2	Continuous controlling of project results (4.79)	4	High quality of offshore employees (4.68)
3	1	Definition of clear project goals (4.62)	3	Ensuring of a continuous communication flow (4.76)	7	Preparation of a detailed project specification (4.68)
4	2	Continuous controlling of project results (4.62)	5	Good language abilities of the offshore employees in German and English (4.69)	1	Definition of clear project goals (4.68)
5	7	Preparation of a detailed project specification (4.50)	4	High quality of offshore employees (4.55)	3	Ensuring of a continuous communication flow (4.61)

Regarding significant assessment differences within the analysis dimension „Project size", Table 99 in the appendix indicates that the relevance of the CSF "Creation of a cultural sensibility among employees" significantly rises with increasing project size.

6.3.1.8 Project Experience

Table 49 confirms that the CSF "Continuous controlling of project results" gains in importance with increasing project experience in the field of OSD. While participants with a low OSD project experience ranked this CSF fourth in their list, participants with a medium project experience already ranked it second, and participants with a high project experience even 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 medium and a high project experience ranked this CSF fourth in their lists.

Table 49: CSF relevance by project experience

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

The examination of the three dimension values in regard to significant assessment differences within the dimension "Project experience" shows that the relevance rating of the two CSF "International corporate culture" and "Comprehensive experience with IT outsourcing projects" significantly decreases with increasing OSD project experience, while the relevance rating of the CSF "Ensuring of a bilateral know-how transfer" significantly increases with rising project experience (compare Table 100 in the appendix).

6.3.1.9 Position of Employee

Table 50 analyzes the relevance of our CSF list in dependency on the position of the participants within their companies. In this context, it has to be noted that more than 90 percent of the participants are taking on leading positions (at least temporarily) within their respective companies (compare section 6.2.3). Therefore, due to data representativity issues, we decided to limit the data analysis in regard to the dimension "Position of employee" to the answers of these participants.

Differentiating between employees working on a strategic level and employees working on a tactical level, we were only able to identify slight differences between these two participant groups in regard to their relevance ratings. Within both groups, the factors "Definition of clear project goals", "Continuous controlling of project results", "Good language abilities of the offshore employees in German and English", "High quality of offshore employees", and "Ensuring of a continuous communication flow" are among the top five CSF, even though, in different orders.

Table 50: CSF relevance by position of employee

Rank	Board member / Director		(Project) Manager	
	ID	CSF (AM)	ID	CSF (AM)
1	2	Continuous controlling of project results (4.82)	1	Definition of clear project goals (4.72)
2	1	Definition of clear project goals (4.80)	2	Continuous controlling of project results (4.70)
3	4	High quality of offshore employees (4.77)	3	Ensuring of a continuous communication flow (4.63)
4	3	Ensuring of a continuous communication flow (4.75)	5	Good language abilities of the offshore employees in German and English (4.60)
5	5	Good language abilities of the offshore employees in German and English (4.66)	4	High quality of offshore employees (4.58)

Within the analysis dimension „Position of employee", it became apparent that the perception of a board member or a director of a company in regard to the relevance of the CSF "International corporate culture" and "Face-to-face meetings with the offshore provider on a regular basis" significantly diverges from the one of a (project) manager (compare Table 101 in the appendix).

6.3.2 Phase Specificity

Within this section, we analyze the phase specificity of the 29 CSF. In this context, we asked the participants of the online survey to assign each CSF to one of the following project phases: Planning and analysis (I), decision and negotiation (II), or implementation (III). Alternatively to the mentioned project phases, the participants were able to categorize a CSF as cross-phase (I-III).

Table 51 illustrates in percent how often a CSF was assigned to one of the four assignment classes. With regard to each CSF, the table highlights the field with the highest percentage value in gray. Here, it becomes apparent that the great majority of the 29 CSF were classified as cross-phase by the participants (20 factors, of which 16 factors exhibit a percentage value of more than 50 percent). Five of the remaining nine CSF were predominantly assigned to the planning and analysis phase of an OSD project (three of these factors receiving a percentage value of more than 50 percent). In contrast, only three and one CSF respectively were categorized as rather specific for the implementation as well as the decision and negotiation phase.

Table 51: CSF phase specificity

ID	CSF	Planning and analysis (I)	Decision and negotiation (II)	Implementation (III)	Cross-phase (I-III)
20	Selection of a suitable software component	.773	.113	.093	.021
1	Definition of clear project goals	.505	.248	.059	.188
14	Early internal change management	.505	.238	.188	.069
25	Development of a comprehensive business case	.489	.284	.080	.148
12	Definition of project standards	.370	.200	.150	.280
17	Definition of an accurate contract	.134	.732	.010	.124
2	Continuous controlling of project results	.050	.010	.485	.455
10	Establishment of an efficient IT infrastructure	.170	.110	.480	.240
7	Preparation of a detailed project specification	.212	.222	.384	.182
3	Ensuring of a continuous communication flow	.040	.010	.121	.828
8	Creation of a partnership-like relationship	.072	.124	.062	.742
5	Good language abilities of the offshore employees in German and English	.092	.051	.133	.724
9	Sustained management support	.040	.120	.140	.700
19	Legal and political stability in the offshore country	.129	.140	.032	.699
13	Financial stability of the offshore provider	.072	.155	.082	.691
4	High quality of offshore employees	.060	.060	.190	.690
18	Face-to-face meetings with the offshore provider on a regular basis	.106	.064	.202	.628
16	Standardized and documented processes on provider side	.051	.051	.273	.626
28	International corporate culture	.038	.205	.167	.590
22	Creation of a cultural sensibility among employees	.163	.130	.130	.576

26	Comprehensive experience with IT outsourcing projects	.182	.117	.130	.571
27	Suitable company size of the offshore provider	.139	.177	.114	.570
15	Standardized and documented processes	.122	.010	.316	.551
24	Comprehensive industry knowledge of the offshore provider	.205	.102	.148	.545
21	Efficient internal organizational structure	.111	.051	.313	.525
11	Ensuring of a bilateral know-how transfer	.062	.041	.381	.515
29	Geographical closeness of the offshore provider	.243	.071	.200	.486
23	Appropriate internal technical knowledge	.330	.138	.170	.362
6	Composition of an appropriate project team	.270	.200	.170	.360

Within the online survey, the participants were allowed to skip the assessment of a CSF in regard to its phase specificity, if they rated this CSF as not relevant for the success of an OSD project. For this reason, the percentage values presented in Table 51 do not necessarily refer to the entirety of the participants.

6.3.2.1 Company Perspective

Within the CSF relevance analysis, we particularly identified significant assessment differences in regard to the analysis dimension "company perspective" (compare section 6.3.1.1). Therefore, we decided to restrict the CSF phase specificity analysis to this dimension.

The following table compares in terms of percent how often a CSF was assigned to one of the four assignment classes (I, II, III, I-III) by the corresponding three participants groups (OSD clients, providers, and consultancies). The highest percentage value for each CSF and participant group is again gray highlighted.

Table 52: CSF phase specificity by company perspective

		Client				Provider				Consultancy			
ID	**CSF**	**I**	**II**	**III**	**I-III**	**I**	**II**	**III**	**I-III**	**I**	**II**	**III**	**I-III**
20	Selection of a suitable software component	.821	.051	.077	.026	.703	.135	.081	.000	.609	.130	.130	.043

1	Definition of clear project goals	.487	.154	.077	.256	.541	.324	.027	.108	.435	.261	.087	.174
14	Early internal change management	.436	.282	.179	.077	.568	.189	.216	.027	.478	.174	.174	.130
25	Development of a comprehensive business case	.462	.231	.026	.154	.378	.297	.108	.081	.478	.174	.087	.130
12	Definition of project standards	.282	.154	.077	.462	.486	.243	.162	.108	.217	.174	.261	.261
17	Definition of an accurate contract	.231	.564	.000	.128	.054	.784	.027	.108	.087	.739	.000	.130
2	Continuous controlling of project results	.051	.000	.462	.436	.027	.000	.486	.486	.087	.043	.478	.391
10	Establishment of an efficient IT infrastructure	.179	.077	.359	.333	.162	.054	.595	.162	.174	.217	.435	.174
7	Preparation of a detailed project specification	.231	.103	.436	.154	.189	.243	.351	.216	.217	.304	.304	.130
3	Ensuring of a continuous communication flow	.026	.000	.128	.769	.054	.027	.108	.784	.043	.000	.130	.826
8	Creation of a partnership-like relationship	.051	.103	.051	.718	.054	.189	.081	.649	.087	.043	.043	.739
5	Good language abilities of the offshore employees in German and English	.077	.051	.128	.718	.135	.027	.108	.730	.043	.043	.174	.609
9	Sustained management support	.027	.189	.108	.676	.054	.081	.189	.676	.045	.091	.136	.727
19	Legal and political stability in the offshore country	.154	.103	.026	.641	.027	.135	.027	.703	.174	.174	.043	.522
13	Financial stability of the offshore provider	.103	.128	.051	.667	.027	.108	.135	.703	.087	.217	.043	.565
4	High quality of offshore employees	.077	.103	.103	.692	.054	.027	.216	.703	.043	.043	.304	.565
18	Face-to-face meetings with the offshore provider on a regular basis	.103	.026	.205	.538	.108	.108	.135	.568	.087	.043	.217	.609
16	Standardized and documented processes on provider side	.077	.026	.282	.564	.000	.081	.270	.649	.087	.043	.261	.565
28	International corporate culture	.031	.156	.188	.625	.043	.217	.217	.522	.053	.263	.053	.632

22	Creation of a cultural sensibility among employees	.103	.026	.103	.667	.189	.189	.108	.405	.174	.130	.174	.435
26	Comprehensive experience with IT outsourcing projects	.121	.030	.121	.727	.227	.273	.182	.318	.222	.000	.111	.667
27	Suitable company size of the offshore provider	.231	.103	.077	.333	.027	.189	.081	.541	.043	.087	.130	.435
15	Standardized and documented processes	.056	.028	.417	.500	.111	.000	.306	.583	.227	.000	.227	.545
24	Comprehensive industry knowledge of the offshore provider	.179	.103	.179	.410	.135	.108	.081	.568	.261	.043	.130	.348
21	Efficient internal organizational structure	.081	.054	.324	.541	.139	.083	.306	.472	.136	.000	.273	.591
11	Ensuring of a bilateral know-how transfer	.051	.051	.333	.462	.027	.054	.324	.541	.130	.000	.435	.435
29	Geographical closeness of the offshore provider	.154	.051	.205	.385	.135	.054	.108	.324	.217	.043	.087	.261
23	Appropriate internal technical knowledge	.324	.108	.189	.378	.371	.200	.143	.286	.222	.111	.167	.500
6	Composition of an appropriate project team	.256	.077	.231	.359	.243	.270	.162	.324	.348	.261	.043	.348

Table 52 makes clear that particularly in regard to the CSF "Appropriate internal technical knowledge" and "Definition of project standards" significant differences between the three participant groups exist. While OSD clients and consultancies predominantly classified these two CSF as cross-phase, the majority of the OSD providers assigned these CSF to the planning and analysis phase.

With regard to Table 52, it has to be noted that not all percentage values per CSF and dimension value sum up to 100 percent. The reason for this is that the assignment of CSF to project phases was not mandatory within the online survey.

6.3.3 Level of Influence

Within this section, we analyze the level of influence of the identified CSF for OSD projects. Here, we asked the participants of the online survey to specify for each individual CSF if this factor can be influenced in the short-term (s), the medium-term (m), or the long-term (l). Alternatively, the participants were able to categorize a CSF as not or rather conditionally influenceable (-).

Table 53 indicates in percent how often a CSF was assigned to one of the four assignment classes by the participants (for each CSF, the field with the highest percentage value is gray highlighted). As illustrated in the table, the majority of the identified CSF are influenceable in the short-term (twelve of the 29 CSF, of which eight factors received a percentage value of more than 50 percent). According to the participants, eight and five CSF respectively (in both cases, four CSF exhibit percentage values of more than 50 percent) can be influenced in the medium- and in the long-term respectively. In contrast, four CSF were classified as not or rather conditionally influenceable (all of these factors receiving percentage values of more than 50 percent): "Financial stability of the offshore provider", "Geographical closeness of the offshore provider", "Legal and political stability in the offshore country", and "Suitable company size of the offshore provider". These CSF can only be influenced indirectly, for instance, by the selection of the offshore provider or country respectively.

Table 53: CSF level of influence

ID	CSF	Short-term (s)	Medium-term (m)	Long-term (l)	Not / rather conditional (-)
18	Face-to-face meetings with the offshore provider on a regular basis	.876	.072	.031	.021
2	Continuous controlling of project results	.850	.110	.030	.010
17	Definition of an accurate contract	.753	.196	.031	.021
1	Definition of clear project goals	.735	.176	.078	.010
20	Selection of a suitable software component	.726	.189	.063	.021
14	Early internal change management	.627	.294	.069	.010
3	Ensuring of a continuous communication flow	.600	.370	.020	.010
6	Composition of an appropriate project team	.510	.410	.040	.040
25	Development of a comprehensive business case	.462	.418	.110	.011
10	Establishment of an efficient IT infrastructure	.460	.390	.120	.030
7	Preparation of a detailed project specification	.441	.402	.147	.010

9	Sustained management support	.301	.252	.282	.165
8	Creation of a partnership-like relationship	.111	.677	.182	.030
11	Ensuring of a bilateral know-how transfer	.320	.570	.110	.000
23	Appropriate internal technical knowledge	.153	.510	.296	.041
15	Standardized and documented processes	.126	.505	.369	.000
12	Definition of project standards	.382	.480	.137	.000
21	Efficient internal organizational structure	.019	.466	.398	.117
16	Standardized and documented processes on provider side	.021	.454	.433	.093
4	High quality of offshore employees	.050	.430	.360	.160
28	International corporate culture	.053	.084	.674	.189
22	Creation of a cultural sensibility among employees	.083	.323	.563	.031
26	Comprehensive experience with IT outsourcing projects	.085	.287	.543	.085
24	Comprehensive industry knowledge of the offshore provider	.031	.340	.526	.103
5	Good language abilities of the offshore employees in German and English	.061	.394	.404	.141
19	Legal and political stability in the offshore country	.010	.020	.061	.909
13	Financial stability of the offshore provider	.041	.041	.194	.724
27	Suitable company size of the offshore provider	.056	.079	.191	.674
29	Geographical closeness of the offshore provider	.063	.126	.179	.632

Again, the percentage values presented in Table 53 do not necessarily refer to the entirety of the participants.

6.3.3.1 Company Perspective

Analogous to the analysis of the CSF phase specificity, we limited the analysis of the CSF level of influence to the company perspective dimension.

The following table compares in terms of percent how often a CSF was assigned to one of the four levels of influence (s, m, l, -) by the corresponding participants groups (OSD clients, providers, and consultancies). Again, the highest percentage value for each CSF and participant group is highlighted gray.

Table 54: CSF level of influence by company perspective

		Client				Provider				Consultancy			
ID	CSF	s	m	l	-	s	m	l	-	s	m	l	-
18	Face-to-face meetings with the offshore provider on a regular basis	.889	.056	.028	.028	.800	.114	.057	.029	.955	.045	.000	.000
2	Continuous controlling of project results	.921	.079	.000	.000	.750	.167	.083	.000	.909	.045	.000	.045
17	Definition of an accurate contract	.694	.278	.028	.000	.722	.167	.056	.056	.857	.143	.000	.000
1	Definition of clear project goals	.718	.205	.077	.000	.750	.139	.083	.028	.739	.174	.087	.000
20	Selection of a suitable software component	.649	.324	.027	.000	.788	.091	.121	.000	.714	.143	.048	.095
14	Early internal change management	.615	.333	.051	.000	.556	.306	.139	.000	.696	.261	.000	.043
3	Ensuring of a continuous communication flow	.579	.421	.000	.000	.556	.389	.028	.028	.682	.273	.045	.000
6	Composition of an appropriate project team	.368	.579	.026	.026	.528	.361	.056	.056	.682	.227	.045	.045
25	Development of a comprehensive business case	.514	.343	.143	.000	.400	.467	.133	.000	.500	.409	.045	.045
10	Establishment of an efficient IT infrastructure	.474	.395	.105	.026	.528	.306	.167	.000	.364	.455	.091	.091
7	Preparation of a detailed project specification	.513	.308	.154	.026	.361	.417	.222	.000	.435	.522	.043	.000
9	Sustained management support	.333	.333	.205	.128	.297	.216	.324	.162	.304	.130	.391	.174
8	Creation of a partnership-like relationship	.132	.684	.184	.000	.111	.611	.222	.056	.095	.714	.143	.048
11	Ensuring of a bilateral know-how transfer	.342	.553	.105	.000	.222	.639	.139	.000	.409	.500	.091	.000

23	Appropriate internal technical knowledge	.132	.553	.316	.000	.176	.412	.324	.088	.182	.545	.227	.045
15	Standardized and documented processes	.154	.513	.333	.000	.108	.405	.486	.000	.087	.652	.261	.000
12	Definition of project standards	.256	.590	.154	.000	.444	.417	.139	.000	.478	.435	.087	.000
21	Efficient internal organizational structure	.000	.564	.385	.051	.054	.378	.378	.189	.000	.478	.391	.130
16	Standardized and documented processes on provider side	.000	.389	.556	.056	.000	.541	.324	.135	.100	.400	.400	.100
4	High quality of offshore employees	.000	.421	.421	.158	.081	.459	.297	.162	.095	.381	.381	.143
28	International corporate culture	.000	.056	.861	.083	.094	.094	.500	.313	.087	.130	.609	.174
22	Creation of a cultural sensibility among employees	.108	.216	.649	.027	.061	.303	.576	.061	.091	.545	.364	.000
26	Comprehensive experience with IT outsourcing projects	.056	.361	.556	.028	.156	.281	.438	.125	.045	.227	.636	.091
24	Comprehensive industry knowledge of the offshore provider	.000	.324	.622	.054	.027	.378	.432	.162	.105	.316	.474	.105
5	Good language abilities of the offshore employees in German and English	.026	.421	.368	.184	.108	.486	.297	.108	.050	.150	.700	.100
19	Legal and political stability in the offshore country	.000	.026	.053	.921	.000	.028	.083	.889	.048	.000	.000	.952
13	Financial stability of the offshore provider	.026	.000	.184	.789	.029	.057	.257	.657	.048	.048	.095	.810
27	Suitable company size of the offshore provider	.063	.031	.125	.781	.029	.147	.265	.559	.100	.050	.100	.750
29	Geographical closeness of the offshore provider	.056	.083	.167	.694	.057	.200	.229	.514	.100	.100	.100	.700

Regarding the analysis of the CSF level of influence, we were able to identify considerable differences between the three company perspectives (compare Table 54). In total, ten of the 29 CSF were assigned to different levels of influence by the respective participant groups. These are: "Composition of an appropriate project team", "Development of a comprehensive business case", "Establishment of an efficient IT infrastructure", "Preparation of a detailed project specification", "Sustained management support", "Standardized and documented processes", "Definition of project standards", "Standardized and documented processes on provider side", "Creation of a cultural sensibility among employees", as well as "Good language abilities of the offshore employees in German and English".

6.4 Discussion

Based on the conduction of an online survey with 103 representatives of German-speaking companies as well as the application of statistical procedures, we were able to analyze our list of 29 CSF with regard to its relevance, phase specificity, and level of influence. In this context, we examined all three analysis aspects both in general (incorporating the answers of all participants) and in respect of selected analysis dimensions (only incorporating the answers of the respective participant groups). For the latter, we classified the participants along nine dimensions (company perspective, company size, industry, region of destination, organizational form, project type, project size, project experience, and position of employee), and examined the significance of the assessment differences between the individual participant groups (if statistically applicable).

Regarding the **CSF relevance**, the results of our online survey show that the CSF "Definition of clear project goals", "Continuous controlling of project results", "Ensuring of a continuous communication flow", and "High quality of offshore employees" are considered most critical to the success of an OSD project by the participants. In addition, with regard to our two-dimensional CSF model, it became apparent that the external management factors represent the most relevant CSF group, followed by the internal management factors. In contrast, the participants of the online survey assessed the suitability factors in general as less relevant for the successful implementation of an OSD project.

In terms of assessment differences between individual participant groups, we particularly found considerable differences within the analysis dimension "company perspective". Within this dimension, the relevance ratings of 13 of the 29 CSF differ statistically significantly from one another. This was by far the highest number of significant assessment differences within one dimension.

With regard to the **CSF phase specificity**, it can be summarized that the great majority of the identified CSF can be classified as cross-phase (20 factors). According to the participants of the online survey, five of the 29 CSF are specific for the planning and analysis phase, while three CSF are specific for the implementation phase. In contrast, only one CSF was categorized as specific for the decision and negotiation phase of an OSD project.

In consideration of assessment differences between OSD clients, providers, and consultancies, it became apparent that the respective participants groups assigned two CSF to different project phases. While OSD clients and consultancies predominantly classified the "Appropriate internal technical knowledge" and the "Definition of project standards" as cross-phase, the majority of the OSD providers assigned these CSF to the planning and analysis phase.

In regard to the **CSF level of influence**, it can be observed that the majority of the 29 CSF are regarded influenceable in the short-term (12 factors). According to the participants, eight and five CSF respectively can be influenced in the medium- and in the long-term respectively. On the contrary, only four CSF were categorized as not or rather conditionally influenceable. These factors can only be influenced indirectly, for instance, by the selection of the offshore provider or country respectively.

The analysis of the assessment differences between the three company perspectives again clarifies the different perceptions of our CSF list by the respective participants groups. In total, these groups assigned ten of the 29 CSF to different levels of influence.

In conclusion, it can be summarized that the following seven CSF are particularly relevant for the successful implementation of an OSD project, and, therefore, require a considerably higher management attention: The "Definition of clear project goals", the "Continuous controlling of project results", the "Ensuring of a continuous communication flow", the "High quality of offshore employees", the "Good language abilities of the offshore employees in German and English", the "Composition of an appropriate project team", and the "Preparation of a detailed project specification". The high relevance of these seven CSF is also confirmed by the group-specific CSF rankings in regard to the nine analysis dimensions. Even though, not all of the mentioned CSF are OSD-specific (e. g., the "Definition of clear project goals"), the relevance of these more general factors seems to increase in the OSD context. In addition, the online survey verified the particularly high importance of external and internal management factors. Further, it has to be emphasized that the perception of the individual CSF heavily depends on the company perspective. In particular, this is confirmed by the CSF relevance and the CSF level of influence analysis.

Chapter 7

Management of Critical Success Factors

Chapter Contents: This chapter analyzes the relevance and the management activities in regard to our list of 29 CSF for OSD projects within two organizational contexts. For this purpose, we conducted two in-depth case studies, one with a Swiss large-scale enterprise (PCS) and another with a German medium-sized enterprise (CCS). Within the chapter, we first detail our research design (*7.1 Research Design*). Next, we present the results of the pilot and the confirmatory case study (*7.2 Pilot Case Study* and *7.3 Confirmatory Case Study*). In an effort to identify similarities as well as differences between the two case studies, we compare the results of the pilot and the confirmatory case study to one another (*7.4 Comparison of the Case Studies*). Finally, we summarize our findings (*7.5 Discussion*).

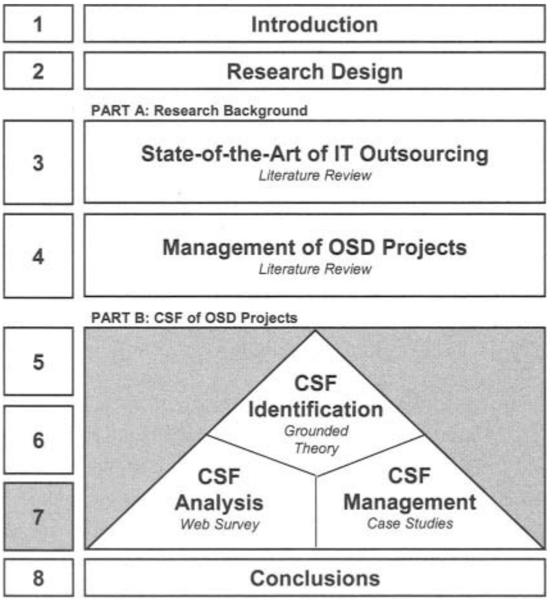


Figure 50: Thesis roadmap – CSF Management (chapter 7)

7.1 Research Design

In the following sections, we first present the **research objectives** of the chapter at hand. Next, we introduce the **research methodology** applied and outline the **research process** implemented in order to reach the defined goals.

7.1.1 Research Objectives

At present, we do not know of any research studies which focus solely on the management of CSF for OSD projects. Even though, we were able to identify 15 CSF studies in the field of IT outsourcing (compare section 5.2), none of these studies provides an in-depth management analysis with regard to the proposed CSF. The doctoral thesis at hand makes an effort to close this gap. Therefore, the main objective of this chapter is to create a deeper understanding in regard to the **management** of the identified 29 CSF (compare chapter 5) in practice. In doing so, primarily the following research question will be addressed: "How can companies influence the identified CSF in practice?"

7.1.2 Research Methodology

With the aim of gaining a deeper understanding concerning the management of the identified CSF, we chose a **qualitative research design**. In consideration of the fact that important influencing factors currently still remain unknown (Creswell, 2003) and existing theories and models cannot be applied to the research object under examination (Morse, 1991), qualitative research seemed to be the best way to reach our goals.

Major qualitative research methods are: Action research, case study research, ethnography, and grounded theory. These research methods imply different skills, assumptions, and research practices, and primarily differ in the way and composition of data collection (Myers, 1997). According to Baroudi and Orlikowski (1991), the most commonly applied qualitative method in the IS context is case study research. Yin (2003a) defines a case study as "*an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*" (p. 13).

Furthermore, Yin (2003b) states that the "*case study is the method of choice when the phenomenon under study is not readily distinguishable from its context. Such a phenomenon may be a project or program in an evaluation study.*" (p. 4)

Examining the management of CSF in OSD projects, we came to the decision that **case study research** is the most appropriate method for investigating the application and the utilization of our CSF list in a real-life context. The appropriateness of this approach for the examination of the management of CSF is also confirmed by Esteves (2004).

According to Yin (2003b), six different types of case studies can be distinguished. These can be illustrated in a 2 x 3 matrix (compare Table 55). Within this matrix, the first dimension separates *single* from *multiple case studies* and refers to whether only one single case or two or more cases are subject to the research conducted. The latter requires an accurate selection of the cases, so that they replicate each other with the aim of either predicting similar outcomes or standing in contrast to complement one another. The second dimension differentiates between *descriptive*, *explanatory*, and *exploratory case studies*. A descriptive case study is applied to obtain an entire description of a phenomenon within its context. An explanatory case study is utilized to explain how events came about, thereby sustaining cause and effect relationships. Finally, an exploratory case study is selected when the intention of the work is to define questions and hypothesis for another study or when the feasibility of a desired research procedure is to be assessed (Yin, 2003b).

Table 55: Types of case studies

	Descriptive case study	**Explanatory case study**	**Exploratory case study**
Single case study			
Multiple case studies	X		

Since we aim at obtaining an as accurate view of the management practices in regard to the identified CSF as possible, we chose a **descriptive case study design** (compare table above).

Descriptive case studies demand at least some theory in order to narrow the range of data collection. Thereby descriptive theories are not used for the explanation of cause-effect relationships but specify the scope and depth of the object under study (Yin, 2003b). Answers to the following questions have to be given: "*...where should your description start, and where should it end? What should your description include, and what might it exclude?*" (Yin, 2003b, p. 23)

The next step is to decide whether to apply a single or a multiple case design. Both have specific advantages and disadvantages. Multiple case studies are considered more compelling and, therefore, more stable. On the other side, there are reasons which imply the use of a single case, especially, when the object of research is unusual, rare, or represents a critical case (Yin, 1989).

If a multiple case study is the research design of choice, every case examined should serve an explicit purpose within the entire research study. Yin (1989) states that multiple case studies follow not sampling but replication logic: "*Each case must be carefully selected so that it either (a) predicts similar results (a literal replication) or (b) produces contrary results for predictable reasons (a theoretical replication).*" (Yin, 1989, p. 53)

We selected a **multiple case study design** with two companies under investigation. Here, it was our aim to analyze how our CSF are managed in the corresponding organizational contexts as well as to identify similarities and differences in regard to the CSF management between the organizations examined.

Concerning the data collection process, Yin (2003b) differentiates between six sources of evidence: Documentation, archival records, interviews, direct observations, participant observations, and physical artifacts. He further states that the use of multiple sources of evidence (data triangulation) strengthens the case study.

For our case studies, we decided to primarily rely on interviews, participant observations, and project documentation. Yin (2003b) employs the geometric concept of triangulation to demonstrate how the usage of several different data sources increases the validity of a study: "*The most robust fact may be considered to have been established if three sources all coincide.*" (Yin, 2003b, p. 83)

Regarding the data analysis, we first triangulated the collected data and then utilized elements of the Grounded Theory method, proposed by Glaser and Strauss (1967). To analyze data, this method applies the so-called coding process. This procedure consists of three components: Open, axial, and selective coding (Corbin and Strauss, 1990). According to Pandit (1996), these types must neither be executed in a particular succession, nor must all three be executed completely.

In our case, we selected **open coding** to analyze and evaluate the collected data. Here, data is broken down, compared to one another, and similar data is combined to form concepts. Finally, related concepts are grouped together on a higher level to form categories.

7.1.3 Research Process

In an attempt to derive management activities for our developed CSF list, we first analyzed the content of the CSF studies identified within the literature review (compare section 5.2). However, as we believe that the understanding of the management of CSF for OSD projects cannot be achieved without considering the organizational context (Yin, 1994), we decided to extend our research by the conduction of two case studies (a pilot and a confirmatory case study), both including the client and the provider perspective. Here, it has to be mentioned that the terms pilot and confirmatory case study do not imply that one of the case studies is less comprehensive, but refer to the sequence of the conducted case studies.

Our use of the Case Study method is characterized by an iterative process. This applies particularly to our selected procedures for the preparation of the two case studies and for the data collection and analysis within both case studies (compare Figure 51).

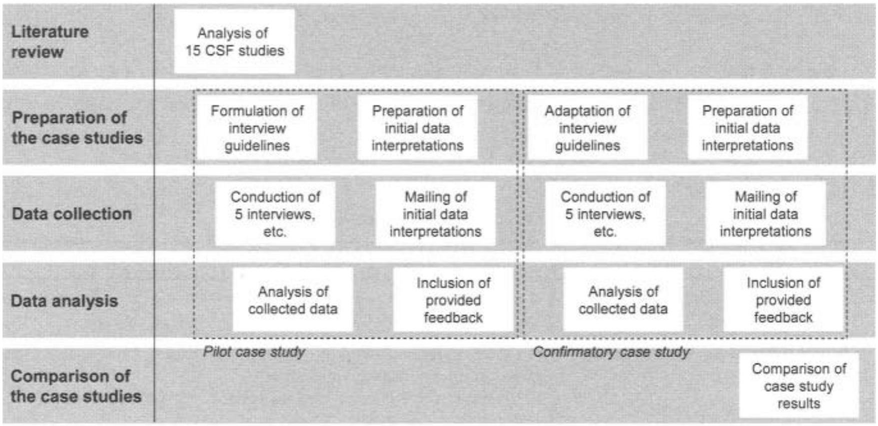


Figure 51: Iterative research process implemented

Regarding the applied research process, Table 56 outlines the five pivotal research steps. Here, due to the fact that both case studies were carried out in exactly the same fashion, it is not explicitly differentiated between the pilot and the confirmatory case study.

In the following, the research steps listed above will be described in more detail.

7.1.3.1 Literature Review

In regard to the procedure used in deriving management activities from the identified CSF studies in the field of IT outsourcing, reference can be made to section 5.2.

7.1.3.2 Preparation of the Case Studies

Consisting of three essential components, the interview guidelines compiled for the pilot and the confirmatory case study were designed to obtain general information on the project context as well as information on the CSF relevance and the CSF management respectively within the OSD projects under study. In order to be in a position to provide a "thick" description of the case study, the first part of the interview guidelines sought to obtain a sufficient amount of company-, project-, and person-related information. In the second part, the guidelines focused on the identified CSF for OSD projects. In this context, the interview partners were asked to rank the CSF according to their specific degree of relevance. In the third and last part, the interview guidelines dealt with the management practices in regard to the individual CSF. Here, open questions were used in order to ensure that the statements made by the interview partners possessed a certain degree of authenticity.

In an effort to prepare for a verification of the initial data interpretations of the case studies, the data gained from the questionnaires filled out by the individual interview partners was combined with the miscellaneous notes we documented during the course of the case studies and the information we obtained through the analysis of the project documentation.

Table 56: Description of research steps

Research Step	Short Description
Literature Review	Analysis of management activities in regard to the 29 CSF based on the identified CSF studies in the field of IT outsourcing
Preparation of the Case Studies	(1+3) Formulation and iterative adaptation of the general and specific questions of the interview guidelines (2+4) Preparation of initial data interpretations of the pilot and the confirmatory case study
Data Collection	(1+3) Conduction of five interviews, observation of participants, and examination of project documentation within both the pilot and the confirmatory case study (2+4) Mailing of initial data interpretations to the participants of the pilot and the confirmatory case study for verification purposes
Data Analysis	(1+3) Analysis and triangulation of the data collected within the pilot and the confirmatory case study by means of open coding (2+4) Inclusion of feedback provided by the participants of the pilot and the confirmatory case study
Comparison of the Case Studies	Comparison of the results of the pilot case study with the results of the confirmatory case study

7.1.3.3 Data Collection

Within both the pilot and the confirmatory case study, we conducted five interviews with different members of the OSD projects under investigation. Here, in an attempt to create a comprehensive understanding concerning the relevance and the management of the 29 CSF within the OSD projects examined, both the client and the provider side were taken into consideration.

The framework of the data collection process consisted of face-to-face interviews, onsite observations as well as the examination of project-related documents. In regard to the interviews, all participants were interviewed for 30 to 120 minutes. In order to reduce the loss of information, one member of the research team administrated the interview, while the remaining two members focused on the written documentation. Here, deciding to keep written records of the relevant contents, we aimed to ensure the open nature and authenticity of the statements (Urquhart, 2001). During and immediately after each interview, field notes, commonly known as memos (Corbin and Strauss, 1998), were documented. Complementing the interviews, we were able to observe project members during their daily work and analyze project documents, such as presentations, project plans, or charts. In this context, the main intention was to gain as much project-related background information as possible.

In order to complete the verification of the initial data interpretations by the research team, the participants of both the pilot and the confirmatory case study received a structured summary of the interpretations via e-mail. The document covered all components of the case studies, hereby focusing on the relevance and the management of the 29 CSF under examination.

7.1.3.4 Data Analysis

The evaluation of the data, collected within the pilot and the confirmatory case study, was carried out according to the open coding process of the Grounded Theory method (compare section 7.1.2). Here, based on the data collected through the conduction of interviews, the observation of project members, and the analysis of project documents, we were able to develop a final list of CSF-related management activities determined by means of open coding.

The summary of the initial data interpretations sent to the interview partners was meant to give the participants the opportunity to either confirm the provided data or to address any misunderstandings which may have occurred between the research team and the interview partners. In consequence, any feedback provided by the participants was considered and led to a modification of the initial data interpretations.

7.1.3.5 Comparison of the Case Studies

In an effort to reveal similarities and differences as well as draw key conclusions in regard to the management of the identified CSF for OSD projects, the results of the pilot case study were compared to the results of the confirmatory case study in regard to three pivotal aspects: The research context exhibited by the respective study, as well as the assessed degree of relevance and the management practices regarding each individual CSF.

7.2 Pilot Case Study

The presentation of the results of the pilot case study is divided into the following three sections: **Research context**, **CSF relevance analysis**, and **CSF management analysis**.

7.2.1 Research Context

By the conduction of interviews, the observation of participants, and the examination of company-internal documents, we were able to gather comprehensive information on the subject under study. The information gained consisted of both general company-related data, and data specifically related to the company's current OSD projects (compare Table 57).

Table 57: Company- and project-related information (PCS)

Company information	*Name*	**PCS**[13]
	Country	Switzerland
	Industry	Banking and insurance
	Revenue[14]	EUR 17.5 bill. (worldwide)
	Employees[14]	16.000 employees (worldwide)
	IT department[14]	740 employees (Switzerland)
Project information	*Goals*	*Primary goal:* Cost reduction *Secondary goals:* Flexibility, process, and quality improvements, development of experience with OSD
	Perspective	OSD client
	Experience	One nearshore project (18 months ago) Two offshore pilot projects (ongoing)
	Destinations	Spain (nearshore project) India (offshore project I and II)
	Organization	Cooperation with subsidiary (nearshore project) Cooperation with third-party-vendor with subsidiaries in Germany and Switzerland (offshore project I and II)
	Type	Web design (nearshore project) Code migration (offshore project I) Data warehouse migration (offshore project II)

[13] Company name was changed for privacy reasons (PCS is short for "Pilot Case Study").

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

	Duration	Six months (nearshore project) Four months (offshore project I) Nine months (offshore project II)
	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)

With regard to the transferability of research results, we agree with Esteves (2004) that this aspect "*is mostly verified through 'thick' description*" (p. 82). Therefore, in an effort to facilitate the transferability of the results of our pilot case study, an as complete data base as possible is presented in the following sections.

7.2.1.1 Company-related Information

Being a major player in the Swiss banking and insurance sector, PCS also represents a significant competitor in the international banking and insurance sector. On a worldwide scale, the company generated a total revenue of approximately 17.5 billion euros in 2004 and currently employs 16.000 people. Beside the Swiss market, major markets for PCS are Germany and the United States.

The company's Swiss-based IT department consists of 740 employees, not including the data center, which is subject to an outsourcing agreement.

7.2.1.2 Project-related Information

As an OSD client, PCS not only hopes to accomplish a significant reduction of costs, but also aims to reach a higher level of flexibility in regard to the deployment of their resources as well as an improvement of their business processes and their software quality. In addition, through the implementation of offshore pilot projects, PCS targets to gain experience in the field of OSD.

Due to the important role which global sourcing has generally taken on in recent years, PCS views their OSD activities as a "natural" development for its IT department and aims to develop know-how in this field. Thus far, the company's experience with OSD activities was solely rooted in one single, six-month nearshore project which focused on web design and was implemented within the company's Spanish subsidiary one and a half years ago. At present, two offshore pilot projects are being carried out with a leading service provider based in India. The Indian service provider also runs subsidiaries in Germany and Switzerland.

The first of the two pilot projects focuses on a code migration from Assembler to PL/1. Resulting from a lack of available Assembler know-how as well as a high cost of maintenance for the Assembler modules, the project is currently in its premature stages and expected to run until the end of March 2006. Following a dual-shore approach, two external employees, primarily responsible for the coordination of know-how transfer, are located onshore, while a total of ten offshore employees concentrate on the implementation and the testing of the technical migration. The project's main challenge is posed by the necessary fulfillment of various requirements for a well-structured and easily maintainable PL/1 code.

PCS's second offshore pilot project is expected to run until the end of July 2006 and deals with the implementation of a comprehensive data warehouse migration from a mainframe-based to a UNIX-server-based solution. The scope of this particular project encompasses the migration of the data base (from *UDB* to *Oracle*), the conversion of ETL-tools (from *Prism* to *Informatika Power Center*), as well as a significant improvement of the general project documentation. Furthermore, the project calls for a reorganization of various scheduling aspects. The second offshore pilot project is set to run a total of nine months and accounts for two to four external employees, working onsite, and a total of ten offshore employees.

7.2.2 CSF Relevance Analysis

Within all of the five interviews conducted within the IT department of PCS, we asked the interview partners to rank our CSF list for OSD projects in regard to its relevance within the company-specific project context. Here, the interviewees rated the 29 CSF on a scale of 1 to 5 (with 1 equivalent to "not relevant" and 5 equivalent to "significantly relevant").

All of our interview partners are currently taking on leading roles within the two offshore pilot projects under examination. While two of the interview partners (IP2 and IP4) take on manager positions at PCS's IT department (tactical level), the three remaining interview partners (IP1, IP3, and IP5) fulfill the roles of project coordinators (operational level). In this context, it must be noted that while all five of the participants work permanently at the client location, only four of these are actually employed by the OSD client. The fifth interview partner (IP5) is employed by the OSD provider and works onsite as a "single point-of-contact".

Table 58 displays the ranking of our 29 CSF in regard to the project-specific degree of relevance given to each CSF by the interview partners. In addition, the table compares the arithmetic means (AM) of the relevance ratings within the pilot case study with the respective arithmetic means identified by means of an online survey (OS) (compare section 6.3.1).

Table 58: CSF relevance in project context examined (PCS)

Rank	CSF	IP1	IP2	IP3	IP4	IP5	AM	OS rank	OS AM	Δ AM
1	Definition of an accurate contract	5	4	5	5	5	**4.8**	17	**4.06**	*+0.74*
1	Definition of clear project goals	4	5	5	5	5	**4.8**	1	**4.75**	*+0.05*
1	High quality of offshore employees	5	5	4	5	5	**4.8**	4	**4.67**	*+0.13*
4	Composition of an appropriate project team	5	5	5	5	3	**4.6**	6	**4.54**	*+0.06*
4	Early internal change management	5	5	4	5	4	**4.6**	14	**4.21**	*+0.39*
4	Ensuring of a continuous communication flow	5	5	5	4	4	**4.6**	3	**4.69**	*-0.09*
7	Continuous controlling of project results	5	4	5	4	4	**4.4**	2	**4.73**	*-0.33*
7	Definition of project standards	5	4	4	5	4	**4.4**	12	**4.22**	*+0.18*
7	Good language abilities of the offshore employees in German and English	5	4	4	5	4	**4.4**	5	**4.55**	*-0.15*
7	Preparation of a detailed project specification	5	4	3	5	5	**4.4**	7	**4.52**	*-0.12*
7	Standardized and documented processes	4	5	5	5	3	**4.4**	15	**4.16**	*+0.24*
7	Standardized and documented processes on provider side	4	5	4	4	5	**4.4**	16	**4.09**	*+0.31*
13	Legal and political stability in the offshore country	4	4	4	5	4	**4.2**	18	**3.95**	*+0.25*
13	Selection of a suitable software component	4	4	5	5	3	**4.2**	20	**3.93**	*+0.27*
15	Appropriate internal technical knowledge	4	4	3	4	5	**4.0**	24	**3.59**	*+0.41*
15	Creation of a partnership-like relationship	5	4	3	4	4	**4.0**	8	**4.30**	*-0.30*
15	Sustained management support	4	4	4	5	3	**4.0**	9	**4.29**	*-0.29*
18	Financial stability of the offshore provider	3	4	3	5	4	**3.8**	13	**4.21**	*-0.41*
19	Comprehensive industry knowledge of the offshore provider	3	3	4	4	4	**3.6**	23	**3.59**	*+0.01*
19	Ensuring of a bilateral know-how transfer	5	4	4	3	2	**3.6**	11	**4.24**	*-0.64*
19	Establishment of an efficient IT infrastructure	4	4	4	3	3	**3.6**	10	**4.25**	*-0.65*

19	Face-to-face meetings with the offshore provider on a regular basis	4	4	3	4	3	**3.6**	19	**3.95**	*-0.35*
23	Efficient internal organizational structure	4	4	4	2	3	**3.4**	21	**3.83**	*-0.43*
23	Suitable company size of the offshore provider	3	3	3	3	5	**3.4**	26	**3.28**	*+0.12*
25	Geographical closeness of the offshore provider	4	3	1	5	3	**3.2**	29	**2.62**	*+0.58*
26	Comprehensive experience with IT outsourcing projects	2	3	5	4	1	**3.0**	27	**3.28**	*-0.28*
26	Creation of a cultural sensibility among employees	3	4	1	4	3	**3.0**	22	**3.67**	*-0.67*
28	Development of a comprehensive business case	5	3	3	1	2	**2.8**	25	**3.42**	*-0.62*
29	International corporate culture	2	3	1	2	2	**2.0**	28	**3.22**	*-1.22*
	Average	4,14	4,04	3.72	4.14	3,62	**3.93**	-	**4.03**	*-0.10*

Overall, the accumulated average degree of relevance given to the individual CSF by the interview partners ranges between 2.0 and 4.8. While seventeen of the CSF received an average relevance rating of 4.0 or higher, only two CSF were regarded as rather irrelevant, receiving a rating lower than 3.0. On the whole, the CSF were granted an average relevance of 3.93.

In line with the interview partners' assessment, the CSF regarded as the three most relevant for the success of PCS's OSD projects are the "Definition of an accurate contract", the "Definition of clear project goals", and the "High quality of offshore employees", all of which received an average rating of 4.8.

With regard to the relevance of internal and external CSF, it became apparent that, in the case of PCS, these factors are nearly balanced. In contrast, regarding suitability and management factors, Table 58 confirms that management factors generally tend to outweigh suitability factors in regard to their relevance for the success of an OSD project. In line with this observation, eight out of the twelve most relevant CSF reflect management factors while only four of them describe suitability factors. However, when examining the twelve top-ranked CSF only with regard to internal and external management factors, neither of these categories prevails, as both are balanced out at four apiece.

When comparing the overall average degree of relevance of the 29 CSF within the pilot case study with the overall average degree of relevance found in the online survey, a minor deviation of -0.10 was identified. In this context, particularly the CSF addressing the "Definition of an accurate contract" and the "Geographical closeness of the offshore provider" received a significantly higher average degree of relevance in the case study than in the online survey. In contrast, the CSF emphasizing the "Ensuring of a bilateral know-how transfer", the "Establishment of an efficient IT infrastructure", the "Creation of a cultural sensibility among employees", the "Development of a comprehensive business case" and the pursuit of an "International corporate culture" were granted a considerably lower average degree of relevance in the case study than in the online survey.

7.2.3 CSF Management Analysis

Alongside analyzing the identified CSF in regard to their individual degree of relevance, we analyzed how these CSF are managed within the two OSD projects under study.

In the following, the management activities implemented by PCS in regard to each individual CSF are presented (with the individual CSF listed within each of the four categories in the order of their relevance to PCS's OSD projects, beginning with the most relevant CSF of each respective group). For a summary of the corresponding management activities, see Table 102 in the appendix.

7.2.3.1 Internal Suitability Factors

Standardized and documented processes: In an attempt to minimize the process-related documentation effort, PCS first selected relevant processes, and then adapted these processes to the corresponding processes on the side of the provider. To support the selection and the adaptation of the processes, PCS also integrated its internal process manager.

In order to further ensure a smooth collaboration, PCS and the provider jointly defined the reporting, documentation, and testing processes of the OSD projects.

Appropriate internal technical knowledge: In an effort to examine which technical skills should be kept in-house, PCS first analyzed and defined its company-specific core competences. In doing so, PCS primarily tried to prevent dependencies on an OSD provider and to ensure the preparation of a most detailed project specification. The latter proved to be of particular importance in regard to the company's current migration projects. In this context, PCS also hired external consultants to support the preparation of the project specifications as well as to develop the RFP.

In addition, as a prerequisite for maintaining an appropriate internal technical know-how, PCS emphasized the preparation of a comprehensive project documentation through the offshore provider.

Sustained management support: In order to ensure continuous management support, PCS stressed the regular alignment of the sourcing strategy with the top management and the determination of top managers as project sponsors. Here, the company's CIO was appointed as the project sponsor of the data warehouse migration project, while a department manager represented the project sponsor of the Assembler-PL/1 project.

Beside the determination of designated project sponsors, PCS also created a project steering committee consisting of managers from both the client and provider side. This committee usually meets every four to six weeks.

Efficient internal organizational structure: Concerning the efficiency of the client's internal organizational structure, PCS emphasized the importance of a strict process orientation, particularly with regard to the efficiency of internal administrative tasks. In addition, effective communication structures, e. g., the determination of a single point-of-contact on the client side, and the establishment of a central offshore coordination center turned out to be of significant value in regard to the successful implementation of the OSD projects.

Comprehensive experience with IT outsourcing projects: PCS regarded any prior experience in the field of IT outsourcing as beneficial for the implementation of current and future OSD projects. In an effort to harvest the benefits of previous collaborations, PCS tried to transfer any lessons learned from past experiences with national IT outsourcing projects which might be relevant for the company's offshore projects. In this context, PCS aims to gradually expand its experience with such projects primarily through the implementation of the two pilot projects and the detailed documentation of misunderstandings and problems which occurred in the early stages of the respective OSD arrangements. These written records are normally kept by the internal single point-of-contact.

Alongside falling back on past experiences, PCS also established an internal competence center in regard to OSD projects. This center is not only responsible for the development of a clear sourcing strategy, but also helps to support the provider assessment process as well as any other issues concerning the contractual management of such projects.

International corporate culture: In an effort to demonstrate a certain degree of international corporate culture, PCS emphasizes a general openness, respect, and understanding in regard to different mindsets resulting from cultural differences among their employees. In this context, PCS especially encourages the members of the OSD project teams to get familiar with the culture of the offshore country. Here, for instance, the project coordinator of the data warehouse migration project provided a wide range of information regarding the offshore destination and its cultural particularities to the internal project team members.

Aside from addressing the need for the distribution of such background information, PCS also dwelled on the quality of the English language skills which the project team members were required to exhibit, describing them as particularly necessary for efficient communication during telephone and video conferences.

7.2.3.2 Internal Management Factors

Definition of clear project goals: In the process of defining clear project goals, PCS decided to first set general boundaries associated with its sourcing strategy. This, for instance, called for the rejection of all OSD projects with a duration of more than twelve months.

In addition, beside the definition of long-term goals, including cost reduction, simultaneous flexibility increase, process- and quality-oriented improvements as well as the development of experience in the field of OSD, PCS determined a project baseline in regard to each single OSD project. This baseline reflects the fundamental short-term goals of the project.

Early internal change management: At PCS, a broad range of measures were taken to prevent any negative effects of the OSD projects on the motivation and the commitment of the client's employees. In this context, the establishment of an Intranet-based website aimed to prevent internal resistance on the one hand, as well as trigger understanding and acceptance for the organization's offshore objectives on the other hand. This website serves PCS employees as an information pool regarding the company's offshore activities, the arrangement of joint excursions with offshore employees, and the conduction of regular informative events for internal employees.

Furthermore, PCS conducted user-acceptance tests and asked its employees for internal feedback regarding the cooperation with the offshore employees.

Definition of project standards: In order to enable a frictionless collaboration between PCS and the offshore provider, numerous project standards were defined. Standards addressing project management included uniform formats for the project methodology, reporting, and documentation among others. Standards addressing technical issues, such as program structures or the calling of program modules, became subject of the programming guidelines. In large part, these technical standards were transferred from the offshore provider.

Preparation of a detailed project specification: Regarding the preparation of a detailed project specification, PCS's approach included the hiring of external consultants. In addition, following the selection of an offshore provider, up to four offshore employees worked temporarily onsite at PCS, gathering relevant project documents and refining the content of the project specification.

Selection of a suitable software component: In an effort to identify a suitable software component for its impending offshore projects, PCS first analyzed and evaluated the company-specific application portfolio. Here, PCS used a two-dimensional evaluation matrix, giving insight into the business depth and complexity of the considered software projects (compare Figure 52 below), and estimated implementation costs of the corresponding projects. As a result, PCS generally decided to focus on the offshoring of smaller, well-defined software projects with a maximum duration of 12 months.

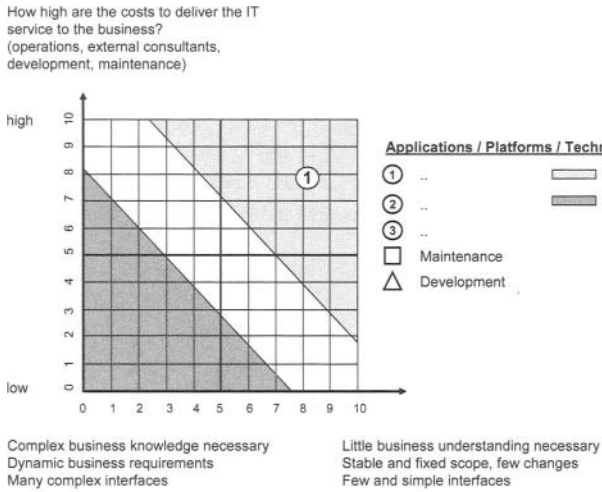


Figure 52: Evaluation matrix for OSD projects (PCS)

After potential OSD projects had been identified, a thorough assessment of the risks tied to each individual project was carried out. In addition, the requirements for each individual project in regard to data protection and data security were examined.

Creation of a cultural sensibility among employees: The initial attempt to create a certain degree of cultural sensibility among PCS's employees was closely related to the company's assessment of possible offshore providers. Making an effort to bridge the cultural gap between client and provider, PCS focused on the selection of an offshore provider with a German and/or Swiss subsidiary, as this could serve as an important interface between PCS and the provider.

After an adequate provider was identified and chosen, background information in regard to the offshore country itself as well as the offshore provider's employees was distributed via e-mail by the single points-of-contact. Here, PCS exposed internal employees to similarities between the different countries and cultures in an attempt to reduce fears and concerns regarding contact with the foreign culture.

Regarding the integration of employees, bilateral action was taken: While PCS arranged for excursions with its offshore colleagues, leading project members, in turn, were given the opportunity to visit the provider site in India. In addition, PCS emphasized the continuous coaching of both internal and external employees through the project coordinator in an effort to prevent misunderstandings. In this context, particularly the procurement of country-specific manners and social graces took on a pivotal role.

Development of a comprehensive business case: In line with a detailed discussion of the project goals and the examination of existing benefits and risks, the estimation of costs and cost saving potentials represented the core of a thoroughly developed business case. Regarding the project costs, PCS directed a great amount of attention to so-called "hidden costs". In addition, the company repeatedly stressed their request for a fixed price model (exclusive the translation of individual project documents from German to English). In terms of cost savings, PCS aimed for 10 to 20 percent cost savings in the short-term, gradually increasing to a maximum of 30 percent in the long run.

Based on the developed business case, PCS analyzed the added value of various project arrangements. Here, in particular, the options addressing either internal or offshore service provision were compared to one another.

7.2.3.3 External Suitability Factors

High quality of offshore employees: In an approach similar to the one taken in regard to the offshore provider's industry-specific knowledge, PCS focused on ensuring a general high quality among offshore employees. Fundamental in this context was the selection of an established, well-known Indian provider, included in NASSCOM's top 20 list. In addition, the resumes of individual offshore employees were examined and information regarding past reference projects was requested.

Good language abilities of the offshore employees in German and English: As efficient communication between the project partners is regarded critical for the successful implementation of the OSD projects, PCS assigned a German-speaking offshore employee as an onsite single point-of-contact and emphasized the quality of the English language skills exhibited by the offshore employees. As a result, a well-known offshore provider (NASSCOM top 20) located in a major offshore destination was selected. This ensured a significant amount of experience in dealing with foreign languages on the side of the provider. In this context, the resumes of the offshore employees were analyzed in regard to both language skills as well as past reference projects with German-speaking clients.

Standardized and documented processes on provider side: With regard to the quality of processes on the part of the provider, PCS relied on quality standards, such as CMM and ISO 9000, exhibited by the offshore provider.

Legal and political stability in the offshore country: In order to be able to confirm a sufficient degree of legal and political security in the selected offshore country, PCS conducted a comprehensive risk analysis for each of the potential offshore destinations. The analysis was directed especially towards the offshore country's infrastructure, but also examined relevant political and legal aspects such as the legal status of IP rights in the specific offshore country. Here, in an attempt to gain as much information as possible, both external studies (e. g., Gartner) and input from legal experts were acquired to further assess the different offshore destinations. As a result, PCS selected India as its offshore destination of choice.

Financial stability of the offshore provider: In an effort to ensure the financial stability of the offshore provider, PCS chose to narrow down its offshore provider selection process to the 20 largest service providers in the Indian market, hereby referring to NASSCOM's top 20 list.

Comprehensive industry knowledge of the offshore provider: In the case of PCS, the assessment of the offshore provider's industry knowledge played a key role in identifying and selecting the appropriate offshore partner. Therefore, PCS intended to gain as much insight as possible into the experiences of the offshore provider and its employees with similar projects. In this context, PCS requested information regarding reference customers and projects, and talked to employees of a company in the Netherlands, which had already implemented a data warehouse project akin to the one at PCS with the same provider.

Suitable company size of the offshore provider: Besides emphasizing qualitative aspects on the side of the provider, PCS was also interested in finding an offshore partner whose company size was similar to the one of PCS. In consequence, the company first pre-selected the offshore providers featured on NASSCOM's list of top 20 providers in India, and then sent out its RFP exclusively to medium scale providers, thereby excluding the top five providers. This measure intended to ensure an adequate amount of management attention on the part of the provider.

Geographical closeness of the offshore provider: Considering the challenges the geographical distance between client and provider can bring forth, PCS aimed to satisfy this concern by selecting an offshore provider who possessed a German and/or Swiss subsidiary. Consequently, all relevant contracts were to be concluded with the corresponding branch office. In addition, the geographical distance between PCS and the offshore provider was compensated through the determination of an offshore employee who works permanently at the client site, thereby acting as an interface between the two project parties.

7.2.3.4 External Management Factors

Definition of an accurate contract: Concerning the contract between PCS and the offshore provider, the agreement was concluded with the offshore provider's subsidiary located in PCS's home country of Switzerland. Based on a standard structure, the framework agreement between the two project sides included individual working orders, which, in turn, encompassed the project scope, milestones and specific payment arrangements, respectively. Major concerns in this context were the minimization of any interpretation scope and the contractual safeguarding against employee turnover on the part of the provider.

In general, both project partners accepted that not every issue can be sorted out within the contract. Therefore, PCS and the offshore provider agreed on a rather lean contract structure, hereby preventing an unrealistic level of detail.

Composition of an appropriate project team: PCS put a great deal of effort into the composition of an appropriate project team. The implementation of the two projects itself was based on a dual-shore model. This implies that the early stages of the project, such as the requirement analysis, as well as the project's final stages, like the onsite testing and the launch of the software, are conducted onsite at PCS. In contrast, offshore activities focus on the design and the initial testing of the developed software.

In line with the dual-shore model, a number of key project roles were determined and assigned to qualified project members representing both the client and the provider side of the offshore arrangement. Such roles included the project sponsor, fulfilled by top managers of PCS, the project manager, one on both sides, as well as the single point-of-contact, one on the part of PCS and two on the part of the provider (onsite and offsite). Here, a significant amount of attention was given to the selection of the project manager on the PCS side, as he is primarily responsible for preserving a sufficient amount of motivation and commitment among the internal project team. In addition, the project manager on the part of the provider was also determined and commissioned with the general coordination of the OSD project.

Furthermore, PCS chose to integrate the work of external consultants into the preparation of its offshore projects.

Ensuring of a continuous communication flow: Representing a pivotal aspect in OSD projects, communication between PCS and the offshore provider receives a great deal of attention from both sides. In an attempt to guarantee a solid technical foundation, a broad communication mix including e-mail exchange as well as telephone- and video conferences on a regular basis, was emphasized from the beginning of the offshore partnership.

In addition, a number of communication rules were defined which primarily aim to prevent any misunderstandings or loss of information during the course of a conversation. Supporting the wide range of communication channels, an onsite single point-of-contact on the provider side was determined, who, for instance, translates incoming e-mails from English to German and vice versa.

Despite these preventive actions, the project members are aware of the fact that a significant amount of information will be misinterpreted due to cultural as well as language barriers. Therefore, in the case of PCS, well-defined communication processes, such as weekly project status reports, receive a significant amount of attention.

Continuous controlling of project results: According to PCS, the continuous controlling of the project results was of particular importance. For this reason, the company implemented a broad range of control methods. The groundwork, however, was described within the scope of a detailed project plan, which included fixed milestones and results, and was designed with the support of MS Project. In tune with the project plan, regular meetings on a monthly basis discuss the current project progress.

In an attempt to ensure continuous progress, the provider's onsite single point-of-contact maintains so-called "query registers", in which the project's open issues are specified. In addition, the single point-of-contact on the part of the client keeps a record of any challenges, arising during the implementation of the project.

Alongside the query registers, status reports are compiled on a weekly basis in order to enable an alignment of the project's current progress against the corresponding milestones defined in the project plan. Further controlling measures include, among others, the conduction of user-acceptance tests and the constant development of prototypes, which meticulously test the migration procedure at an early stage in the development process.

In line with its incremental approach, PCS and the offshore provider agreed on a staggered payment structure in which partial payments become due each time one of the defined project milestones is achieved.

Creation of a partnership-like relationship: According to PCS, the relationship constantly pursued by the two sides of the project is one of give-and-take (e. g., neither PCS nor the offshore provider should use weaknesses in the concluded contract to its own advantage).

In this context, PCS sought to develop a sufficient amount of trust through the implementation of the two pilot projects.

Another aspect addressed by PCS was the continuous need for bilateral transparency in regard to current project developments. Here, PCS aims to keep both internal and external employees well-informed during all project stages (e. g., through the establishment of a project website and the arrangement of informative events).

As far as the contract itself is concerned, the conclusion of a master agreement between PCS and the provider supported the objectives on either side by emphasizing the companies' intention to enter into a long-term partnership.

Furthermore, a number of measures determined by PCS and the offshore provider aim to endorse a partnership-like relationship. Among others, these included the definition of a joint project steering committee as well as the arrangement of mutual company visits.

Ensuring of a bilateral know-how transfer: In order to ensure a bilateral know-how transfer between PCS and the offshore provider, two pivotal measures were taken. First, the provider was assigned with the preparation of a comprehensive technical project documentation, including standards and guidelines as well as system and user handbooks. Second, a Lotus Notes database with relevant project information was established. Here, PCS decided against the implementation of a knowledge portal, as one offshore employee would be required for the mere maintenance of the portal. With regard to the project database, offshore employees first translated relevant documents to English, before these entered the database.

Establishment of an efficient IT infrastructure: The establishment of an efficient infrastructure represented one of the major challenges at the outset of PCS's OSD projects. In order to enable a comparison between the old system and the one currently being developed, the jointly established development, integration, and testing environment had to apply to both the old mainframe processors and the new UNIX systems. For support, an efficient network encompassing all of the relevant project locations was erected, with the long-term goal being the establishment of a global network with an ever higher capacity. In addition, PCS and the offshore provider agreed upon a widespread use of standard platforms.

In regard to data security, PCS defined a comprehensive security infrastructure. The requirements implied by this security infrastructure also posed several administrative problems to PCS's internal security department (e. g., granting of access rights to offshore employees). Further security measures included the use of standard encryption, firewalls, and virtual private networks (VPN), which enable offshore project members to access the common development, integration, and testing environment, hosted by PCS. In addition, in an effort to ensure a consistent hardware configuration, PCS sent ten notebooks to the offshore provider.

Furthermore, regarding offshore employees working temporarily onsite, PCS made an effort to offer an appropriate working environment for these employees (e. g., providing them with English keyboards).

Face-to-face meetings with the offshore provider on a regular basis: Despite the deployment of a broad range of communication tools, regular face-to-face meetings between PCS and the offshore provider still represent a vital element of the partnership. In this context, the companies schedule weekly project status meetings as well as meetings held by the projects' steering committee (usually conducted on a monthly basis).

Further, project members on the PCS side were encouraged to visit the offshore provider just as offshore employees were given the opportunity to visit the project's onsite location in Switzerland. The latter most notably took on a pivotal role during the early stages of the OSD projects, when offshore employees followed the task of gathering relevant project information onsite at PCS.

7.3 Confirmatory Case Study

Analogous to the pilot case study, the presentation of the results of the confirmatory case study is divided into the following three sections: **Research context**, **CSF relevance analysis**, and **CSF management analysis**.

7.3.1 Research Context

Akin to the pilot case study, the information gained within the scope of the confirmatory case study was drawn from a series of interviews as well as onsite participant observations and the examination of internal documents relevant to the company's current OSD project. As a result, both company- and project related information was collected (compare Table 59).

Table 59: Company- and project-related information (CCS)

Company information	*Name*	**CCS**[15]
	Country	Germany
	Industry	Chemical industry
	Revenue[16]	EUR 1.1 bill. (worldwide)
	Employees[14]	2.400 employees (worldwide)
	IT department[14]	20 employees (Germany)
Project information	*Goals*	*Primary goal:* Cost reduction *Secondary goal:* Reduction of dependencies
	Perspective	OSD client
	Experience	One offshore project (ongoing)
	Destinations	India
	Organization	Cooperation with third-party-vendor with subsidiary in Germany
	Type	Re-development of legacy system
	Duration	Six months
	Volume	1 to 2 external employees onshore and 18 offshore

[15] Company name was changed for privacy reasons (CCS is short for "Confirmatory Case Study").

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

Identical to the pilot case study, in order to ensure the transferability of our research results, we made an effort to provide a "thick" description on the confirmatory case study (Esteves, 2004).

7.3.1.1 Company-related Information

As a prime competitor in the chemical industry, CCS produced a total revenue of over one billion euros within the fiscal year of 2004 and currently employs approximately 2.400 people worldwide. The company operates locations in Germany, North America, and Scandinavia and exports their products to over 150 countries.

The rather lean German IT department consists of 20 employees, a great part of which is currently involved in the company's OSD project.

7.3.1.2 Project-related Information

Representing the client side of the OSD project, CCS primarily aims to achieve a significant cost reduction through the implementation of its offshore project. Hereby, the ultimate goal is to reduce the costs tied to the operation and the maintenance of the current legacy system (e. g., the annual leasing rate). In addition, CCS intends to decrease the various dependencies brought forth by the system, by facilitating the maintenance of the system as well as by increasing the number of internal employees possessing system-specific knowledge.

Before engaging in their current OSD project, CCS had no experience with offshore projects. At present, the company is involved in one OSD project, thereby taking on the client role in cooperation with an Indian offshore service provider, which also operates a German-based subsidiary.

CCS's OSD project focuses on the re-development of a legacy system, hereby attempting to replace a FORTRAN-based Laboratory Information Management System (LIMS), located on a Siemens host, with a RPG-based solution, which will run on an IBM host. Additionally, the project also includes re-engineering tasks such as the removal of software modules.

The project is estimated to take six months and employs 20 persons on the side of the provider: One project manager and one senior project manager as well as a total of 16 programmers are located offshore and concentrate on the implementation of the project. In addition, a maximum of two offshore employees, located onshore at the CCS site, focus on the coordination of the project.

Assuming a successful implementation of the OSD project, CCS is currently considering further cooperation with the offshore provider in regard to the future operation and maintenance of the modernized system.

7.3.2 CSF Relevance Analysis

Analogous to the pilot case study, within the confirmatory case study, five personal interviews were conducted within the CCS IT department, in which we asked the interview partners to rank our CSF list for OSD projects in regard to its relevance within the company-specific project context. Accordingly, the interviewees rated the 29 CSF on a scale of 1 to 5 (1 equivalent to "not relevant" and 5 equivalent to "significantly relevant").

The five project members interviewed all fulfill critical roles within the scope of the OSD project. While two of the participants take on manager positions in the CCS IT department (IP1 and IP2), thereby focusing on strategic and tactical aspects, the three other participants are responsible for the project coordination on a more operational level. One of these project coordinators is employed by CCS (IP3), the others by the offshore provider (IP4 and IP5). At this point, it must be emphasized that IP4 and IP5 work, at least temporarily, onsite.

Table 60 displays the ranking of our 29 CSF in regard to the project-specific degree of relevance given to each CSF by the interview partners. Akin to the pilot case study, the table compares the arithmetic means (AM) of the relevance ratings within the confirmatory case study with the respective arithmetic means identified by means of an online survey (OS).

Table 60: CSF relevance in project context examined (CCS)

Rank	**CSF**	**IP1**	**IP2**	**IP3**	**IP4**	**IP5**	**AM**	**OS rank**	**OS AM**	**Δ AM**
1	Appropriate internal technical knowledge	5	5	5	5	5	**5.0**	24	**3.59**	*+1.41*
1	Composition of an appropriate project team	5	5	5	5	5	**5.0**	6	**4.54**	*+0.46*
1	Definition of an accurate contract	5	5	5	5	5	**5.0**	17	**4.06**	*+0,94*
1	Definition of clear project goals	5	5	5	5	5	**5.0**	1	**4.75**	*+0.25*
5	Continuous controlling of project results	5	5	5	5	4	**4.8**	2	**4.73**	*+0.07*
5	Ensuring of a continuous communication flow	5	5	4	5	5	**4.8**	3	**4.69**	*+0.11*
5	Sustained management support	5	5	4	5	5	**4.8**	9	**4.29**	*+0.51*
8	Creation of a partnership-like relationship	4	4	4	5	5	**4.4**	8	**4.30**	*+0.10*

8	Establishment of an efficient IT infrastructure	4	4	4	5	5	**4.4**	10	**4.25**	*+0.15*
10	Early internal change management	4	4	5	3	5	**4.2**	14	**4.21**	*-0.01*
10	Ensuring of a bilateral know-how transfer	4	4	3	5	5	**4.2**	11	**4.24**	*-0.04*
10	Face-to-face meetings with the offshore provider on a regular basis	5	5	3	5	3	**4.2**	19	**3.95**	*+0.25*
10	Preparation of a detailed project specification	4	4	5	3	5	**4.2**	7	**4.52**	*-0.32*
14	Efficient internal organizational structure	3	4	4	4	5	**4.0**	21	**3.83**	*+0.17*
14	High quality of offshore employees	3	3	5	4	5	**4.0**	4	**4.67**	*-0.67*
16	Financial stability of the offshore provider	3	3	3	5	5	**3.8**	13	**4.21**	*-0.41*
16	Legal and political stability in the offshore country	3	3	3	5	5	**3.8**	18	**3.95**	*-0.15*
16	Standardized and documented processes	3	3	5	4	4	**3.8**	15	**4.16**	*-0.36*
16	Suitable company size of the offshore provider	4	4	2	5	4	**3.8**	26	**3.28**	*+0.52*
20	Good language abilities of the offshore employees in German and English	3	4	3	5	3	**3.6**	5	**4.55**	*-0.95*
20	International corporate culture	4	4	3	4	3	**3.6**	28	**3.22**	*+0.38*
22	Geographical closeness of the offshore provider	4	4	2	2	5	**3.4**	29	**2.62**	*+0.78*
23	Definition of project standards	2	2	4	3	4	**3.0**	12	**4.22**	*-1.22*
23	Standardized and documented processes on provider side	3	3	2	5	2	**3.0**	16	**4.09**	*-1.09*
25	Comprehensive industry knowledge of the offshore provider	1	1	2	3	5	**2.4**	23	**3.59**	*-1.19*
26	Creation of a cultural sensibility among employees	1	2	1	2	5	**2.2**	22	**3.67**	*-1.47*
27	Development of a comprehensive business case	1	1	2	2	4	**2.0**	25	**3.42**	*-1.42*
27	Selection of a suitable software component	1	1	2	3	3	**2.0**	20	**3.93**	*-1.93*
29	Comprehensive experience with IT outsourcing projects	1	1	1	2	4	**1.8**	27	**3.28**	*-1.48*
	Average	3.45	3.55	3.48	4.10	4.42	**3.80**	-	**4.03**	*-0.23*

According to the five interview partners, the average degree of relevance of the individual CSF ranges between 1.8 and 5.0. Fifteen of the 29 CSF were granted an average rating of 4.0 or higher and, therefore, regarded as very relevant to the successful implementation of CCS's current OSD project. On the contrary, five CSF were assessed with an average of lower than 3.0, meaning they were regarded as rather irrelevant to the success of the project. Overall, the average degree of relevance for our CSF list calculates to 3.8.

According to the assessment conducted by the five interview partners, the CSF "Appropriate internal technical knowledge", the "Composition of an appropriate project team", the "Definition of an accurate contract", as well as the "Definition of clear project goals" were considered to be the most relevant factors for the successful implementation of the company's OSD project, all receiving the maximum rating of 5.0.

When comparing the relevance of internal and external CSF, it can be noted that the external factors slightly outweigh the internal factors: While six of the nine most relevant CSF reflect external factors, only three of these CSF are internal factors. Regarding the ratio between suitability and management factors, Table 60 reveals a high degree of dominance on the side of the management factors: While seven of the nine CSF assessed with the greatest importance in regard to CCS's OSD project represent management factors, only two of them reflect suitability factors. Among these seven management factors, the external management factors dominate the internal management factors with a ratio of six to one.

The overall average degree of relevance of the 29 CSF within the confirmatory case study shows a deviation of -0.23 when compared to the overall average degree of relevance identified in the online survey. Here, the project members at CCS particularly considered the CSF "Appropriate internal technical knowledge", "Definition of an accurate contract", "Sustained management support", "Suitable company size of the offshore provider" and "Geographical closeness of the offshore provider" as significantly more relevant than the participants of the online survey. On the contrary, the CSF "Selection of a suitable software component", "Comprehensive experience with IT outsourcing projects", "Creation of a cultural sensibility among employees", "Development of a comprehensive business case", "Comprehensive industry knowledge of the offshore provider", "Definition of project standards", "Standardized and documented processes on provider side", "Good language abilities of the offshore employees in German and English", as well as "High quality of offshore employees" received a considerably lower average degree of relevance in the confirmatory case study than in the online survey.

7.3.3 CSF Management Analysis

Identical to the pilot case study with PCS, we analyzed how our list of 29 CSF is managed within CCS.

In the following, the management activities implemented by CCS in regard to each individual CSF are presented (with the individual CSF listed within each of the four categories in the order of their relevance to CCS's OSD project, beginning with the most relevant CSF of each respective group). For a summary of the corresponding activities, see Table 103 in the appendix.

7.3.3.1 Internal Suitability Factors

Appropriate internal technical knowledge: In order to ensure a 1:1 re-development of the legacy system, the internal know-how passed on from CCS to the offshore provider required a high accuracy. Therefore, CCS emphasized the inclusion of the corresponding internal knowledge carriers within its OSD project. These are 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.

In addition, in order to prevent a dependency on the offshore provider, CCS assigned the provider with the preparation of a detailed technical project documentation.

Sustained management support: To ensure continuous management support, members of CCS's top management were determined as project sponsors. Further, CCS emphasizes a close and ongoing cooperation between the strategic and operational level (e. g., through the determination of a project coordinator). The fact that the OSD project is fully supported by the company's top management and not solely IT-driven alleviates this cooperation.

In addition, to ensure the support of the top management, CCS established an internal as well as a mutual steering committee with project members from both the client and the provider side. Both of these committees schedule meetings regularly.

Efficient internal organizational structure: A lean corporate structure represents an essential characteristic of CCS and has many a time been accountable for the company's success. Hence, the management continuously makes an effort to maintain this structure during the implementation of its OSD project. Alongside numerous lean management measures, CCS established an internal steering committee which is exclusively dedicated to the current offshore project and consists of senior as well as IT management representatives.

Standardized and documented processes: Since CCS possesses neither standardized nor documented processes, no management activities were able to be identified for this particular CSF.

International corporate culture: In an attempt to develop an international corporate culture as a means of support to the company's OSD project, CCS defined English as the primary document and secondary corporate language. Accordingly, English language skills are considered as very important and crucial to the success of the project. Due to the fact that CCS's corporate culture is characterized by an American mindset, a great deal of communication among employees already took place in English prior to the offshore arrangement.

Comprehensive experience with IT outsourcing projects: Regarding previous experience with projects in the field of IT outsourcing, CCS sees an advantage in the possession of little or no experience, as it can give way to the exploitation of motivational advantages. According to their standpoint, a company, for which an IT outsourcing project represents a routine project, runs the risk of a project-related fatigue among employees. In contrast, within a less experienced company, project members are constantly confronted with new challenges due to their lack of experience. As a result, these challenges attract more attention from the part of the individual employee.

7.3.3.2 Internal Management Factors

Definition of clear project goals: The process of defining project-related objectives focused on both short- and long-term goals. The two main targets in this context were a significant decrease in costs as well as the reduction of dependencies. Beside the definition of project goals, CCS pursued the establishment of a joint understanding in regard to the individual goals.

Additionally, in an effort to ensure a smooth cooperation with the offshore provider in the long run, a clearly defined project scope and restrictions on the handling of change requests were determined.

Early internal change management: In consideration of CCS's employees, a number of measures were executed: Beside the appointment of centrally located contact persons, the specific user group's willingness to change as well as the early integration of the relevant user groups drew a significant amount of attention from CCS's management. The integration of the user communities in particular called for an in-depth analysis of specific system requirements. In addition, both internal training measures and user-acceptance tests, made possible with the agreement on a regular delivery of prototypes through the offshore provider, were carried out during the early stages of the project.

On a more social level, a project kickoff event with key users and relevant IT staff as well as collective events with offshore employees, located onsite, were arranged. The latter especially aimed to serve as a foundation for the development of personal relationships among the culturally diverse project members.

Preparation of a detailed project specification: For the preparation of a detailed project specification, the so-called SRS (system requirements specifications), templates from the side of the offshore provider were deployed. The actual development of the specification relied on the support of two offshore employees, working at the client location for a period of two weeks. Alongside collecting relevant project documents, the offshore project members conducted a front-end analysis in close collaboration with the user communities and a back-end analysis with the project coordinator on the side of CCS.

Definition of project standards: 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.

Creation of a cultural sensibility among employees: CCS's efforts to create a cultural sensibility among employees were closely related to its selection of an appropriate offshore provider, as one of the preconditions was that the provider possessed a German subsidiary. Such a relationship gives CCS the opportunity to communicate with a German-speaking offshore employee who fulfills the role of a so-called "cultural interface". Alongside stressing this beneficial structure, CCS carried out additional measures such as the provision of information regarding the offshore destination (e. g., videos) or the conduction of management visits to the offshore country.

Among the internal and external project members, particularly the integration of the offshore employees and the development of personal relationships (e. g., by the exchange of photos or corporate posters) are considered pivotal aspects for the long-term success of the OSD agreement.

Development of a comprehensive business case: In an effort to develop a business case for its OSD project, CCS first of all examined the various options including standard software, line-by-line conversion, and re-programming in greater detail. Next to analyzing the added value of each of these solutions, the respective costs and impacts on the projects payback period were also estimated. In addition, specific project risks, brought forth by the potential project arrangements, were taken into consideration.

Regarding project costs, CCS and the offshore provider agreed upon a fixed-price model, which, in consideration of the defined restrictions on change requests, proves to be especially beneficial for the client during the project implementation phase.

Selection of a suitable software component: In regard to the selected software component for the OSD project, a comprehensive analysis of project risks was conducted. In this context it must be noted that, due to the projects clear initial situation, other software components were not considered for this particular OSD arrangement.

7.3.3.3 External Suitability Factors

High quality of offshore employees: In an effort to ensure a high level of quality among the offshore employees, CCS followed a similar approach as was taken during the evaluation of the employees' language abilities. Accordingly, the adequate size of the offshore provider played a pivotal role, as did the existence of corresponding reference projects on the part of the provider. Concerning the review of the offshore employees' resumes, particular attention was drawn towards the resumes of the employees potentially designated to work onsite at CCS.

Financial stability of the offshore provider: The evaluation of the financial stability of the selected offshore provider was based on a pre-selection of adequately sized providers. In the evaluation process, CCS focused on the monetary stability of the provider's German subsidiary, as it represented the contractual partner for the offshore operations. In this process, CCS was supported by its financial and controlling department.

Legal and political stability in the offshore country: The legal and political stability in the offshore country was examined by CCS with the help of a country-specific risk analysis, which, above all, aimed to deliver an in-depth look into the current condition of the communication infrastructure and the threat of natural disasters in the destination country. Beside such physical risks, the provider's ability to shift working packages to alternate locations within the offshore country in case of an emergency was also investigated.

Suitable company size of the offshore provider: Regarding the size of the offshore provider, CCS conducted a pre-selection of adequately-sized providers. As a result, German providers were no longer considered for the project due to their insufficient size. In their final selection, CCS primarily focused on the potential amount of management attention received from the offshore provider.

Good language abilities of the offshore employees in German and English: Another reason why CCS decided to select an adequately sized offshore provider was the reliable existence of sufficient language skills in English among the offshore employees. In order to further ensure a smooth communication and prevent misunderstandings, a German-speaking offshore employee was assigned as a single point-of-contact. In addition, CCS reviewed the resumes of the individual offshore employees.

Geographical closeness of the offshore provider: CCS's selection of an offshore provider with a German-based subsidiary most notably proves to be beneficial when considering the geographical aspect of a typical offshore arrangement and its effect on, for instance, contractual conflicts. Besides handling numerous technical and administrative tasks, the provider's German subsidiary also provides an adequate environment for development and testing purposes. In addition, a German-speaking project coordinator acts as a kind of interface between CCS and the offshore provider.

Standardized and documented processes on provider side: The maturity of the processes on the part of the offshore provider was assessed in regard to the CMM level and other quality certifications (e. g., ISO 9000) exhibited by the provider. In order to minimize overhead costs, CCS further emphasized the adaptation of processes between the provider and CCS.

Comprehensive industry knowledge of the offshore provider: In regard to the industry-specific knowledge exhibited by the offshore provider, CCS's request for information primarily aimed to identify similar re-development projects (from FORTRAN to RPG) implemented by the provider. Therefore, the technical abilities turned out to be of greater importance than the industry-specific knowledge of the provider.

7.3.3.4 External Management Factors

Composition of an appropriate project team: The composition of an appropriate project team received significant attention from CCS. Hence, a number of measures were executed in an attempt to ensure an efficient communication between the project partners. In this context, CCS chose a dual-shore model which aims to deliver an effective mix between onshore and offshore resources. The defined project roles included the project sponsor, key users on the side of CCS, subject matter experts on the provider side, as well as an intercultural experienced project manager and coordinator on both the CCS and the provider side. In addition, an internal IT coordinator, responsible for the synchronization of requirements requested from CCS's various user communities, was determined.

The integration of the user communities themselves represented a further important aspect of the team-building process. Moreover, in an effort to increase the efficiency of the cooperation, the offshore programming team was divided into sub-project teams, each of which exhibited its own team manager.

Definition of an accurate contract: From a CCS point of view, the definition of an accurate contract represented another pivotal factor for the success of the company's OSD project. In pursuit of a solid contractual foundation, a detailed description of the project scope and individual responsibilities was developed. Against the background of the fixed-price structure of the project, this measure most notably intended to minimize the scope of interpretation in regard to the contract. Other precautionary actions included the agreement on contractual penalties in the case of missed due dates and the conclusion of the contract with the offshore provider's German-based subsidiary.

Continuous controlling of project results: According to CCS, the continuous controlling of project results requires a variety of control methods and is to be considered as very critical to the successful implementation of an OSD project. In this context, CCS particularly stresses the early development of prototypes during the course of the project. Based on these prototypes, the entire project is subject to a staggered payment structure.

Further controlling mechanisms include the regular conduction of user-acceptance tests, the request for routine status reports on a weekly basis, as well as the scheduling of monthly steering committee meetings in addition to weekly project meetings. The status reports are based on the deployment of a so-called "traffic light system", which points out the current development progress. Furthermore, the project partners maintain joint MS-Excel files in order to administer open queries.

Ensuring of a continuous communication flow: In order to manage the complexity of the OSD project, CCS emphasizes the deployment of a broad communication mix, including e-mail, telephone and video conferences, net meetings, as well as face-to-face discussions. Potential misunderstandings are in large part prevented by the establishment of clear communication rules ranging from the repetition of pivotal statements to the compilation of the minutes of a meeting.

Figure 53 displays the internal and external communication structure enforced in reference to CCS's offshore project. Common tasks carried out between the individual positions include daily conference calls, weekly project status meetings, as well as steering committee meetings scheduled monthly. In addition, the onsite project coordinator on the part of the provider is responsible for the composition of a weekly status report. In case of a conflict, a well-defined escalation procedure aims to maintain a healthy atmosphere among the project partners.

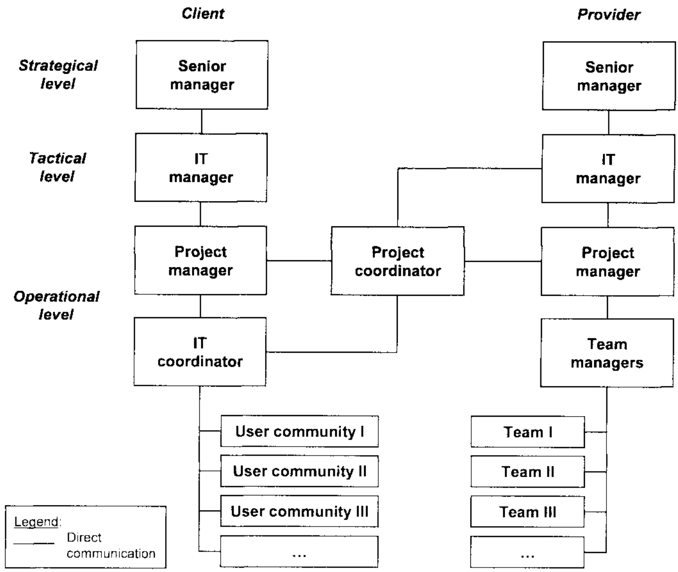


Figure 53: Project communication structure (CCS)

Creation of a partnership-like relationship: In an effort to create a partnership-like relationship with the offshore provider, a partnership clause was incorporated into the offshore contract. In addition, CCS emphasized the need for a joint steering committee, focusing on the collective discussion of project goals and potential change requests, among other tasks.

With regard to potential conflicts, both sides of the OSD project agreed on the deployment of independent mediators. Finally, given a successful project course, CCS confirmed a general willingness to act as a future reference customer for the offshore provider.

Establishment of an efficient IT infrastructure: According to CCS, the establishment of an efficient IT infrastructure represents a rather important factor in regard to the success of an OSD project. Here, above all, the definition of a common development and testing environment with 24/7 support proves to be most beneficial to both sides of the project. While the actual development environment is located at the provider's headquarters in India, various prototypes run on a server at the provider's German-based subsidiary. Additionally, CCS installed a comprehensive document management system.

Regarding security-related aspects, numerous actions were taken to establish a sufficient security infrastructure. These included the integration of project locations via VPN as well as the definition of employee-specific access rights.

Ensuring of a bilateral know-how transfer: In the case of CCS, the introduction of a document management system ("LiveLink") and the preparation of a detailed technical project documentation through the offshore provider contribute to the bilateral transfer of knowledge between CCS and the provider. In this way, the exchange and the documentation of relevant know-how between the project partners are heavily simplified.

Face-to-face meetings with the offshore provider on a regular basis: Alongside the deployment of a broad communication mix, face-to-face meetings between CCS and the offshore provider represent an essential ingredient to a successful OSD partnership. In this context, offshore employees worked temporarily onsite at CCS and members of the client's management visited the provider's offshore location.

Beside mutual company visits, weekly project status meetings with the provider's onsite coordinator and monthly scheduled steering committee meetings help to strengthen the personal relationship between the project partners.

7.4 Comparison of the Case Studies

The comparison of the pilot and the confirmatory case studies is again structured into the following three sections: **Research context**, **CSF relevance analysis**, and **CSF management analysis**.

7.4.1 Research Context

In Table 61, the company- and project-related information gained within the scope of both the pilot and the confirmatory case study are compared to one another.

Table 61: Comparison of the research context

	Name	**PCS**	**CCS**
Company information	*Country*	Switzerland	Germany
	Industry	Banking and insurance	Chemical industry
	Revenue[17]	EUR 17.5 bill. (worldwide)	EUR 1.1 bill. (worldwide)
	Employees[17]	16.000 employees (worldwide)	2.400 employees (worldwide)
	IT department[17]	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

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

	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

7.4.1.1 Company-related Information

Regarding the range of their business activities, both PCS and CCS compete on international markets. While PCS operates in the service industry (banking and insurance), CCS is part of the manufacturing industry (chemicals). In regard to their company size, PCS represents a large-scale enterprise (16.000 employees worldwide) and CCS a medium-sized enterprise (2.400 employees worldwide). The differences in company size become particularly apparent with regard to the companies' IT departments: PCS employs 740 people within its IT department alone, as opposed to the lean IT staff of 20 employees on the side of CCS. This major deviation can most notably be traced back to the high relevance of data and services within PCS's business operations.

7.4.1.2 Project-related Information

Both PCS and CCS fulfill the role of clients in their respective OSD agreements. In addition, prior to engaging in their current OSD projects, both companies exhibited either little (PCS) or no experience (CCS) with the implementation of offshore projects.

In regard to the primary goals related to their individual offshore arrangements, both OSD clients are in pursuit of a significant reduction of costs. However, each of them further emphasizes other, more specific aspects: While PCS particularly intends to improve their internal business processes, flexibility, and quality of software as well as to develop experience with OSD, CCS aims to reduce internal dependencies caused by their current legacy system by, for instance, facilitating the maintenance of this system.

PCS is currently involved in two OSD projects: A relatively small code migration project from Assembler to PL/1 with a duration of four months as well as a data warehouse migration project expected to run a total of nine months. CCS presently implements a quite comprehensive offshore project, a re-development project of a legacy system, which is estimated to require six months for implementation. In this context, similarities can be identified between PCS's code migration project and the re-development project pursued by CCS, as both of these projects are the result of scarce technical know-how among internal employees and high costs of maintenance.

Concerning the offshore-onshore-mix of the individual projects, PCS and CCS both follow a dual-shore approach, in which the employees located onshore are primarily responsible for the coordination of the project and the relevant know-how transfer, while the offshore employees focus on the implementation and testing of the project's technical aspects. On the whole, the scope of the re-development project at CCS requires a stronger external work force than either of the OSD projects pursued by PCS, calling for a total of 20 employees. In contrast, PCS's code migration project accounts for a total of twelve and the company's data warehouse project for a total of 14 external employees.

7.4.2 CSF Relevance Analysis

Within both case studies, five project members were asked to assess our list of 29 CSF on a scale of 1 ("not relevant") to 5 ("significantly relevant") in regard to the specific degree of relevance of each CSF to the company's current OSD projects. Table 62 displays the results of the evaluation process in reference to the individual case studies, presenting both the corresponding rankings and the average degrees of relevance (AM). In addition, the table compares the deviations of the arithmetic means (Δ AM) of the relevance ratings within the pilot study from the respective arithmetic means identified by means of an online survey with the corresponding deviations within the confirmatory case study.

Table 62: Comparison of the CSF relevance

OS rank	CSF	PCS			CCS			Comp.
		Rank	AM	Δ AM	Rank	AM	Δ AM	Diff. (Δ) AM
1	Definition of clear project goals	1	**4.8**	*+0.05*	1	**5.0**	*+0.25*	***0.2***
2	Continuous controlling of project results	7	**4.4**	*-0.33*	5	**4.8**	*+0.07*	***0.4***
3	Ensuring of a continuous communication flow	4	**4.6**	*-0.09*	5	**4.8**	*+0.11*	***0.2***
4	High quality of offshore employees	1	**4.8**	*+0.13*	14	**4.0**	*-0.67*	***0.8***

5	Good language abilities of the offshore employees in German and English	7	**4.4**	*-0.15*	20	**3.6**	*-0.95*	***0.8***
6	Composition of an appropriate project team	4	**4.6**	*+0.06*	1	**5.0**	*+0.46*	***0.4***
7	Preparation of a detailed project specification	7	**4.4**	*-0.12*	10	**4.2**	*-0.32*	***0.2***
8	Creation of a partnership-like relationship	15	**4.0**	*-0.30*	8	**4.4**	*+0.10*	***0.4***
9	Sustained management support	15	**4.0**	*-0.29*	5	**4.8**	*+0.51*	***0.8***
10	Establishment of an efficient IT infrastructure	19	**3.6**	*-0.65*	8	**4.4**	*+0.15*	***0.8***
11	Ensuring of a bilateral know-how transfer	19	**3.6**	*-0.64*	10	**4.2**	*-0.04*	***0.6***
12	Definition of project standards	7	**4.4**	*+0.18*	23	**3.0**	*-1.22*	***1.4***
13	Financial stability of the off-shore provider	18	**3.8**	*-0.41*	16	**3.8**	*-0.41*	***0.0***
14	Early internal change manage-ment	4	**4.6**	*+0.39*	10	**4.2**	*-0.01*	***0.4***
15	Standardized and documented processes	7	**4.4**	*+0.24*	16	**3.8**	*-0.36*	***0.6***
16	Standardized and documented processes on provider side	7	**4.4**	*+0.31*	23	**3.0**	*-1.09*	***1.4***
17	Definition of an accurate con-tract	1	**4.8**	*+0.74*	1	**5.0**	*+0.94*	***0.2***
18	Legal and political stability in the offshore country	13	**4.2**	*+0.25*	16	**3.8**	*-0.15*	***0.4***
19	Face-to-face meetings with the offshore provider on a regular basis	19	**3.6**	*-0.35*	10	**4.2**	*+0.25*	***0.6***
20	Selection of a suitable software component	13	**4.2**	*+0.27*	27	**2.0**	*-1.93*	***2.2***
21	Efficient internal organizational structure	23	**3.4**	*-0.43*	14	**4.0**	*+0.17*	***0.6***
22	Creation of a cultural sensibility among employees	26	**3.0**	*-0.67*	26	**2.2**	*-1.47*	***0.8***
23	Comprehensive industry knowl-edge of the offshore provider	19	**3.6**	*+0.01*	25	**2.4**	*-1.19*	***1.2***
24	Appropriate internal technical knowledge	15	**4.0**	*+0.41*	1	**5.0**	*+1.41*	***1.0***
25	Development of a comprehen-sive business case	28	**2.8**	*-0.62*	27	**2.0**	*-1.42*	***0.8***
26	Suitable company size of the offshore provider	23	**3.4**	*+0.12*	16	**3.8**	*+0.52*	***0.4***

27	Comprehensive experience with IT outsourcing projects	26	**3.0**	*-0.28*	29	**1.8**	*-1.48*	***1.2***
28	International corporate culture	29	**2.0**	*-1.22*	20	**3.6**	*+0.38*	***1.6***
29	Geographical closeness of the offshore provider	25	**3.2**	*+0.58*	22	**3.4**	*+0.78*	***0.2***
	Average	-	**3.93**	*-0.10*	-	**3.80**	*-0.23*	***0.13***

Generally speaking, the average degree of relevance granted to the CSF by the two companies under study was nearly identical, exhibiting only a minor deviation (0.13 on the scale from 1 to 5). Here, it is most notably that PCS and CCS assessed 17 and 15 of our CSF with a rating of 4.0 or higher.

When examining the results of the assessment process in regard to the CSF regarded as most relevant and those considered rather irrelevant to the success of the corresponding OSD projects, both similarities and differences between PCS and CCS can be identified: As Table 62 confirms, both companies consider the "Definition of an accurate contract" as well as the "Definition of clear project goals" to be pivotal aspects for the successful implementation of an OSD project, granting these two factors an average degree of relevance of 4.8 and 5.0 respectively. However, PCS further regards the "High quality of offshore employees" as a decisive factor, assessing it with an average rating of 4.8, while this particular CSF only ranks 14th on CCS's relevance list. In a similar fashion, CCS dwells on the significance of an "Appropriate internal technical knowledge", granting this CSF an average rating of 5.0, while PCS ranks this aspect 15th on their list of relevant CSF. This can in particular be traced back to the insufficient internal documentation of CCS's legacy system.

In line with our two-dimensional CSF model, PCS considers internal and external CSF as almost equally important. In contrast, CCS regards external factors as particularly important for the successful implementation of an OSD project, as these factors represent six of the nine most relevant CSF within CCS's relevance list. When examining the ratio between suitability and management factors, management factors clearly outweigh suitability factors in both case studies: At PCS, eight of the twelve most relevant CSF reflect management factors. In the case of CCS, seven of the nine top-ranked CSF fall into this category. In regard to the relevance of internal and external management CSF, in turn, we were able to identify a balance between these factors in the case of PCS. In contrast, in the case of CCS, external management factors clearly dominate internal management factors.

Regarding the differences of the (deviations of the) average degrees of relevance between the pilot and the confirmatory case study (from the average degree of relevance identified in the online survey), it can be pointed out that, although, the overall difference can be regarded as rather minor, averaging out at 0.13, several CSF exhibit more significant differences. The CSF delivering the most notable differences between the two case studies are: "Selection of a suitable software component", "International corporate culture", "Definition of project standards", "Standardized an documented processes at provider site", "Comprehensive industry knowledge of the offshore provider", "Comprehensive experience with IT outsourcing projects", and "Appropriate internal technical knowledge". Here, particularly the considerable differences of the average degrees of relevance granted by the two companies regarding the "Selection of a suitable software component" and the "Definition of project standards" can be traced back to company-specific issues which will be presented in more detail in the following section, dealing with the management of the 29 CSF within the respective organizations.

7.4.3 CSF Management Analysis

In the following, the management activities implemented by PCS and CCS in regard to the 29 identified CSF for OSD projects (see Table 102 and Table 103 in the appendix) are compared to one another. Here, the individual CSF are listed in each of the four CSF groups in the order of their rank within the online survey (compare Table 62).

7.4.3.1 Internal Suitability Factors

Sustained management support (ISF 1): Regarding the securing of a sustained management support during the OSD projects, a similar philosophy exists within the two case studies (compare Table 63). In both cases, members of top management were appointed as project sponsors. Further, a joint project steering committee was created by PCS and CCS. In this context, CCS also established an internal steering committee designated for the internal coordination of the OSD project.

Table 63: Comparison of management activities by PCS and CCS (ISF 1)

Pilot case study	Confirmatory case study
• Determination of managers as project sponsors • Establishment of a mutual steering committee • Scheduling of regular steering committee meetings	• Determination of managers as project sponsors • Establishment of a mutual steering committee • Scheduling of regular steering committee meetings
• Regular alignment of the sourcing strategy with top management	
	• Close and continuous cooperation between the strategic and the operational level • Establishment of an internal steering committee

Standardized and documented processes (ISF 2): Due to a lack of standardized and documented processes in the case of CCS, a comparison regarding this aspect is not possible. However, the numerous management activities implemented by PCS in regard to this CSF reveal the case-specific importance of such processes (compare Table 64).

Table 64: Comparison of management activities by PCS and CCS (ISF 2)

Pilot case study	Confirmatory case study
• Definition of uniform processes • Inclusion of internal process manager • Selection of relevant processes and adaptation of these processes	

Efficient internal organizational structure (ISF 3): Actions taken by the individual companies in respect of their internal organizational structure during the OSD projects revealed some significant differences (compare Table 65): While PCS introduced a central OSD competence center and stressed efficient communication structures by emphasizing a strict process-driven orientation, CCS established an internal steering committee, hereby aiming to remain true to the company's traditional lean management structure.

Table 65: Comparison of management activities by PCS and CCS (ISF 3)

Pilot case study	Confirmatory case study
• Emphasis on process orientation • Ensuring of the efficiency of internal administrative processes • Establishment of a central coordinating center • Preponderance of effective communication structures	
	• Emphasis on a lean corporate structure • Establishment of an internal steering committee

Appropriate internal technical knowledge (ISF 4): In an effort to continuously ensure a sufficient amount of internal technical knowledge, PCS and CCS follow different approaches: In the case of PCS, external consultants were hired to prevent a major dependency on the offshore provider. In contrast, CCS emphasized the importance of internal knowledge carriers (compare Table 66). In order to maintain relevant know-how in house, both companies assigned the provider with the preparation of a comprehensive project documentation.

Table 66: Comparison of management activities by PCS and CCS (ISF 4)

Pilot case study	Confirmatory case study
• Preparation of a comprehensive project documentation	• Preparation of a comprehensive project documentation
• Analysis and definition of core competences • Inclusion of external consultants	
	• Inclusion of internal experts

Comprehensive experience with IT outsourcing projects (ISF 5): No similarities between the two case studies can be identified regarding the role of previous experience with projects in the field of IT outsourcing (compare Table 67). While PCS considers such experience to be an essential ingredient to the success of its OSD projects, CCS feels that prior experience potentially leads to project fatigue. In this context, it must be noted that, contrary to CCS, PCS possesses experience from one nearshore project and some major IT infrastructure outsourcing projects.

Table 67: Comparison of management activities by PCS and CCS (ISF 5)

Pilot case study	Confirmatory case study
• Establishment of an internal knowledge center • Gradual development of experience with OSD projects • Transfer of lessons learned from experiences with national IT outsourcing projects	
	• Exploitation of motivational advantages tied to sparse project experience

International corporate culture (ISF 6): In order to create an international corporate culture, PCS and CCS set their primary focus on language-related aspects. Here, both companies aimed to ensure appropriate English language skills among internal project members. Accordingly, CCS defined English as the primary document language for the OSD project.

Table 68: Comparison of management activities by PCS and CCS (ISF 6)

Pilot case study	Confirmatory case study
• Ensuring of appropriate English language skills	• Ensuring of appropriate English language skills
• Emphasis on openness, respect, and understanding in regard to different mindsets • Encouragement of dealing with a foreign culture	

	• Definition of English as the primary document and secondary corporate language

Beside these language-related aspects, PCS attempted to develop a cultural openness, respect, and understanding among internal project members, for instance, by pointing out culture-related particularities (compare Table 68).

7.4.3.2 *Internal Management Factors*

Definition of clear project goals (IMF 1): The management actions taken by both companies in regard to the definition of project goals clearly demonstrate the cost focus of the companies' OSD projects: For instance, the definition of a project baseline, in the case of PCS, as well as the definition of restrictions on change requests, in the case of CCS. In this context, it is also noteworthy, 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 (compare Table 69).

Table 69: Comparison of management activities by PCS and CCS (IMF 1)

Pilot case study	Confirmatory case study
• Definition of long-term goals	• Definition of short- and long-term goals
• Definition of a project baseline • Development of a sourcing strategy	
	• Definition of restrictions in regard to the handling of change requests • Establishment of a joint understanding regarding the individual goals

Preparation of a detailed project specification (IMF 2): Regarding the preparation of a detailed project specification the two cases reflect different approaches (compare Table 70): While PCS relied on the experience of external consultants, CCS deployed specification templates from the side of its offshore provider. However, both companies decided to resort to the support of offshore employees for the actual development of the specification.

Table 70: Comparison of management activities by PCS and CCS (IMF 2)

Pilot case study	Confirmatory case study
• Refinement of the specification with support of offshore employees working temporarily onsite	• Development of the specification with support of offshore employees working temporarily onsite
• Inclusion of external consultants	

	• Deployment of provider specification templates

Definition of project standards (IMF 3): Making an effort to allow for a smooth collaboration with the offshore provider, both PCS and CCS decided to adopt a selected number of project standards from the side of their respective offshore provider (compare Table 71). Particularly standards addressing project management and documentation were absorbed by both organizations.

Table 71: Comparison of management activities by PCS and CCS (IMF 3)

Pilot case study	Confirmatory case study
• Adoption of selected provider standards	• Adoption of selected provider standards
• Definition of programming guidelines • Definition of project management standards	
	• Definition of English as the primary project language

Early internal change management (IMF 4): In an effort to maintain a high standard of commitment and motivation among employees, a variety of measures regarding internal change management were implemented by both organizations under study (compare Table 72).

Table 72: Comparison of management activities by PCS and CCS (IMF 4)

Pilot case study	Confirmatory case study
• Arrangement of joint excursions with offshore employees • Conduction of user acceptance tests	• Arrangement of collective events with offshore employees located onsite • Conduction of user-acceptance tests
• Launching of an internal website as information pool • Request for internal feedback in regard to the cooperation with the offshore employees • Scheduling of regular informative events	
	• Consideration of the specific user group's willingness to change • Determination of internal contact persons • Early conduction of internal training measures • Early integration of the relevant user communities • Organization of a project kickoff event with key users and project-related IT staff

Concerning change management activities, similarities between PCS and CCS can mostly be identified on an interpersonal level (e. g., the arrangement of joint excursions or collective events with offshore employees). In addition, both companies suggest the regular conduction of user-acceptance tests. Further, in the case of PCS, an internal website, dedicated solely to the company's OSD projects, was implemented as a central source of information, while CCS appointed specific contact persons within its organization, thereby allowing for the circulation of current project developments among employees.

Selection of a suitable software component (IMF 5): Of the two client companies under examination, only PCS conducted a thorough evaluation regarding the selection of a suitable software component for its OSD arrangement (compare Table 73). This can be reasoned by the fact that, in the case of CCS, the software component was already determined prior to the company's decision to engage in OSD.

Table 73: Comparison of management activities by PCS and CCS (IMF 5)

Pilot case study	Confirmatory case study
• Analysis of the risks associated with a software component	• Analysis of project risks
• Analysis and evaluation of the company-specific application portfolio • Examination of the requirements of a software component in regard to data protection and data security • Selection of a smaller, well-defined software project	

Creation of a cultural sensibility among employees (IMF 6): In developing a cultural sensibility among project members, both PCS and CCS carried out numerous measures. In this context, the two companies' individual approaches were almost identical and included, among others, the timely distribution of information concerning the offshore destination as well as the conduction of mutual company visits (compare Table 74).

Table 74: Comparison of management activities by PCS and CCS (IMF 6)

Pilot case study	Confirmatory case study
• Conduction of client and provider visits	• Conduction of client and provider visits
• Integration of offshore employees	• Integration of offshore employees
• Provision of information on the offshore country	• Provision of information on the offshore country
• Selection of an offshore provider with a German and a Swiss subsidiary	• Selection of an offshore provider with a German subsidiary

• Coaching of employees • Reduction of fears in regard to getting in contact with a foreign culture	
	• Development of personal relationships between internal and external project members

Another pivotal aspect in both cases was the fact that the offshore provider was required to exhibit a subsidiary in the client's home country. One aspect which does distinguish CCS from PCS is the latter's emphasis on the continuous coaching of internal and external project members, in an effort to prevent misunderstandings resulting from the cultural differences between the project partners.

Development of a comprehensive business case (IMF 7): In the case of both PCS and CCS, the development of a comprehensive business case mainly consisted of an examination of project -related risks, an estimation of costs, as well as an analysis of the added value delivered by the potential offshoring arrangements (compare Table 75). Regarding cost-related aspects, the focus of the companies differed: While PCS turned its attention towards potential "hidden costs" of its OSD projects, CCS concentrated on the expected payback period of the project.

Table 75: Comparison of management activities by PCS and CCS (IMF 7)

Pilot case study	Confirmatory case study
• Analysis of value added of different options • Estimation of costs and cost saving potentials • Examination of existing benefits and risks	• Analysis of value added of different options • Estimation of costs and payback period • Examination of project-related risks
• Discussion of project goals	

7.4.3.3 External Suitability Factors

High quality of offshore employees (ESF 1): In their effort to guarantee a high level of quality among offshore employees, PCS and CCS alike concentrated on the examination of the individual employees' resumes as well as their project experience (compare Table 76). In the latter context, CCS particularly focused on the employees' experience with relevant technologies (FORTRAN and RPG), while PCS concentrated on their project-specific experience.

Table 76: Comparison of management activities by PCS and CCS (ESF 1)

Pilot case study	Confirmatory case study
• Request for information concerning reference projects of the offshore employees • Review of the individual offshore employees' resumes	• Request for information concerning reference projects of the offshore employees • Review of the individual offshore employees' resumes
• Selection of a major offshore destination and a well-known offshore provider	
	• Selection of an adequately sized provider

Good language abilities of the offshore employees in German and English (ESF 2): The selection of an adequately sized offshore provider by both of the companies under study aimed to ensure a sufficient level of language abilities in English on the side of the provider. To further bridge the language gap, PCS and CCS each assigned a German-speaking offshore employee to work permanently onsite, thereby, functioning as a single point-of-contact for both client and provider employees (compare Table 77).

Table 77: Comparison of management activities by PCS and CCS (ESF 2)

Pilot case study	Confirmatory case study
• Assignment of a German-speaking offshore employee as single point-of-contact	• Assignment of a German-speaking offshore employee as single point-of-contact
• Selection of a major offshore destination and a well-known offshore provider • Selection of the offshore employees in consideration of their language abilities	
	• Review of the individual offshore employees' resumes • Selection of an adequately sized provider

Financial stability of the offshore provider (ESF 3): In order to ensure the financial stability of the offshore provider, PCS and CCS both conducted a pre-selection of adequately sized providers before making their final decision. Here, PCS relied upon NASSCOM's top 20 list of offshore providers. Beside the pre-selection of providers, CCS primarily evaluated the financial stability of the provider's German-based subsidiary, as it would take on a significant role in the impending OSD project (compare Table 78).

Table 78: Comparison of management activities by PCS and CCS (ESF 3)

Pilot case study	Confirmatory case study
• Pre-selection of adequately sized providers	• Pre-selection of adequately sized providers
	• Evaluation of the financial stability of the provider's subsidiary

Standardized and documented processes on provider side (ESF 4): The pilot as well as the confirmatory case study assert that both client organizations relied on standards such as CMM and ISO 9000 in their selection of a suitable offshore provider (compare Table 79). In this context, CCS also examined the provider's willingness to adapt its processes to client-specific requirements.

Table 79: Comparison of management activities by PCS and CCS (ESF 4)

Pilot case study	Confirmatory case study
• Consideration of quality standards	• Consideration of quality standards
	• Adaptation of provider processes to client-specific requirements

Legal and political stability in the offshore country (ESF 5): In assessing the legal and political stability of the potential offshore destinations, PCS and CCS followed a fundamentally similar approach: Both companies conducted a comprehensive risk analysis in regard to potential offshore destination countries (compare Table 80). While CCS's risk analysis primarily aimed to evaluate the offshore provider's ability to relocate work packages to alternate locations within the offshore country in the case of natural disasters, PCS also examined the legal status of IP rights within the examined countries and included both external studies and input from legal experts in its analysis process.

Table 80: Comparison of management activities by PCS and CCS (ESF 5)

Pilot case study	Confirmatory case study
• Conduction of a risk analysis in regard to potential offshore destinations	• Conduction of a risk analysis in regard to potential offshore destinations
• Assessment of offshore destinations by means of external experts and studies • Request for information on IP rights in potential offshore destinations • Selection of a major offshore destination	

Comprehensive industry knowledge of the offshore provider (ESF 6): Regarding the importance of industry-specific knowledge on the side of the offshore provider, both of the organizations under study emphasized the provider's technical abilities over general industry experience. In that respect, information on the provider's reference projects, exhibiting similar technical content, was requested by both PCS and CCS (compare Table 81). Here, PCS also contacted selected reference customers, in an effort to verify the collected information.

Table 81: Comparison of management activities by PCS and CCS (ESF 6)

Pilot case study	Confirmatory case study
• Request for information regarding reference customers and projects	• Request for information regarding reference customers and projects
• Exchange of experiences with reference customers • Request for information regarding project experience of the individual offshore employees	

Suitable company size of the offshore provider (ESF 7): With regard to the corporate size of the offshore provider, both companies under study emphasized the importance of the selection of an adequately sized provider (compare Table 82). Hereby, PCS and CCS aimed to receive an appropriate amount of management attention on the part of the provider.

Table 82: Comparison of management activities by PCS and CCS (ESF 7)

Pilot case study	Confirmatory case study
• Pre-selection of the top providers of an offshore country	• Pre-selection of adequately-sized providers
• Mailing of RFP to similar sized offshore providers	

Geographical closeness of the offshore provider (ESF 8): In regard to the geographical distance between the offshore provider and the client, both of the client organizations chose a similar approach to dealing with this challenge. Accordingly, PCS and CCS stressed the fact that the offshore provider needed to exhibit a subsidiary within their respective home countries, which would act as an interface between the geographically widely distributed project locations (compare Table 83).

Table 83: Comparison of management activities by PCS and CCS (ESF 8)

Pilot case study	Confirmatory case study
• Determination of an offshore employee who works permanently onsite • Selection of an offshore provider with a German and a Swiss subsidiary	• Determination of an offshore employee who works permanently onsite • Selection of an offshore provider with a German subsidiary

7.4.3.4 External Management Factors

Continuous controlling of project results (EMF 1): In the case of PCS and CCS, the constant controlling of project results is tied to fixed milestones and a corresponding staggered payment procedure.

Table 84: Comparison of management activities by PCS and CCS (EMF 1)

Pilot case study	Confirmatory case study
• Agreement on a staggered payment procedure • Conduction of regular tests • Development of prototypes • Maintenance of a query register • Request for regular status reports • Scheduling of regular meetings	• Agreement on a staggered payment procedure • Conduction of regular tests • Early development of prototypes • Maintenance of a query register • Request for regular status reports • Scheduling of regular meetings
• Definition of a detailed project plan	

Continuous user-acceptance tests, weekly status reports, and regularly scheduled steering committee meetings are also emphasized by both companies (compare Table 84). Additionally, one aspect, stressed particularly by CCS, is the early development of prototypes.

Ensuring of a continuous communication flow (EMF 2): In order to secure a constant communication flow and to prevent misunderstandings due to cultural or linguistical barriers, PCS and CCS follow a similar approach: Both companies stress the importance of well-defined communication rules as well as the deployment of a broad communication mix (including e-mail, telephone and video conferences, etc.). Alongside the mentioned similarities, the companies' communication management approaches also revealed some slight differences (compare Table 85): While PCS determined a single point-of-contact on both sides of the project and introduced well-defined communication processes, CCS appointed only one single point-of-contact on the side of the provider and defined an internal and external communication hierarchy.

Table 85: Comparison of management activities by PCS and CCS (EMF 2)

Pilot case study	Confirmatory case study
• Definition of a single point-of-contact on both sides • Definition of communication rules • Deployment of a broad communication mix • Introduction of well-defined communication processes	• Definition of a single point-of-contact on the provider side • Definition of communication rules • Deployment of a broad communication mix • Introduction of an internal and external communication hierarchy
	• Definition of escalation procedures

Composition of an appropriate project team (EMF 3): Regarding the composition of the project team, both companies under study implement a dual-shore model (compare Table 86). Here, even though, a number of similarities can be identified, the exact implementation of this model varies in several aspects between PCS and CCS: While both companies determined high-rank project sponsors, single points-of-contact, as well as one project manager on both client and provider side, PCS further included external consultants in the preparation of its OSD projects. In the case of CCS, the company further appointed an internal IT coordinator, representing the different user communities, and divided the offshore developers into smaller teams.

Pilot case study	Confirmatory case study
• Definition of project roles • Implementation of a dual-shore model • Selection of an appropriate employee as project manager on the part of the client	• Definition of project roles • Implementation of a dual-shore model • Selection of an appropriate employee as project manager on the part of the client
• Determination of the project manager on the part of the provider as overall project manager • Inclusion of external consultants	
	• Assignment of a project coordinator with intercultural experience on the side of the provider • Determination of an internal IT coordinator • Integration of the various user communities • Segmentation of the offshore programming team into subproject teams

Creation of a partnership-like relationship (EMF 4): In attempting to create a partnership-like relationship with the offshore provider, both case studies suggest the definition of a joint steering committee (compare Table 87). Furthermore, both organizations encourage the scheduling of mutual company visits. In regard to dealing with potential conflicts, PCS emphasized trust and bilateral transparency in order to prevent conflicts and build long-term relationships, while CCS stressed the need for independent mediators in the case of conflict. Despite their more distant approach, CCS did include a partnership clause in its agreement with the offshore provider. In this context, PCS concluded a master agreement with the offshore provider, giving it the status of a preferred supplier.

Pilot case study	Confirmatory case study
• Definition of a joint project steering committee	• Definition of a joint project steering committee
• Conclusion of a master agreement • Creation of transparency on both sides	

• Development of trust through pilot projects • Emphasis on give-and-take • Scheduling of mutual company visits	
	• Agreement on the deployment of independent mediators in the case of a conflict • Collective discussion of project goals • Endorsement of the offshore provider in regard to any future acquisitions of project partners • Incorporation of a partnership clause within the agreement

Establishment of an efficient IT infrastructure (EMF 5): Within the establishment of an efficient IT infrastructure, both case studies emphasized the definition of a common environment for development, integration, and testing tasks. In addition, the need for comprehensive security measures (e. g., definition of access rights, installation of firewalls and VPN) was mentioned in both studies (compare Table 88). Further requirements of an efficient IT infrastructure included the establishment of a high-speed network between the project locations (in the case of PCS) and the installation of supportive software tools (in the case of CCS).

Table 88: Comparison of management activities by PCS and CCS (EMF 5)

Pilot case study	Confirmatory case study
• Definition of a common development, integration, and testing environment • Definition of a comprehensive security infrastructure	• Definition of a common development, integration, and testing environment • Definition of a security infrastructure
• Deployment of standard platforms • Offering of an appropriate work environment for offshore employees working temporarily onsite • Provision of an efficient network infrastructure	
	• Ensuring of 24/7 support • Installation of a document management system • Installation of MS NetMeeting

Ensuring of a bilateral know-how transfer (EMF 6): Both companies under study supported the bilateral transfer of know-how by introducing a shared database for relevant project data, as well as by commissioning the offshore provider to prepare a comprehensive technical project documentation (compare Table 89).

Table 89: Comparison of management activities by PCS and CCS (EMF 6)

Pilot case study	Confirmatory case study
• Maintenance of a database with relevant project documents • Preparation of a comprehensive technical project documentation through the offshore provider	• Maintenance of a document management system • Preparation of a comprehensive technical project documentation through the offshore provider

Definition of an accurate contract (EMF 7): Concerning the accuracy of the OSD contract, particularly CCS aimed to minimize the room for interpretations by clearly defining the project scope, milestones, and corresponding responsibilities, as well as paying significant attention to the definition of contractual penalties (compare Table 90). Due to the geographical distance of the offshore provider, the conclusion of the contract with the provider's subsidiary was considered very important by PCS and CCS alike.

Table 90: Comparison of management activities by PCS and CCS (EMF 7)

Pilot case study	Confirmatory case study
• Conclusion of contract with the offshore provider's Swiss subsidiary	• Conclusion of contract with the offshore provider's German subsidiary
• Agreement on a lean contract structure • Formulation of project-specific working orders • Use of a standard contract	
	• Agreement on contractual penalties • Detailed description of the project scope and individual responsibilities

Face-to-face meetings with the offshore provider on a regular basis (EMF 8): Regarding the conduction of face-to-face meetings between the project partners, both companies under study highlighted identical aspects. Most notably these include the weekly performance of project status meetings with the onsite coordinator of the offshore provider, monthly scheduled steering committee meetings, as well as mutual company visits (compare Table 91).

Table 91: Comparison of management activities by PCS and CCS (EMF 8)

Pilot case study	Confirmatory case study
• Monthly conduction of a steering committee meeting • Scheduling of mutual company visits • Weekly conduction of a project status meeting	• Monthly conduction of steering committee meetings • Scheduling of mutual company visits • Weekly conduction of a project status meeting

7.5 Discussion

Based on the conduction of two in-depth case studies, one with a Swiss large-scale (PCS) and another with a German medium-sized enterprise (CCS), we analyzed the relevance and the management of our list of 29 CSF for OSD projects within the respective organizational contexts.

Regarding the **CSF relevance**, both PCS and CCS considered the CSF "Definition of an accurate contract" and "Definition of clear project goals" most critical for the successful implementation of their respective OSD projects. In this context, PCS further emphasized the "High quality of offshore employees", while CCS dwelled on the significance of an "Appropriate internal technical knowledge" and the "Composition of an appropriate project team". In contrast, the CSF viewed as less relevant by PCS and CCS most notably included the "Creation of a cultural sensibility among employees". Here, the low rank attributed to the CSF "International corporate culture" by both companies confirmed the minor relevance of cultural aspects in the two organizational contexts under study.

With respect to the two-dimensional CSF model which divides the CSF into internal suitability, internal management, external suitability, and external management factors, the relevance of these four CSF groups varied between PCS and CCS: While PCS considered internal and external CSF to be equally relevant to the success of its OSD projects, CCS declared the external factors as more important. In regard to suitability and management factors, the latter were granted a higher degree of relevance by both companies under study. These management factors, in turn, are balanced internally and externally in the case of PCS, while external management factors clearly outweigh internal management factors in the case of CCS.

In regard to the **CSF management**, the two companies under examination implemented a variety of similar management activities in an effort to give consideration to the individual CSF. The corresponding actions, taken by PCS and CCS, can be classified into the four categories suggested by the CSF model:

Regarding management activities related to *internal suitability factors*, a number of measures were confirmed by both case studies. These included the preparation of a comprehensive project documentation in an attempt to maintain technical know-how in-house, the emphasis of English language skills among internal project members, and the appointment of top management representatives as project sponsors. The latter aimed to ensure continuous management support.

In terms of *internal management factors*, PCS and CCS distributed information on the offshore destination in an effort to develop a certain degree of cultural sensibility among their employees. With regard to project standards, both companies adopted provider standards addressing project management and documentation. Considering the business case, PCS and CCS evaluated project-related risks, conducted an in-depth cost analysis, and examined the added value brought forth by the potential offshore arrangements. Further, the regular conduction of user-acceptance tests as well as the integration of offshore employees for the task of developing a project specification was confirmed by both case studies.

Beside the mentioned similarities between the two companies under study in regard to the management of *internal CSF*, it became evident that PCS dedicated a greater amount of management effort to the preparation of its OSD projects. In this context, several management activities conducted exclusively by PCS deserve particular mention: Regarding internal suitability factors, especially the establishment of a centrally located OSD competence center as well as the selection and the adaptation of process standards relevant to the OSD project stand out. In addition, with regard to internal management factors, PCS emphasized the continuous coaching of internal project members in order to prevent misunderstandings, the development of a clear sourcing strategy, the introduction of an internal website dedicated exclusively to the OSD projects, the thorough evaluation of offshore candidates, as well as the inclusion of external consultants in the preparation of a detailed project specification. This considerably higher amount of management attention in regard to internal factors could possibly be traced back to PCS's greater experience with IT outsourcing projects in general as well as its internal corporate structure, resulting from its larger company size.

In consideration of the *external suitability factors* suggested by the CSF model, both PCS and CCS conducted a pre-selection of adequately sized offshore providers, hereby aiming to receive the desired amount of management attention. With regard to the selection of the offshore provider, particular emphasis was laid on reliable information in regard to quality standards, technical abilities, reference projects, and project experience on the part of the provider and its individual employees respectively. Further, both organizations required the offshore provider to possess a subsidiary located in their respective home countries. In addition, PCS and CCS each conducted a comprehensive risk analysis in regard to the legal and political stability within the offshore destination country.

Finally, in regard to the *external management factors*, PCS and CCS implemented a dual-shore model, thereby determining a single point-of-contact at the client location as well as project managers on the client and the provider side. In addition, aiming to ensure an efficient IT infrastructure, both companies defined numerous security measures and a common environment for development, integration, and testing tasks. This was further enhanced by the introduction of a shared database for relevant project documents. To ensure a bilateral know-how transfer, both OSD clients commissioned the offshore provider to prepare a comprehensive technical project documentation. In an attempt to create a partnership-like relationship with the offshore provider, PCS and CCS each established a joint steering committee and enforced mutual company visits, particularly during the early stages of their respective offshore arrangements. In close relation to this partnership aspect, both organizations made an effort to maintain a continuous communication flow by stressing the deployment of a broad communication mix and the determination of well-defined communication rules. Regarding the monitoring of project results, both companies relied on the agreement of a staggered payment procedure and the conclusion of an accurate contract, exhibiting the project scope as well as fixed milestones and associated responsibilities. Other management activities in this context included the early development of prototypes, the performance of weekly status reports, and the scheduling of monthly steering committee meetings.

In conclusion, it can be summarized that the (external) management factors are particularly relevant for the successful implementation of an OSD project, and, therefore, require a considerably higher management effort. This is also confirmed by the multitude of management activities taken in regard to these CSF within both case studies as well as the results of the conducted online survey (compare chapter 6).

Chapter 8

Conclusions

Chapter Contents: This chapter first outlines the answers to the research questions addressed (*8.1 Research Questions Addressed*) and evaluates the trustworthiness of the research results (*8.2 Trustworthiness*). Following, it discusses the limitations of the research project (*8.3 Limitations*) and summarizes the contributions of this thesis (*8.4 Contributions*). Finally, the chapter looks at possible future developments of the German IT offshoring market as well as potential impacts of these developments on the German economy (*8.5 Outlook*).

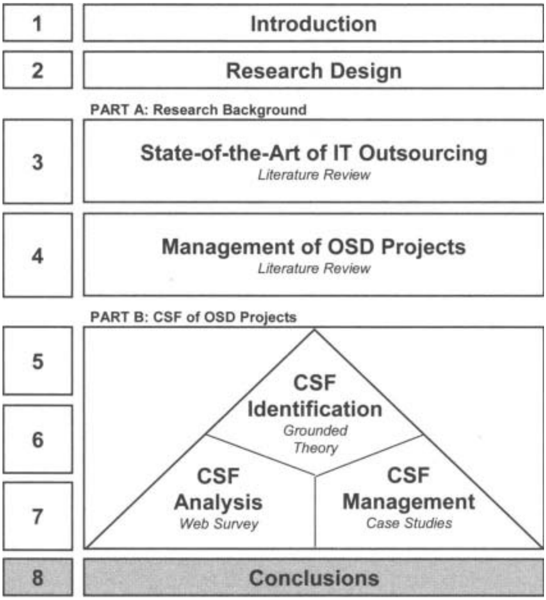


Figure 54: Thesis roadmap – Conclusions (chapter 8)

8.1 Research Questions Addressed

In order to provide a substantiated basis for the examination of the CSF for OSD projects, the *first part* of the doctoral thesis at hand analyzed the **state-of-the-art of IT outsourcing** in general as well as the **management of OSD projects** in particular. By providing background information, thereby delimiting OSD to other fields of IT outsourcing, as well as by presenting a management framework for OSD projects, this part aimed to place our research in context. Here, it became apparent that, up to now, only little research has been carried out in regard to IT offshoring and OSD. Furthermore, the comprehensive list of management activities, which need to be considered within an OSD project, clarified the demand for the identification and the examination of those factors significantly influencing the successful implementation of an OSD project.

Based on the results of this more general first part, the *second part* of the doctoral thesis concentrated on the **identification**, the **analysis**, and the **management of CSF for OSD projects**. In this context, the section at hand summarizes the answers to the research questions of the doctoral research project presented in section 2.3.1.

1. CSF Identification: *Which CSF do companies have to consider when implementing OSD projects?*

Based on the conducted literature review, 22 interviews with experts in the field of OSD, and the comparison of the developed CSF list with the content of related studies, a **CSF model** for the successful implementation of OSD projects, consisting of 29 CSF, was able to be developed from the perspective of German-speaking clients. Within this model, the CSF are classified along the dimensions "internal vs. external factors" and "static vs. dynamic factors", enabling us to assign each CSF to one of the following four CSF groups: Internal suitability, internal management, external suitability, and external management factors. In this context, the aggregated examination of the number of mentions within the expert interviews already indicated the importance of the management factors, and here, particularly, the importance of the external management factors. In regard to the number of times the individual CSF were mentioned, it became apparent that the five most frequently mentioned CSF all represent management factors. These are (sorted by their total number of mentions): "Creation of a partnership-like relationship", "Ensuring of a continuous communication flow", "Face-to-face meetings with the offshore provider on a regular basis", "Preparation of a detailed project specification", and "Creation of a cultural sensibility among employees". Regarding these five factors, the dominance of the CSF „Creation of a partnership-like relationship" between the project partners was remarkable, as it was mentioned nearly twice as often as the second most frequently mentioned factor.

In conclusion, it can be summarized that the CSF for OSD projects can be classified into internal and external factors as well as suitability and management factors. In this context, the (external) management factors seem to be of particular importance for the successful implementation of an OSD project.

2. CSF Analysis: *Which of the identified CSF are particularly relevant in which OSD project contexts, which of these CSF are specific for which OSD project phases, and in which time frame can these CSF be influenced?*

Based on the conduction of an online survey with 103 representatives of German-speaking companies as well as the application of statistical procedures, we were able to analyze our list of 29 CSF in regard to its relevance, phase specificity, and level of influence. In this context, we examined all three analysis aspects both in general (incorporating the answers of all participants) and in respect of selected analysis dimensions (only incorporating the answers of the respective participant groups). For the latter, we classified the participants along nine dimensions and examined the significance of the assessment differences between the individual participant groups (if statistically applicable).

Regarding the **relevance**, the results of our online survey show that the participants consider the CSF "Definition of clear project goals", "Continuous controlling of project results", "Ensuring of a continuous communication flow", and "High quality of offshore employees" most critical to the success of an OSD project. In addition, with regard to our two-dimensional CSF model, it becomes apparent that the external management factors represent the most relevant CSF group, followed by the internal management factors. In contrast, the participants of the online survey assessed the suitability factors in general as less relevant for the successful implementation of an OSD project. In terms of assessment differences between individual participant groups, we particularly found considerable differences within the analysis dimension "company perspective". Within this dimension, the relevance ratings of 13 of the 29 CSF differ statistically significantly from one another. This by far presented the highest number of significant assessment differences within one dimension.

With regard to the **phase specificity**, it can be summarized that the great majority of the identified CSF can be classified as cross-phase (20 factors). According to the participants of the online survey, five of the 29 CSF are specific for the planning and analysis phase, while three CSF are specific for the implementation phase. In contrast, only one CSF was categorized as specific for the decision and negotiation phase of an OSD project. In consideration of assessment differences between OSD clients, providers, and consultancies, it became apparent that the respective participants groups assigned two CSF to different project phases. While OSD clients and consultancies predominantly classified the "Appropriate internal technical knowledge" and the "Definition of project standards" as cross-phase, the majority of the OSD providers assigned these CSF to the planning and analysis phase.

In regard to the **level of influence**, it can be observed that the majority of the 29 CSF is regarded as influenceable in the short-term (12 factors). According to the participants, eight and five CSF respectively can be influenced in the medium- and in the long-term respectively. On the contrary, only four CSF were categorized as not or rather conditionally influenceable. The corresponding factors can only be influenced indirectly, for instance, by the selection of the offshore provider or country respectively.The analysis of the assessment differences between the three company perspectives again clarified the different perceptions of our CSF list by the respective participants groups. In total, these groups assigned ten of the 29 CSF to different levels of influence.

In conclusion, it can be summarized that the following seven CSF are particularly relevant for the successful implementation of an OSD project, and, therefore, require a considerably higher management attention: The "Definition of clear project goals", the "Continuous controlling of project results", the "Ensuring of a continuous communication flow", the "High quality of offshore employees", the "Good language abilities of the offshore employees in German and English", the "Composition of an appropriate project team", and the "Preparation of a detailed project specification". The high relevance of these seven CSF is also confirmed by the group-specific CSF rankings in regard to the nine analysis dimensions. Even though, not all of the mentioned CSF are OSD-specific (e. g., the "Definition of clear project goals"), the relevance of these more general factors seems to increase in the OSD context. In addition, the online survey verified the particularly high importance of external and internal management factors. Further, it has to be emphasized that the perception of the individual CSF heavily depends on the company perspective.

3. CSF Management: *How can companies influence the identified CSF in practice?*

Based on the conduction of two in-depth case studies, one with a Swiss large-scale (PCS) and another with a German medium-sized enterprise (CCS), we analyzed the relevance and the management of our list of 29 CSF for OSD projects within the respective organizational contexts.

Regarding the **relevance**, both PCS and CCS considered the CSF "Definition of an accurate contract" and "Definition of clear project goals" to be most critical for the successful implementation of their respective OSD projects. In contrast, the CSF viewed as less relevant by PCS and CCS most notably included the "Creation of a cultural sensibility among employees". Here, the low rank attributed to the CSF "International corporate culture" by both companies confirmed the minor relevance of cultural aspects in the two organizational contexts under study. With respect to our two-dimensional CSF model, the higher relevance of management factors was confirmed by both companies under study. These management factors, in turn, are balanced internally and externally in the case of PCS, while external management factors clearly outweigh internal management factors in the case of CCS.

In regard to the **management**, the two companies under examination implemented a variety of similar management activities in an effort to give consideration to the individual CSF. The corresponding actions, taken by PCS and CCS, can be classified into the four categories suggested by the CSF model: Regarding management activities related to *internal suitability factors*, these included the preparation of a comprehensive project documentation, the emphasis of English language skills among internal project members, as well as the appointment of top management representatives as project sponsors. In terms of *internal management factors*, both companies distributed information on the offshore destination among their employees, adopted provider standards addressing project management and documentation, and, in consideration of the business case, evaluated project-related risks, conducted an in-depth cost analysis, and examined the added value brought forth by the potential offshore arrangements. Further, the regular conduction of user-acceptance tests as well as the integration of offshore employees for the task of developing a project specification was confirmed by both case studies. In consideration of *external suitability factors*, both PCS and CCS conducted a preselection of adequately sized offshore providers and emphasized the need for reliable information in regard to quality standards, technical abilities, reference projects, and project experience. In addition, both organizations required the offshore provider to possess a subsidiary located in their respective home countries and conducted a comprehensive risk analysis in regard to the legal and political stability within the offshore destination country. Finally, in regard to *external management factors*, PCS and CCS implemented a dual-shore model, defined numerous security measures as well as a common environment for development, integration, and testing tasks, commissioned the offshore provider to prepare a comprehensive technical project documentation, established a joint steering committee, enforced mutual company visits, made an effort to maintain a continuous communication flow, agreed on a staggered payment procedure, and concluded an accurate contract. Furthermore, both companies stressed the early development of prototypes, the performance of weekly status reports, and the scheduling of monthly steering committee meetings.

Beside the mentioned similarities between the two companies under study, it became evident that PCS dedicated a greater amount of management effort to *internal CSF*. In this context, several management activities conducted exclusively by PCS deserve particular mention: Regarding internal suitability factors, especially the establishment of a centrally located OSD competence center as well as the selection and the adaptation of process standards relevant to the OSD projects stand out. In addition, with regard to internal management factors, PCS emphasized the continuous coaching of internal project members, the development of a clear sourcing strategy, the introduction of an internal OSD project website, the thorough evaluation of offshore candidates, as well as the inclusion of external consultants in the preparation of a detailed project specification. This considerably higher amount of management attention in regard to internal factors could possibly be traced back to PCS's greater experience with IT outsourcing projects in general as well as its internal corporate structure, resulting from its larger company size.

In conclusion, it can be summarized that the (external) management factors are particularly relevant for the successful implementation of an OSD project, and, therefore, require a considerably higher management effort. This is also confirmed by the multitude of management activities taken in regard to these CSF within both case studies as well as the results of the conducted online survey (compare "*2. CSF Analysis*").

8.2 Trustworthiness

In qualitative research, there is an enthusiastic discussion on the requirements of validity and reliability. According to Pulkkinen (2004), some researchers argue that "*these traditional measures (...) are not applicable at all in qualitative research because of the nature of the methods and epistemological assumptions of the research*". However, Gibbs (2002) emphasizes that the issue of trustworthiness cannot be disregarded in qualitative research. Therefore, within this section, we discuss the trustworthiness of the research results of the doctoral thesis at hand, thereby referring to Guba and Lincoln's (1985) evaluation criteria introduced in section 2.4: Credibility, transferability, dependability, and confirmability (compare Table 92).

Table 92: Trustworthiness of the doctoral research project

Evaluation criteria	Research action
Credibility	**CSF Identification** (*Grounded Theory*): • Literature review over a period of six months • Conduction of expert interviews over a period of three months • Input from 22 participants during data collection • Consideration of different perspectives during data collection
	CSF Analysis (*Web Survey*): • Literature review over a period of one month • Mailing of requests for participation to 247 employees of German-speaking companies working in the OSD field and 974 companies located in Austria, Germany, or Switzerland • Conduction of a survey over a period of two months • Input from 103 participants during data collection • Consideration of different perspectives during data collection
	CSF Management (*Case Studies*): • Literature review over a period of one month • Preparation of case studies over a period of three months • Conduction of two case studies (pilot and confirmatory case study) over a period of two months • Input from 5 participants (pilot case study) and 5 participants respectively (confirmatory case study) during data collection • Analysis of project documentation over a period of one month • Consideration of different perspectives during data collection

Transferability	**CSF Identification** (*Grounded Theory*): • Description of the research context • Inclusion of findings from literature review • Representation of theoretical model by data from all perspectives
	CSF Analysis (*Web Survey*): • Transfer of findings from "CSF Identification" • Description of the research context • Inclusion of findings from literature review • Representation of theoretical findings by data from all perspectives
	CSF Management (*Case Studies*): • Transfer of findings from "CSF Identification" and "CSF Analysis" • "Thick" description of the research context within both case studies • Inclusion of findings from literature review • Representation of theoretical findings by data from all perspectives
Dependability	**CSF Identification** (*Grounded Theory*): • Use of all categories emerging from the data • Auditing research process by the doctoral supervisor
	CSF Analysis (*Web Survey*): • Use of all categories emerging from the data • Auditing research process by the doctoral supervisor
	CSF Management (*Case Studies*): • Use of all categories emerging from the data • Auditing research process by the doctoral supervisor
Confirmability	**CSF Identification** (*Grounded Theory*): • Comparison with the results of the literature review • Verification of initial interpretations with the participants • Inclusion of feedback provided by the participants • Comparison with the results of related studies
	CSF Analysis (*Web Survey*): • Application of measures for ensuring statistical data representativity
	CSF Management (*Case Studies*): • Verification of initial interpretations with the participating companies • Inclusion of feedback provided by the companies • Comparison of the results of the two case studies

As illustrated in the table above, regarding the *credibility* of the research results of the doctoral thesis at hand, we carried out a comprehensive literature review on both IT outsourcing in general and CSF of IT outsourcing projects in particular over a time period of more than one year, conducted more than 30 expert interviews, an online survey with more than 100 participants, as well as two case studies, and considered different perspectives during data collection. In terms of the *transferability* of the research results, we provided a detailed description of the research contexts, included our findings from the conducted literature reviews, transferred findings from previous research phases, and paid attention to the fact that our results are represented by data from all perspectives. In consideration of the *dependability* of the results, we used all categories emerging from the data and regularly aligned the further research process. Finally, in regard to the *confirmability* of the research results of this thesis, we compared our results with those of the literature reviews and related studies respectively, verified our initial interpretations with the corresponding participants as well as included their feedback, and applied statistical measures.

For these reasons, we believe that the results of the doctoral research project are also applicable for the implementation of OSD projects in other organizational contexts than those already involved in this research project. Here, as indicated in Table 92, particularly the application of different research methods (method triangulation) as well as the use of different data sources (data triangulation) increases the robustness of our research results.

In regard to the trustworthiness of the research results, a major issue represents the translation of the interview transcripts from German to English, as we documented all interviews in their native language. However, we are aware that this translation may cause some biases. In this context, we agree with Esteves (2004) that we have to reaffirm "*what we saw, heard or experienced about the phenomenon*" (p. 265).

8.3 Limitations

In regard to the presented doctoral research project, several limitations have to be mentioned. One clear limitation of the doctoral thesis at hand is that we have focused on the identification, the analysis, and the management of CSF for OSD projects. In this context, we identified 29 factors critical for the success of an OSD project from a German-speaking client perspective, analyzed the relevance, the phase specificity, and the level of influence of the identified CSF, as well as examined how companies deal with these CSF in practice. However, our research results are not or rather conditionally suitable for answering the following, more advanced research questions: "How do the identified CSF correlate with one another?" and "How can these CSF be measured?"

Furthermore, with regard to the CSF identification, it has to be noted that, with 29 factors, the number of the identified CSF is quite large. According to Esteves (2004), in an attempt to examine all of these factors in more detail, a longer period of time would be necessary "*than the time available for a doctoral thesis realization. Each CSF study could easily be a doctoral thesis topic.*" (p. 266)

In regard to the CSF analysis, some limitations exist in regard to the statistical interpretation of the collected data: Within three of the nine analysis dimensions, the participants of the online survey 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. Due to these interdependencies, we were not able to analyze the significance of assessment differences within the respective dimensions. In addition, due to the use of nominal assessment scales within the CSF phase specificity and the CSF level of influence analysis, we were not allowed to employ more sophisticated statistical procedures in regard to these two analysis aspects. Furthermore, the relatively small sample size complicated the generation of data clusters. For this reason, we were not able to conduct multidimensional analyses.

With respect to the CSF management, one main limitation is that, in an effort to analyze management practices in regard to the identified CSF, we have only conducted two case studies. In this context, additional research is necessary in order to verify the CSF management analysis presented in this thesis. In addition, the development of integrated management methods and tools for the identified CSF or clusters of those was not part of this doctoral research project. Here, the developed CSF list and the proposed CSF classification could serve as a starting point for the development of such methods or tools.

8.4 Contributions

The research results of the doctoral thesis at hand aim to create a deeper understanding of successful project management in the realm of OSD. In this context, the major research goal is to support German-speaking clients in the successful implementation of OSD projects: Companies, which have not yet implemented such a project, shall be able to benefit from our research results in order to avoid typical mistakes in their initial projects. Companies, already in possession of OSD experience, shall be given the opportunity to compare their experiences with the results of our research project as well as to align their activities within ongoing OSD projects according to our results.

The specific contributions of this thesis are:

- **A CSF model:** This model can support managers with the successful implementation of an OSD project.
- **CSF relevance schemes:** These schemes can help managers to focus their activities on a limited number of factors which are most critical within their project context, and, therefore, require particularly careful management attention.
- **CSF project phase specificity schemes:** These schemes can help managers to concentrate their activities on areas which are specific for the current or upcoming phase of their OSD projects.
- **CSF level of influence schemes:** These schemes can help managers to coordinate their management activities over the course of an OSD project.
- **A CSF relevance and management analysis in two organizational contexts:** This analysis enables managers to compare or align their management activities within an OSD project to those emphasized by the two companies under study.

Along with these primarily practical contributions, the results of the thesis also aim to provide a basis for further research with regard to the CSF of IT projects in general. In this context, Krcmar et al. (2004) state that CSF research comprises the identification and the examination of influencing factors that explain the success of a company or a project. However, CSF research in practice is often limited to the identification of CSF (e. g., Kuang, Lau, and Nah, 2001). Only a few researchers also analyze the identified factors in more detail, for instance, the relevance of these factors in general (e. g., Esteves and Pastor, 2000) or across different implementation stages (e. g., Nelson and Sumers, 2001). Further, only little research is conducted following a more holistic approach, including the identification of CSF, the analysis of CSF in different project contexts, as well as the management of these factors.

Altogether, the widespread focus on CSF identification and the great variety of research approaches applied for CSF research leads to confusion on how to carry out systematic research in this field. Therefore, in order to promote a unified agenda for CSF research, we derived lessons learned from the CSF research project presented within this doctoral thesis and a second CSF research project in the field of portal engineering (Remus, 2006). In general, both research projects can be broken down into four phases: Literature review, CSF identification, CSF analysis, and CSF management (also compare Esteves, 2004).

By comparing both CSF research projects, we were able to draw the following conclusions: First, CSF research should not be limited to the identification stage. Rather, it should be extended to CSF analysis and management. Thus, the proposed research agenda can be seen as a first step towards a more holistic and systematic approach in CSF research. Second, we recommend the use of a multi-method research approach. According to Bonoma (1985), the application of different methods for data collection and analysis provides a wider range of coverage that may result in a deeper understanding of the unit under study. In addition, by using multiple research methods, the cross-validation of the data obtained by the different methods (method triangulation) can increase the robustness of the research results. Third, based on the four-phase approach for CSF research, we were able to derive lessons learned for each individual research phase (compare Table 93).

Table 93: Lessons learned in CSF research

Research phase	Key lessons learned
Literature review	• Conduct both a literature review on the research field in general and a literature review on CSF research in this field as a basis for the upcoming research phases • Focus on key IS conferences and journals within the literature review • Conduct additional explorative interviews depending on the maturity of the research domain
CSF identification	• Include different stakeholders during data collection • Use all categories emerging from the data • Classify CSF by typical CSF dimensions • Use Grounded Theory to develop a CSF model • Integrate the results of the conducted literature review • Compare the derived CSF model with similar models in other IS fields
CSF analysis	• Execute a quantitative web survey • Consider the results of the conducted literature review when designing the survey

	• Include different stakeholders during data collection • Define relevant project contexts for analysis purposes • Analyze the relevance, the project phase specificity, and the level of influence of the identified CSF • Conduct a multivariate cluster analysis
CSF management	• Conduct a comprehensive literature review on management activities in regard to the identified CSF • Use multiple case studies • Provide a "thick" description of the research context • Include different stakeholders and data sources during data collection • Analyze the collected data by means of the coding procedure • Compare the conducted case studies to one another • Compare management activities proposed in literature with the activities mentioned within the case studies

Taking into consideration our lessons learned in CSF research presented above, we believe that researchers can enhance the trustworthiness of their research. In this context, we refer to the trustworthiness criteria of qualitative research, introduced by Guba and Lincoln (1985): Credibility, transferability, dependability, and confirmability (compare section 2.4). With regard to these criteria, our CSF research approach improves the trustworthiness of the research results, for instance, by proposing the inclusion of different stakeholders and data sources during data collection (*credibility*), the integration of findings from the conducted literature review (*transferability*), the use of all categories emerging from the data (*dependability*), and the comparison of the derived CSF model with similar models in other IS fields (*confirmability*).

Finally, in an effort to provide a basis for further research with regard to the CSF of OSD projects in particular, we have outlined areas of future research, including, for instance, the comparison of the CSF to those of OSD projects in other nations, the analysis of interrelations between the CSF, the definition of KPI for the CSF, as well as the development of integrated management methods and tools for the CSF, and hope that this thesis will encourage research in these areas.

8.5 Outlook

Although the German IT offshoring market is still relatively small compared to the total German employment, IT offshoring is likely to increase in the future as particularly labor-intensive IT services (e. g., software development services) can be produced more cheaply in low-wage countries like India or Russia. This development was primarily enabled by reduced telecommunication costs and technological advances (e. g., the Internet).

Currently, it is still unknown whether German companies have any other alternative but to follow the offshore trend in the near future (Buchta et al., 2004). Companies, which choose to forego purchasing services in low-wage countries, may no longer be competitive in terms of price and quality. Therefore, the inclusion of offshore services could turn out to be an essential requirement for becoming or remaining a successful player in a globalized market.

According to an empirical study by Eichelmann et al. (2004), European countries generally benefit from this growing trend towards IT offshoring, even though negative influences have to be taken into account. In respect of their research, potential positive effects on the German economy are: Increased competitiveness, lower prices, repatriated earnings, increased market share of service exports, etc. These benefits have to be confronted with potential negative effects on the domestic economy: Increased dependency on imports, job losses, downward pressure on wage levels, etc.

In summary, Schaaf (2004) predicts positive effects on the German economy through IT offshoring. Although offshoring will displace some workers, who may also experience lasting economic losses, it is not likely that offshoring will lower Germany's employment in the long run. In fact, IT offshoring has the potential to improve the average standard of living by moving displaced workers into more sophisticated jobs and by protecting existing jobs.

However, in order to benefit from IT offshoring, decisive structural reforms have to be launched in Germany. In this context, according to Schaaf (2004), appropriate actions by Germany's political leaders are necessary. Positive long term effects can be expected if German policy makers succeed in changing the structural conditions responsible for Germany's inability to create new jobs. Possible measures for this include: Reforming the educational system, improving the flexibility of the labor market, loosening product market regulations, and refocusing on innovation (Buchta et al., 2004). Additionally, policy makers should ease the movement of resources from industries which are losing to international competition towards industries which are gaining (Garner and Schwartz, 2004).

Finally, it has to be emphasized that IT offshoring is more than a temporary fashion, but rather a result of global restructuring (Farrell, 2004b). Therefore, according to Boes (2004), it does not make sense to consider offshoring apart from other current developments. In fact, it must be seen as a part of the worldwide restructuring process which is currently taking part. Even though, this process will create new challenges for employers, employees, policy makers, researchers, etc. in Germany (Boes and Schwemmle, 2004), Farrell (2004a) regards IT offshoring as an important opportunity for the German nation, and not as an economic threat. However, as a precondition, Germany's political leaders have to take corresponding actions in order to prepare Germany for a globalized economy. Countries like the United States are already prepared, now it is Germany's turn to catch up.

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Appendix A – Annotated Bibliography

Classification Matrix

In an effort to develop an **annotated bibliography on IT outsourcing research**, Table 94 classifies the 182 publications, identified within the literature review outlined in section 3.4, along the dimensions "research field" (IT outsourcing, IT offshoring, and OSD) and "content category" (contract, culture, decision, environment, organization, performance, relationship, strategy, and others). Within each field of the matrix, the corresponding publications are sorted in alphabetical order.

Table 94: Annotated bibliography on IT outsourcing research

		Research field		
		IT outsourcing	**IT offshoring**	**OSD**
Content category	Contract	**First choice:** Aranda, Aranda, Demirkan, Goul, and Soper (2005), Aubert, Corbitt, and Rouse (2001), Aubert, Dussault, Patry, and Rivard (1999), Aubert, Houde, Patry, and Rivard (2003), Barua, Susarla, and Whinston (2002), Beulen and Ribbers (2003), Chen (2005), Dharwadkar and Vitharana (2002), Kern and Willcocks (1999), Singh and Walden (2003)	**First choice:** -	**First choice:** -
		Second choice: -	**Second choice:** -	**Second choice:** -
	Culture	**First choice:** -	**First choice:** Bu and King (2003), Krishna et al. (2004)	**First choice:** Kim and Meso (2005), Walsham (2002)
		Second choice: -	**Second choice:** -	**Second choice:** Corbitt and Hanisch (2004) (*Organization*)

Decision	**First choice:** Agrawal, Kishore, and Rao (2000), Agrawal, Kishore, and Rao (2001), Amberg, Schröder, and Wiener (2005), Ang and Straub (1998), Aubert and Roy (2000), Babbitt, Burke, and Karhade (2004), Badii (1998), Beck, Nauss, Smith, and Subramanian (2001), Benamati and Rajkumar (2001), Benamati and Rajkumar (2003), Birkin, Gill, and Steigner (2002), Bødker (2002), Chan, Gorla, and Oswald (2002), Chen, Houston, Watson, and Yao (2003), Davis (2005), Dayasindhu (2004), Daylami, Olfman, Ryan, and Shayo (2005), Dertz, Hu, and Moe (2003), Falaleeva (2003), Günther and Tamm (2000), Haried and Zahedi (2004), Heart, Pliskin, and Tractinsky (2004), Hirschheim, Jayatilaka, and Schwarz (2002), Hirschheim and Lacity (2000), Hitt and Snir (1999), Huang, Lee, and Miranda (2004), Kern and Kreijger (2001), Kishore, Randeree, and Rao (2005), Louvieris and Sourenkova (2005), Mårtensson (2001), Morabito (2003), Munoz (2003), Nagpal (2004), Plant and Willcocks (2004), Ross and Weill (2002), Yoo (2005)	**First choice:** Ge and Konana (2004), Haried and Nazareth (2005)	**First choice: -**
	Second choice: Abbas, Dart, Kazmierczak, and O'Brien (1998) (*Strategy*), Farag and Krishnan (2003) (*Strategy*)	**Second choice: -**	**Second choice: -**
Environment	**First choice:** Currie (2000), Gallivan and Oh (2004), Hayes, Hunton, and Reck (1999), Levina, Xin, and Yang (2003)	**First choice:** Benamati and Mahaney (2004), Brooks (2004), Davis, Ein-Dor, King, and Torkzadeh (2004), George, Valacich, and Valor (2004), Kaiser (2004a), Matloff (2004), Reich (2005)	**First choice:** Audy, Avritchir, Marczak, and Sá (2003), Kaiser (2004b)
	Second choice: Huang and Miranda (2004) (*Organization*)	**Second choice: -**	**Second choice: -**
Organization	**First choice:** Au, Chan, Leung, and Li (2001), Balaji and Brown (2005), Chen (2002), Davidson (2002), Davidson and Olfman (2004), Hallikainen, Nurmi, and Rossi (2005), Ho, Soon, and Straub (2003), Huang and Miranda (2004), Kern and Silva (1998), Maeliens and Newell (2001)	**First choice:** Ahuja and Balaji (2005), Currie, Guah, and Khan (2003)	**First choice:** Avritchir, Evaristo, Nicolas, and Prikladnicki (2005), Corbitt and Hanisch (2004), Van Fenema (1997)
	Second choice: Beck et al. (2001) (*Decison*), Bleck, Jackewitz, and Pape (2003) (*Relationship*), Wong (2004) (*Strategy*)	**Second choice: -**	**Second choice: -**

	Performance	**First choice:** Ang, Koh, and Tay (1999), Ang and Slaughter (1998), Aubert, Patry, Rivard, and Smith (2001), Bahli (2004), Barthelemy (2001), Barua, Susarla, and Whinston (2003), Böhmann, Gottwald, and Krcmar (2005), Brown, Deemple, and Seltsikas (2003), Choudhury and Sabherwal (2003), Chung (2000), Cullen, Seddon, and Willcocks (2002), Currie and Desai (2003), Das, Lee, and Soh (1999), Dwyer, Ellis, Stephens, and Whitten (2004), Feeny, Lacity, and Willcocks (2005), Feeny and Willcocks (1998), Kishore, Rao, and Swinarski (2001), Kishore, Rao, and Swinarski (2004), Koh, Soon, and Straub (2004), Lacity and Willcocks (1998), Levina and Ross (2003), Lewis (1998), Lewis (2000), McGuire and McKeown (2000), Medlin and Vannoy (2005), Pärnistö (1997), Reilly, Rouse, and Seddon (2001)	**First choice:** Raghavan and Sakaguchi (2003)	**First choice:** Antunes, Audy, Marczak, and Sá (2003), Audy, Avritchir, Evaristo, and Prikladnicki (2004)
		Second choice: Chan et al. (2002) (*Decision*), Chen (2002) (*Organization*), Chen (2005) (*Contract*), Goo, Kishore, Nam, Rao, and Song (2002) (*Relationship*), Fairchild (2004) (*Relationship*), Kim and Lee (2003) (*Relationship*), Kim, Lee, and Miranda (2004) (*Strategy*), Kumar and Palvia (1998) (*Relationship*), Natovich (2002) (*Strategy*)	**Second choice:** -	**Second choice:** Davenport (2005) (*Strategy*)
	Relationship	**First choice:** Agarwal and Ye (2003), Alborz, Scheepers, and Seddon (2004), Beulen and Ribbers (2002), Bleek et al. (2003), Chaudhury, Kishore, Nam, Rajagopalan, and Rao (2003), Chi-wai et al. (2000), Fairchild (2004), Gallivan and Oh (1999), Goo et al. (2002), Goo, Kishore, Nam, Rao, and Song (2003), Goo, Kishore, and Rao (2004a), Goo, Kishore, and Rao (2004b), Jayatilaka (2000), Kern (1997a), Kern (1997b), Kim and Lee (2003), Kumar and Palvia (1998), Lin, Sun, and Sun (2002), Marcolin and McLellan (1998), McKeen and Smith (2001), Murphy and Yao (2002), Parikh and Parolia (2005), Patnayakuni and Seth (2001), Ribbers and Van der Zee (2000), Stratopoulos (2005), Yao (2002)	**First choice:** Geng, Lin, and Whinston (2005)	**First choice:** Barret, Hinings, Krishna, and Sahay (1997)
		Second choice: Duncan (1998) (*Strategy*), Ho et al. (2003) (*Organization*), Singh and Walden (2003) (*Contract*)	**Second choice:** -	**Second choice:** -

	Strategy	**First choice:** Abbas et al. (1998), Adelakun (2004), Alexander (2002), Aubert, Patry, and Rivard (1998), Bahli and Rivard (2001), Bahli and Rivard (2003), Beath and Walker (1998), Brodsky and Tan (2003), Chen and Gant (2001), Crofts and Swatman (2002), Currie (2003), DiRomualdo and Gurbaxani (1998), Duncan (1998), Farag and Krishnan (2003), Franke and Gewald (2005), Gebelt et al. (1997), Gefen and Senn (1998), Gefen and Senn (1999), Gonzalez, Jose, and Llopis (2004), Goo, Kishore, and Rao (2000), Hackney and Hancox (1999), Huynh, Kwok, Lee, and Pi (2003), Kim et al. (2004), Natovich (2002), Oh (2005), Outlay and Ranganathan (2005), Selig (1997), Venkatraman (1997), Wong (2004), Zhang (2004)	**First choice:** Bhavini, Currie, Khan, and Vishanth (2003), Currie, Khan, and Weerakkody (2003), Dutta and Roy (2005), Gallaugher and Stoller (2003)	**First choice:** Davenport (2005), Delmonte and McCarthy (2003), Heeks (1999)
		Second choice: Ang and Straub (1998) (*Decision*), Aubert et al. (1999) (*Contract*), Aubert et al. (2001) (*Contract*), Birkin et al. (2002) (*Decision*), Goo et al. (2004b) (*Relationship*), Hirschheim and Lacity (2000) (*Decision*), Marcolin and McLellan (1998) (*Relationship*), Ross and Weill (2002) (*Decision*)	**Second choice:** -	**Second choice:** -
	Others	Baxter (2003), Beyah and Gallivan (2001), Currie and Seltsikas (2002), Dewire (2001), Ilie and Parikh (2004), Kiely (1997), Searcy and Woodroof (2003)	-	-

Appendix B – CSF Identification

Concepts and Concept Elements

Each **concept** equates one CSF (sorted in alphabetical order), which, in turn, was derived from the **concept elements** (aggregated interview statements) presented in Table 95.

Table 95: Concept elements of identified CSF

Concept (CSF)	Concept Elements
Appropriate internal technical knowledge	Assessment of project complexity
Composition of an appropriate project team[18]	-
Comprehensive experience with IT outsourcing projects	Experience with distributed development
	Experience with foreign subsidiaries
	Experience with national outsourcing projects
Comprehensive industry knowledge of the offshore provider	Industry knowledge of provider
	Technical knowledge of provider
Continuous controlling of project results	Continuous quality control
	Early testing of software
	Regular control of project progress
Creation of a cultural sensibility among employees	Cultural tolerance
	Mutual cultural sensibility
	Mutual respect
	Knowledge related to the culture of the project partner
Creation of a partnership-like relationship	Creation of a win-win-situation
	Critical faculty
	Integration of the partner
	Knowledge of the partner
	Long-term relationship
	Motivation
	Partnership-like relationship
	Selection of a suitable partner
	Trust

[18] The CSF "Composition of an appropriate project team" was added to the CSF list based on the comparison of the initially derived list with similar lists in literature.

Definition of an accurate contract	Accurate contract form
	Avoidance of inflexible contract
	Balance between precision and flexibility of the contract
	Experience with the formulation of international contracts
Definition of clear project goals	Definition of clear goals
Definition of project standards	Defined project standards
	Definition of processes
	Definition of programming guidelines
	Uniform definition of terms
	Uniform document language
Development of a comprehensive business case	Comprehensive analysis of the planned project
	Consideration of an efficiency factor
	Creation of cost transparency
	In-depth cost calculation
	Rejection of unrealizable claims
Early internal change management	Timely change management
Efficient internal organizational structure	Communication between management and operational level
	Efficient internal structures
Ensuring of a bilateral know-how transfer	Know-how transfer in both directions
	Transfer of accumulated knowledge back to the client
Ensuring of a continuous communication flow	Ability to communicate
	Communication
	Continuous improvement of communication
	Efficient communication network
	Efficient interface management
	Flexibility of information flow
	Ongoing phone contact on management and operational level
	Permanent coaching of offshore provider
	Restriction of responsibility assignments to few project locations
	Uniform communication strategy
	Use of offshore employees as communication interface
Establishment of an efficient IT infrastructure	Direct access to client infrastructure (direct link)
	Identical IT infrastructure

Face-to-face meetings with the offshore provider on a regular basis	Exchange of employees
	Face-to-face contact
	Project kick-off
Financial stability of the offshore provider	Low risk of provider bankruptcy
Geographical closeness of the offshore provider	Establishment of interface (team) at provider site
	Geographical closeness
	Provider with office in client's home country
Good language abilities of the offshore employees in German and English	Good language abilities
	Uniform language
High quality of offshore employees	High commitment of offshore employees
	High level of education in offshore country
	High reliability
	Performance continuity
	Personal continuity
International corporate culture	Corporate and document language of client
	International orientation of client
Legal and political stability in the offshore country	Legal security in offshore country
Preparation of a detailed project specification	Detailed specification of tasks
	Precise description of responsibilities
	Separation of project in smaller projects
Selection of a suitable software component	Consistent system architecture
	Critical project size
	Modular software component
	Selection of a suitable project
Standardized and documented processes	Comparable CMM levels of project partners
	Improvement of internal processes in advance
Standardized and documented processes on provider side	High CMM level on the part of the provider
	Process knowledge of the provider
	Strict process orientation
Suitable company size of the offshore provider	Similar company size of project partners
Sustained management support	Early integration of management

Appendix C – CSF Analysis

Significance of Assessment Differences

For each CSF (sorted in alphabetical order), the following tables indicate the arithmetic mean (AM) and the standard deviation (SD) of the relevance ratings within each dimension value as well as the **significance of the assessment differences** between the different dimension values. Within the column "significance", significant assessment differences (that is, a significance value smaller or equal to 0.05) are highlighted in gray.

Table 96: Significance of CSF relevance differences (company perspective)

	Client		Provider		Consultancy		
CSF	AM	SD	AM	SD	AM	SD	Significance
Appropriate internal technical knowledge	4.05	0.916	3.41	1.166	3.09	1.345	0.003
Composition of an appropriate project team	4.36	0.743	4.65	0.538	4.65	0.487	0.078
Comprehensive experience with IT outsourcing projects	3.56	0.940	2.89	1.048	3.43	1.308	0.021
Comprehensive industry knowledge of the offshore provider	3.41	1.044	3.92	0.954	3.35	0.982	0.040
Continuous controlling of project results	4.56	0.641	4.81	0.397	4.87	0.344	0.033
Creation of a cultural sensibility among employees	3.72	0.999	3.59	1.117	3.65	1.027	0.877
Creation of a partnership-like relationship	4.31	0.731	4.51	0.651	3.91	1.041	0.019
Definition of an accurate contract	3.82	0.997	4.19	0.776	4.26	0.964	0.108
Definition of clear project goals	4.56	0.641	4.84	0.501	4.91	0.288	0.020
Definition of project standards	3.97	0.668	4.35	0.789	4.43	0.728	0.026
Development of a comprehensive business case	2.97	1.013	3.70	1.175	3.78	1.085	0.004
Early internal change management	3.95	0.944	4.38	0.721	4.48	0.790	0.025
Efficient internal organizational structure	3.77	0.959	3.84	0.764	3.91	0.900	0.821
Ensuring of a bilateral know-how transfer	4.21	0.732	4.24	0.723	4.30	0.703	0.872
Ensuring of a continuous communication flow	4.69	0.614	4.73	0.450	4.61	0.499	0.691
Establishment of an efficient IT infrastructure	4.26	0.751	4.24	0.760	4.22	0.736	0.981

Face-to-face meetings with the offshore provider on a regular basis	4.00	1.214	3.89	1.100	3.87	1.058	0.881
Financial stability of the offshore provider	4.23	0.706	4.24	0.760	4.26	0.541	0.986
Geographical closeness of the offshore provider	2.92	1.201	2.70	1.507	2.04	1.224	0.043
Good language abilities of the offshore employees in German and English	4.67	0.662	4.54	0.650	4.48	0.947	0.581
High quality of offshore employees	4.62	0.493	4.78	0.417	4.52	0.593	0.112
International corporate culture	3.38	1.016	3.03	1.142	3.17	1.072	0.352
Legal and political stability in the offshore country	3.97	0.932	3.89	0.936	4.04	0.976	0.827
Preparation of a detailed project specification	4.36	0.743	4.73	0.508	4.57	0.590	0.040
Selection of a suitable software component	4.26	0.966	3.84	1.344	3.48	1.163	0.038
Standardized and documented processes	4.15	0.933	4.16	0.834	4.22	1.043	0.963
Standardized and documented processes on provider side	3.77	0.959	4.41	0.599	4.09	0.733	0.003
Suitable company size of the offshore provider	3.08	0.900	3.32	1.056	3.43	1.199	0.368
Sustained management support	4.13	0.833	4.51	0.804	4.30	0.822	0.128

Table 97: Significance of CSF relevance differences (company size)

	Micro enterprise		SME		LE		
CSF	**AM**	**SD**	**AM**	**SD**	**AM**	**SD**	**Significance**
Appropriate internal technical knowledge	3.42	1.170	3.76	1.091	3.55	1.238	0.574
Composition of an appropriate project team	4.68	0.478	4.42	0.792	4.57	0.539	0.326
Comprehensive experience with IT outsourcing projects	3.42	1.071	3.15	1.034	3.31	1.140	0.665
Comprehensive industry knowledge of the offshore provider	3.42	0.902	3.36	1.194	3.80	0.872	0.103
Continuous controlling of project results	4.84	0.375	4.61	0.659	4.76	0.428	0.212
Creation of a cultural sensibility among employees	3.42	1.170	3.61	1.144	3.80	0.895	0.355
Creation of a partnership-like relationship	4.26	0.733	4.21	0.992	4.37	0.692	0.657

Definition of an accurate contract	4.32	0.749	4.06	1.029	3.96	0.916	0.366
Definition of clear project goals	4.89	0.315	4.76	0.561	4.69	0.583	0.353
Definition of project standards	4.32	0.749	4.27	0.719	4.16	0.758	0.656
Development of a comprehensive business case	3.47	1.124	3.58	1.146	3.29	1.137	0.528
Early internal change management	4.42	0.607	3.97	1.104	4.29	0.782	0.135
Efficient internal organizational structure	3.68	0.946	4.15	0.834	3.69	0.812	0.037
Ensuring of a bilateral know-how transfer	4.21	0.787	4.33	0.816	4.20	0.633	0.683
Ensuring of a continuous communication flow	4.68	0.478	4.73	0.626	4.67	0.476	0.876
Establishment of an efficient IT infrastructure	4.16	0.688	4.27	0.761	4.27	0.750	0.828
Face-to-face meetings with the offshore provider on a regular basis	4.00	1.106	3.61	1.368	4.16	0.880	0.084
Financial stability of the offshore provider	4.21	0.713	4.09	0.723	4.29	0.672	0.429
Geographical closeness of the offshore provider	2.47	1.504	2.85	1.460	2.53	1.222	0.502
Good language abilities of the offshore employees in German and English	4.89	0.315	4.45	0.869	4.49	0.784	0.095
High quality of offshore employees	4.84	0.375	4.64	0.489	4.63	0.528	0.242
International corporate culture	3.32	1.108	2.85	1.149	3.43	1.005	0.052
Legal and political stability in the offshore country	3.89	1.100	3.85	0.939	4.04	0.848	0.628
Preparation of a detailed project specification	4.42	0.692	4.58	0.663	4.53	0.644	0.716
Selection of a suitable software component	3.84	1.214	3.94	1.029	3.96	1.280	0.933
Standardized and documented processes	4.05	0.911	4.24	0.792	4.14	1.000	0.760
Standardized and documented processes on provider side	3.95	0.405	4.15	0.906	4.10	0.900	0.693
Suitable company size of the offshore provider	3.42	0.902	3.42	1.173	3.14	0.980	0.377
Sustained management support	4.00	1.000	4.36	0.929	4.35	0.744	0.264

Table 98: Significance of CSF relevance differences (industry)

CSF	IT industry		Other industries		Significance
	AM	SD	AM	SD	
Appropriate internal technical knowledge	3.66	1.210	3.51	1.140	0.521
Composition of an appropriate project team	4.59	0.596	4.49	0.655	0.420
Comprehensive experience with IT outsourcing projects	3.46	0.953	3.06	1.205	0.063
Comprehensive industry knowledge of the offshore provider	3.61	1.039	3.57	0.972	0.870
Continuous controlling of project results	4.70	0.464	4.77	0.560	0.492
Creation of a cultural sensibility among employees	3.64	1.103	3.70	0.954	0.773
Creation of a partnership-like relationship	4.38	0.648	4.21	0.954	0.309
Definition of an accurate contract	4.18	0.811	3.91	1.039	0.151
Definition of clear project goals	4.82	0.386	4.66	0.668	0.147
Definition of project standards	4.36	0.645	4.06	0.818	0.045
Development of a comprehensive business case	3.55	1.159	3.26	1.093	0.185
Early internal change management	4.23	0.831	4.19	0.947	0.817
Efficient internal organizational structure	3.89	0.966	3.77	0.729	0.461
Ensuring of a bilateral know-how transfer	4.29	0.706	4.19	0.741	0.511
Ensuring of a continuous communication flow	4.75	0.437	4.62	0.610	0.215
Establishment of an efficient IT infrastructure	4.23	0.763	4.28	0.713	0.762
Face-to-face meetings with the offshore provider on a regular basis	3.98	1.104	3.91	1.139	0.762
Financial stability of the offshore provider	4.30	0.630	4.11	0.759	0.153
Geographical closeness of the offshore provider	2.68	1.454	2.55	1.230	0.641
Good language abilities of the offshore employees in German and English	4.68	0.543	4.40	0.948	0.083
High quality of offshore employees	4.64	0.483	4.70	0.507	0.546
International corporate culture	3.05	1.151	3.43	0.994	0.085

Legal and political stability in the off-shore country	3.93	0.850	3.98	1.011	0.785
Preparation of a detailed project specification	4.54	0.602	4.51	0.718	0.848
Selection of a suitable software component	4.09	1.116	3.74	1.242	0.141
Standardized and documented processes	4.23	0.874	4.06	0.965	0.355
Standardized and documented processes on provider side	4.13	0.833	4.04	0.833	0.618
Suitable company size of the offshore provider	3.45	1.094	3.09	0.929	0.077
Sustained management support	4.48	0.687	4.06	0.987	0.016

Table 99: Significance of CSF relevance differences (project size)

	Small		Medium		Large		
CSF	**AM**	**SD**	**AM**	**SD**	**AM**	**SD**	**Significance**
Appropriate internal technical knowledge	3.77	1.142	3.76	1.078	3.19	1.276	0.081
Composition of an appropriate project team	4.50	0.762	4.52	0.594	4.58	0.564	0.881
Comprehensive experience with IT out-sourcing projects	3.12	1.177	3.36	1.008	3.32	1.194	0.667
Comprehensive industry knowledge of the offshore provider	3.69	1.087	3.43	1.085	3.71	0.864	0.424
Continuous controlling of project results	4.62	0.697	4.79	0.415	4.74	0.445	0.407
Creation of a cultural sensibility among employees	3.19	1.201	3.79	0.976	3.87	0.885	0.027
Creation of a partnership-like relationship	4.19	0.981	4.26	0.798	4.42	0.672	0.550
Definition of an accurate contract	4.15	1.047	3.93	0.894	4.16	0.860	0.479
Definition of clear project goals	4.62	0.697	4.88	0.328	4.68	0.599	0.098
Definition of project standards	4.23	0.765	4.21	0.782	4.23	0.717	0.996
Development of a comprehensive business case	3.35	1.018	3.40	1.211	3.55	1.179	0.786
Early internal change management	4.04	1.038	4.29	0.774	4.32	0.791	0.402
Efficient internal organizational structure	3.77	0.815	3.88	0.942	3.81	0.833	0.866
Ensuring of a bilateral know-how transfer	4.23	0.863	4.19	0.740	4.32	0.541	0.738

Ensuring of a continuous communication flow	4.65	0.689	4.76	0.431	4.61	0.495	0.463
Establishment of an efficient IT infra-structure	4.27	0.827	4.29	0.742	4.16	0.688	0.765
Face-to-face meetings with the offshore provider on a regular basis	3.69	1.225	3.98	1.137	4.06	1.031	0.439
Financial stability of the offshore provider	4.31	0.736	4.24	0.759	4.19	0.543	0.824
Geographical closeness of the offshore provider	2.96	1.428	2.69	1.473	2.29	1.071	0.169
Good language abilities of the offshore employees in German and English	4.46	0.989	4.69	0.563	4.52	0.677	0.394
High quality of offshore employees	4.81	0.402	4.55	0.550	4.68	0.475	0.107
International corporate culture	3.00	1.200	3.40	1.037	3.10	1.012	0.263
Legal and political stability in the offshore country	4.04	0.958	3.81	1.065	4.10	0.700	0.385
Preparation of a detailed project specification	4.50	0.707	4.48	0.671	4.68	0.541	0.387
Selection of a suitable software component	4.00	1.131	4.12	1.041	3.58	1.385	0.150
Standardized and documented processes	4.08	0.891	4.19	0.943	4.23	0.920	0.820
Standardized and documented processes on provider side	4.35	0.562	3.88	0.942	4.13	0.806	0.073
Suitable company size of the offshore provider	3.54	1.208	3.14	0.977	3.16	0.934	0.261
Sustained management support	4.08	0.891	4.31	0.841	4.52	0.724	0.137

Table 100: Significance of CSF relevance differences (project experience)

	Low		Medium		High		
CSF	**AM**	**SD**	**AM**	**SD**	**AM**	**SD**	**Significance**
Appropriate internal technical knowledge	3.82	1.131	3.67	1.295	3.46	1.128	0.498
Composition of an appropriate project team	4.53	0.800	4.57	0.626	4.52	0.577	0.947
Comprehensive experience with IT out-sourcing projects	3.65	1.222	3.57	1.040	3.00	1.048	0.026
Comprehensive industry knowledge of the offshore provider	3.65	1.115	3.43	0.935	3.65	1.046	0.623
Continuous controlling of project results	4.65	0.786	4.73	0.450	4.75	0.437	0.773

Creation of a cultural sensibility among employees	3.47	1.328	3.70	0.952	3.69	1.001	0.725
Creation of a partnership-like relationship	4.06	1.144	4.17	0.791	4.44	0.669	0.142
Definition of an accurate contract	4.24	1.200	4.07	0.907	4.00	0.840	0.664
Definition of clear project goals	4.76	0.562	4.77	0.504	4.73	0.564	0.950
Definition of project standards	4.18	0.809	4.17	0.699	4.27	0.770	0.809
Development of a comprehensive business case	3.47	1.125	3.17	1.085	3.58	1.177	0.294
Early internal change management	4.18	1.131	4.33	0.758	4.19	0.817	0.743
Efficient internal organizational structure	3.82	0.636	3.87	1.074	3.81	0.817	0.958
Ensuring of a bilateral know-how transfer	4.29	0.920	3.93	0.583	4.40	0.664	0.014
Ensuring of a continuous communication flow	4.71	0.772	4.63	0.490	4.71	0.457	0.804
Establishment of an efficient IT infrastructure	4.18	0.728	4.23	0.679	4.27	0.795	0.904
Face-to-face meetings with the offshore provider on a regular basis	3.88	1.576	3.97	0.964	3.92	1.064	0.969
Financial stability of the offshore provider	4.35	0.702	4.23	0.728	4.21	0.667	0.763
Geographical closeness of the offshore provider	2.76	1.522	2.63	1.299	2.60	1.361	0.908
Good language abilities of the offshore employees in German and English	4.65	0.862	4.57	0.817	4.56	0.639	0.907
High quality of offshore employees	4.82	0.393	4.57	0.504	4.65	0.520	0.238
International corporate culture	3.53	1.179	3.50	1.075	2.92	0.987	0.024
Legal and political stability in the offshore country	3.65	1.222	4.10	0.712	3.98	0.939	0.275
Preparation of a detailed project specification	4.59	0.795	4.53	0.629	4.54	0.609	0.956
Selection of a suitable software component	3.88	1.166	3.97	1.159	3.90	1.241	0.965
Standardized and documented processes	4.24	0.903	4.17	0.950	4.15	0.916	0.951
Standardized and documented processes on provider side	4.06	0.659	4.03	0.765	4.12	0.922	0.906
Suitable company size of the offshore provider	3.29	1.213	3.40	0.932	3.15	1.036	0.578
Sustained management support	4.53	0.717	4.03	0.809	4.40	0.846	0.073

CSF	Board member / Director AM	Board member / Director SD	(Project) Manager AM	(Project) Manager SD	Significance
Appropriate internal technical knowledge	3.57	1.189	3.65	1.173	0.744
Composition of an appropriate project team	4.57	0.587	4.53	0.550	0.785
Comprehensive experience with IT outsourcing projects	3.16	1.010	3.33	1.169	0.479
Comprehensive industry knowledge of the offshore provider	3.43	1.021	3.81	0.906	0.069
Continuous controlling of project results	4.82	0.390	4.70	0.465	0.194
Creation of a cultural sensibility among employees	3.50	1.131	3.74	0.928	0.275
Creation of a partnership-like relationship	4.32	0.883	4.33	0.747	0.966
Definition of an accurate contract	4.20	0.930	3.93	0.936	0.174
Definition of clear project goals	4.80	0.462	4.72	0.549	0.495
Definition of project standards	4.32	0.740	4.07	0.768	0.128
Development of a comprehensive business case	3.59	1.148	3.35	1.021	0.302
Early internal change management	4.27	0.845	4.16	0.814	0.539
Efficient internal organizational structure	3.95	0.939	3.65	0.783	0.106
Ensuring of a bilateral know-how transfer	4.32	0.740	4.23	0.611	0.557
Ensuring of a continuous communication flow	4.75	0.438	4.63	0.489	0.224
Establishment of an efficient IT infrastructure	4.23	0.743	4.37	0.691	0.349
Face-to-face meetings with the offshore provider on a regular basis	3.68	1.290	4.23	0.812	0.019
Financial stability of the offshore provider	4.14	0.734	4.35	0.650	0.157
Geographical closeness of the offshore provider	2.73	1.515	2.65	1.270	0.800
Good language abilities of the offshore employees in German and English	4.66	0.645	4.60	0.623	0.690
High quality of offshore employees	4.77	0.424	4.58	0.545	0.072
International corporate culture	2.95	1.099	3.44	1.053	0.038

Legal and political stability in the offshore country	3.89	1.017	4.09	0.895	0.317
Preparation of a detailed project specification	4.64	0.574	4.47	0.667	0.203
Selection of a suitable software component	3.93	1.043	3.95	1.214	0.929
Standardized and documented processes	4.18	0.843	4.19	0.958	0.983
Standardized and documented processes on provider side	4.09	0.772	4.00	0.926	0.620
Suitable company size of the offshore provider	3.36	1.014	3.16	1.022	0.360
Sustained management support	4.18	0.971	4.35	0.752	0.373

Appendix D – CSF Management

Management Activities Proposed in the Pilot Case Study

Table 102 presents the **management activities** in regard to the 29 CSF (both sorted in alphabetical order) identified within the **pilot case study**.

Table 102: CSF management activities identified (PCS)

	CSF	Management activities
Internal suitability factors	Appropriate internal technical knowledge	• Analysis and definition of core competences • Inclusion of external consultants • Preparation of a comprehensive project documentation
	Comprehensive experience with IT outsourcing projects	• Establishment of an internal knowledge center • Gradual development of experience with OSD projects • Transfer of lessons learned from experiences with national IT outsourcing projects
	Efficient internal organizational structure	• Emphasis on process orientation • Ensuring of the efficiency of internal administrative processes • Establishment of a central coordinating center • Preponderance of effective communication structures
	International corporate culture	• Emphasis on openness, respect, and understanding in regard to different mindsets • Encouragement of dealing with a foreign culture • Ensuring of appropriate English language skills
	Standardized and documented processes	• Definition of uniform processes • Inclusion of internal process manager • Selection of relevant processes and adaptation of these processes
	Sustained management support	• Determination of managers as project sponsors • Establishment of a steering committee • Regular alignment of the sourcing strategy with top management • Scheduling of regular steering committee meetings

Internal management factors	Creation of a cultural sensibility among employees	• Coaching of employees • Conduction of client and provider visits • Integration of offshore employees • Provision of information on the offshore country • Reduction of fears in regard to getting in contact with a foreign culture • Selection of an offshore provider with a German and a Swiss subsidiary
	Definition of clear project goals	• Definition of a project baseline • Definition of long-term goals • Development of a sourcing strategy
	Definition of project standards	• Adoption of a large part of the provider standards • Definition of programming guidelines • Definition of project management standards
	Development of a comprehensive business case	• Analysis of value added of different options • Discussion of project goals • Estimation of costs and cost saving potentials • Examination of existing benefits and risks
	Early internal change management	• Arrangement of joint excursions with offshore employees • Conduction of user acceptance tests • Launching of an internal website as information pool • Request for internal feedback in regard to the co-operation with the offshore employees • Scheduling of regular informative events
	Preparation of a detailed project specification	• Inclusion of external consultants • Refinement of the specification with support of offshore employees working temporarily onsite
	Selection of a suitable software component	• Analysis and evaluation of the company-specific application portfolio • Analysis of the risks associated with a software component • Examination of the requirements of a software component in regard to data protection and data security • Selection of a smaller, well-defined software project

External suitability factors	Comprehensive industry knowledge of the offshore provider	• Exchange of experiences with reference customers • Request for information regarding project experience of the individual offshore employees • Request for information regarding reference customers and projects
	Financial stability of the offshore provider	• Pre-selection of adequately sized providers
	Geographical closeness of the offshore provider	• Determination of an offshore employee who works permanently onsite • Selection of an offshore provider with a German and a Swiss subsidiary
	Good language abilities of the offshore employees in German and English	• Assignment of a German-speaking offshore employee as single point-of-contact • Selection of a major offshore destination and a well-known offshore provider • Selection of the offshore employees in consideration of their language abilities
	High quality of offshore employees	• Request for information concerning reference projects of the offshore employees • Review of the individual offshore employees' resumes • Selection of a major offshore destination and a well-known offshore provider
	Legal and political stability in the offshore country	• Assessment of offshore destinations by means of external experts and studies • Conduction of a risk analysis in regard to potential offshore destinations • Request for information on IP rights in potential offshore destinations • Selection of a major offshore destination
	Standardized and documented processes on provider side	• Consideration of quality standards
	Suitable company size of the offshore provider	• Mailing of RFP to similar sized offshore providers • Pre-selection of the top providers of an offshore country

External management factors	Composition of an appropriate project team	• Definition of project roles • Determination of the project manager on the part of the provider as overall project manager • Implementation of a dual-shore model • Inclusion of external consultants • Selection of an appropriate employee as project manager on the part of the client
	Continuous controlling of project results	• Agreement on a staggered payment procedure • Conduction of regular tests • Definition of a detailed project plan • Development of prototypes • Maintenance of a query register • Request for regular status reports • Scheduling of regular meetings
	Creation of a partnership-like relationship	• Conclusion of a master agreement • Creation of transparency on both sides • Definition of a joint project steering committee • Development of trust through pilot projects • Emphasis on give-and-take • Scheduling of mutual company visits
	Definition of an accurate contract	• Agreement on a lean contract structure • Conclusion of contract with the offshore provider's Swiss subsidiary • Formulation of project-specific working orders • Use of a standard contract
	Ensuring of a bilateral know-how transfer	• Maintenance of a database with relevant project documents • Preparation of a comprehensive technical project documentation through the offshore provider
	Ensuring of a continuous communication flow	• Definition of a single point-of-contact on both sides • Definition of communication rules • Deployment of a broad communication mix • Introduction of well-defined communication processes

	Establishment of an efficient IT infrastructure	• Definition of a common development, integration, and testing environment • Definition of a comprehensive security infrastructure • Deployment of standard platforms • Offering of an appropriate work environment for offshore employees working temporarily onsite • Provision of an efficient network infrastructure
	Face-to-face meetings with the offshore provider on a regular basis	• Monthly conduction of a steering committee meeting • Scheduling of mutual company visits • Weekly conduction of a project status meeting

Management Activities Proposed in the Confirmatory Case Study

Table 103 presents the **management activities** in regard to the 29 CSF (both sorted in alphabetical order) identified within the **confirmatory case study**.

Table 103: CSF management activities identified (CCS)

	CSF	Management activities
Internal suitability factors	Appropriate internal technical knowledge	• Inclusion of internal experts • Preparation of a comprehensive project documentation
	Comprehensive experience with IT outsourcing projects	• Exploitation of motivational advantages tied to sparse project experience
	Efficient internal organizational structure	• Emphasis on a lean corporate structure • Establishment of an internal steering committee
	International corporate culture	• Definition of English as the primary document and secondary corporate language • Ensuring of appropriate English language skills
	Standardized and documented processes	• -
	Sustained management support	• Close and continuous cooperation between the strategic and the operational level • Determination of managers as project sponsors • Establishment of both an internal and a mutual steering committee • Scheduling of regular steering committee meetings

Internal management factors	Creation of a cultural sensibility among employees	• Conduction of client and provider visits • Development of personal relationships between internal and external project members • Integration of offshore employees • Provision of information on the offshore country • Selection of an offshore provider with a German subsidiary
	Definition of clear project goals	• Definition of restrictions in regard to the handling of change requests • Definition of short- and long-term goals • Establishment of a joint understanding regarding the individual goals
	Definition of project standards	• Adoption of selected provider standards • Definition of English as the primary project language
	Development of a comprehensive business case	• Analysis of value added of different options • Estimation of costs and payback period • Examination of project-related risks
	Early internal change management	• Arrangement of collective events with offshore employees located onsite • Conduction of user-acceptance tests • Consideration of the specific user group's willingness to change • Determination of internal contact persons • Early conduction of internal training measures • Early integration of the relevant user communities • Organization of a project kickoff event with key users and project-related IT staff
	Preparation of a detailed project specification	• Deployment of provider specification templates • Development of the specification with support of offshore employees working temporarily onsite
	Selection of a suitable software component	• Analysis of project risks

External suitability factors	Comprehensive industry knowledge of the offshore provider	• Request for information regarding reference customers and projects
	Financial stability of the offshore provider	• Evaluation of the financial stability of the provider's subsidiary • Pre-selection of adequately sized providers
	Geographical closeness of the offshore provider	• Determination of an offshore employee who works permanently onsite • Selection of an offshore provider with a German subsidiary
	Good language abilities of the offshore employees in German and English	• Assignment of a German-speaking offshore employee as single point-of-contact • Review of the individual offshore employees' resumes • Selection of an adequately sized provider
	High quality of offshore employees	• Request for information concerning reference projects of the offshore employees • Review of the individual offshore employees' resumes • Selection of an adequately sized provider
	Legal and political stability in the offshore country	• Conduction of a risk analysis in regard to potential offshore destinations
	Standardized and documented processes on provider side	• Adaptation of provider processes to client-specific requirements • Consideration of quality standards
	Suitable company size of the offshore provider	• Pre-selection of adequately-sized providers
External management factors	Composition of an appropriate project team	• Assignment of a project coordinator with inter-cultural experience on the side of the provider • Definition of project roles • Determination of an internal IT coordinator • Implementation of a dual-shore model • Integration of the various user communities • Segmentation of the offshore programming team into subproject teams • Selection of an appropriate employee as project manager on the part of the client

	Continuous controlling of project results	• Agreement on a staggered payment procedure • Conduction of regular tests • Early development of prototypes • Maintenance of a query register • Request for regular status reports • Scheduling of regular meetings
	Creation of a partnership-like relationship	• Agreement on the deployment of independent mediators in the case of a conflict • Collective discussion of project goals • Definition of a joint project steering committee • Endorsement of the offshore provider in regard to any future acquisitions of project partners • Incorporation of a partnership clause within the agreement
	Definition of an accurate contract	• Agreement on contractual penalties • Conclusion of contract with the offshore provider's German subsidiary • Detailed description of the project scope and individual responsibilities
	Ensuring of a bilateral know-how transfer	• Maintenance of a document management system • Preparation of a comprehensive technical project documentation through the offshore provider
	Ensuring of a continuous communication flow	• Definition of a single point-of-contact on the provider side • Definition of communication rules • Definition of escalation procedures • Deployment of a broad communication mix • Introduction of an internal and external communication hierarchy
	Establishment of an efficient IT infrastructure	• Definition of a common development, integration, and testing environment • Definition of a security infrastructure • Ensuring of 24/7 support • Installation of a document management system • Installation of MS NetMeeting
	Face-to-face meetings with the offshore provider on a regular basis	• Monthly conduction of steering committee meetings • Scheduling of mutual company visits • Weekly conduction of a project status meetings