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THE CURRENT STATE OF IS OFFSHORING IN GERMANY: PROJECT CHARACTERISTICS AND SUCCESS PATTERNS

MARKUS K. WESTNER
EUROPEAN BUSINESS SCHOOL, OESTRICH-WINKEL, GERMANY
markus.westner@ebs.edu

SUSANNE STRAHRINGER
DRESDEN UNIVERSITY OF TECHNOLOGY, DRESDEN, GERMANY
susanne.strahringer@tu-dresden.de

ABSTRACT

This paper empirically examines the current state of the IS offshoring phenomenon in Germany regarding project characteristics and success patterns. Relying on a sample of 304 projects conducted at various industry sectors and companies, results show that IS offshoring primarily occurs in sectors Telecommunications and IT at large corporations. Cost reduction is the main reason for going offshore and offshore projects are executed as part of a larger program at companies. Noticeably, most projects are delivered from India. Additionally, neither captive offshoring nor offshore outsourcing dominates as a delivery option. Comparing different project subgroups regarding project success, the results reveal that projects delivered by an internal or partially owned service provider are more successful. Other project characteristics such as a project's embeddedness in a larger offshoring program, a project's size, or a project's offshoring degree in terms of relatively offshored labor hours show few significant differences. The paper addresses the paucity of empirical research on the current state of the IS offshoring phenomenon in Germany.

Keywords: Offshoring, nearshoring, sourcing, information systems sourcing, outcome, success, project success, success factors

INTRODUCTION

Information systems (IS) offshoring describes the transfer of IS services to an offshoring service provider (OSP) in a near or far away country. This OSP can be an internal subsidiary (so-called captive offshoring), a partially owned unit, or an external service provider (so-called offshore outsourcing). The services themselves are partially or totally transferred. (Carmel and Agarwal [13]; Hirschheim et al. [23]; Jahns et al. [25]; Mirani [39]; Niederman et al. [42]; Rajkumar and Mani [48]; Srivastava et al. [56])

IS offshoring is worth being researched as a domain of its own because it has specific characteristics that distinguish it from the well-researched field of IS outsourcing. In IS offshoring, service delivery occurs under the additional condition of distance between service provider and client in terms of physical distance, time zone differences, or cultural differences. Additionally, complexity increases due to the higher degree of geographical dispersion among team members. Finally, IS offshoring arrangements often create additional organizational challenges because offshore staff partially replaces domestic onshore staff. (Chua and Pan [14]; Holmström Olsson et

al. [24]; Ranganathan and Balaji [49]; Rottman and Lacity [51]; Srivastava et al. [56]; Winkler et al. [66])

High labor cost differentials in comparison to western countries and the resulting cost savings are the main reasons why companies engage in IS offshoring. Accordingly, the market volume for offshoring of IS services has been growing fast in the last few years, with India being the most popular offshoring destination (Knapp et al. [26]; Metters and Verma [38]; Poornima [45]). Application development and maintenance activities, where labor constitutes a significant share of total costs, are especially likely to be performed offshore (Bitkom [8]; Boes et al. [9]; William et al. [64]).

The situation is different in Germany. There, offshoring levels are rather low: only 6% of all companies source IS services from abroad in contrast to 64% that already use domestic IS outsourcing (Schaaf and Weber [52]; ZEW [68]). Other sources confirm the view of German-speaking countries lagging behind in the adoption of offshoring (William et al. [64]). Additionally, German companies experience difficulties in performing IS offshoring successfully (Prehl [46]). This seems to be due to language and cultural barriers (Dibbern et al. [17]; Mertens [36]; Moczadlo [40]; Wiener [61]).

There is a paucity of research addressing the current state of IS offshoring in Germany. Existing studies for Germany use small samples or few cases (e.g., Dibbern et al. [17]; Wiener [61]), were conducted several years ago (e.g., Schaaf and Weber [52]; Moczadlo [40]), or do not focus particularly on IS offshoring but on sourcing of IT in general with offshoring being only a minor subset (e.g., ZEW [68]).

RESEARCH QUESTIONS

Our paper addresses the previously described research opportunities. Specifically, the two following questions guide our research:

1. What is the current state of IS offshoring in Germany with regard to application development and maintenance services on a project level? By employing the offshore-consumer, i.e., client perspective, we are specifically interested in data regarding project characteristics. This represents the main focus of our paper.
2. Are projects with certain characteristic more successful than others? We compare project success regarding selected project characteristics such as delivery country, project size, or offshore degree and test for statistical significance of these success differences.

With these research questions, we descriptively address the paucity of research that empirically investigates IS offshoring in the context of German businesses by gathering a broad empirical dataset. Second, we examine potential determinants of success based on project characteristics.

For management practice, the paper gives an insight in the current state of IS offshoring in Germany. This is not only relevant for German businesses but also for researchers and practitioners in other non-English speaking countries as well as for OSPs that intend to enter the German market for offshoring. Additionally, our explorative analysis of success determinants gives practitioners indications how to setup and implement their offshore endeavors.

We focus our research along four dimensions: the regional focus is Germany; we focus on the offshore client's perspective; the unit of analysis is offshoring projects, i.e., not the arrangement or relationship between client and OSP in total; and we focus on application development or maintenance services.

PAPER STRUCTURE

First, we provide an overview of existing research regarding offshore project success and IS offshoring in Germany ("Existing Research"). Then, we describe our methodology regarding research approach, research design, applied statistical procedures, and data collection ("Methodology"). The subsequent section "Results" contains the main results of our study regarding study participants, project characteristics, and subgroup comparisons with respect to success. Section "Discussion" reflects upon the resulting findings. Finally, the last section concludes the paper by highlighting its specific limitations and opportunities for further research.

EXISTING RESEARCH

Offshoring in a German context

We carried out a literature review in trade press, academic journals, and conferences in order to identify research with a focus on IS offshoring in Germany. The following paragraphs present the findings of the literature that is most relevant in the context of our study.

Early studies: 2001 to 2005

Kobitzsch et al. (2001) describe the case of a German company setting up a captive IS offshoring operation in India. Although, the authors focus their research primarily on the specific case, they mention that German

companies prefer to create their own subsidiaries offshore. In difference to later publications, the authors did not experience significant cultural and language-related issues in setting up the offshore arrangement. (Kobitzsch et al. [27])

In 2002, BIHK (regional German association for the "Mittelstand", i.e., privately owned small to medium-sized enterprises) conducted a survey among ten companies regarding their adoption of IT offshoring. The survey is on a company, i.e., macro level. Results show that the main reasons for offshoring are to reduce cost, to increase flexibility, and to overcome know-how deficits. Apart from that, the report primarily focuses on developing a reference guide on how to approach offshoring in terms of checklists and process descriptions. It does not further investigate the current situation of IS offshoring in Germany. (BIHK [7])

One study in 2002 descriptively analyzed benefits and challenges of IS offshoring at 76 German companies using a survey design. India and Russia dominated as offshore destinations. 51% of the surveyed companies started their offshore engagements within the three years before the survey, i.e., 2001 to 1999. The main reason for engaging into IS offshoring was cost reduction followed by a need to overcome capacity shortages. A majority of surveyed companies expressed satisfaction with the results of their offshore engagements. The study does not examine relationships between offshore engagements' characteristics and their respective success. (Moczadlo [40])

The consulting company Deloitte published a research report on IS offshoring with special focus on India in 2003. Results show that German companies hope to achieve cost savings by offshoring. Furthermore, they anticipate an increase of offshore outsourcing in the future. The paper also incorporates the Indian service providers' perspective. Based on interviews, the authors find that Indian companies perceive market entry to Germany as far more complicated as to the U.S. They cite language and cultural barriers as the key inhibitors. Moreover, Indian offshore providers perceive the German business culture as very different to the American or British. (Deloitte & Touche [16])

Deutsche Bank Research and Bitkom (German association of the ICT industry representing 1,300 companies) surveyed 570 German, Swiss, and some foreign OSP companies on the adoption of offshoring in Germany in 2004. The study focuses on offshoring on a corporate, i.e., macro level and incorporates the demand as well as the supply side. Results show that offshoring was on a low level in Germany with relatively few projects being offshored. India was the most important offshore location but the share of delivery countries in Eastern Europe was expected to rise. Cost reduction was the main motivation for offshoring. Application development represented the most frequently offshored service. Key challenges in offshore arrangements were to maintain quality, to comply with deadlines and to keep costs under control. The majority of companies were satisfied with their offshore engagements. (Schaaf and Weber [52])

Subsequently, Bitkom in 2005 published a report on how to adopt and implement offshoring in terms of provider selection, processes, and best practices. However, it did not delve deeper in the current IS offshoring situation in Germany. (Bitkom [8])

Recent studies: 2006 to 2009

In their bi-annual research report the research institute ZEW surveys 4,300 German companies of all sizes on their application of IT in business operations. Only few survey questions address the aspect of IS offshoring. The results show that in 2006, 6.1% of all companies from the industry sector, 5.5% from the services sector (without information and communication technology industry, ICT), but 12.1% from the ICT sector were engaged in offshore sourcing. The majority of companies sourced from countries within Europe. (ZEW [68])

Dibbern et al. (2008) examine the effect of extra costs on the economic outcome of IS offshoring projects. They base their research on a multi-case study design at one German financial services institution. Their results indicate that the observed company incurred extra costs for four types of activities which were requirements specification and design, knowledge transfer, control, and coordination. Although they place their research in a German context, they do further explore this aspect by, for example, looking at research for Germany on the topic or by outlining the current state of IS offshoring for Germany. (Dibbern et al. [17]; Winkler et al. [65])

Winkler et al. (2008) explore cultural differences in IS offshoring arrangements involving German client organizations that outsource application development activities to Indian vendors. Based on case studies, the results indicate that cultural difference influence offshore outsourcing success. The authors suggest to define roles and mechanisms clearly, to execute strong leadership, and to manage culture actively to overcome negative effects. Although embedded in a German context, the study does not delve deeper into specifics of IS offshoring for Germany. (Winkler et al. [66])

One of the most recent studies was conducted by a consulting company among 32 offshore experienced large enterprises in Germany and Europe. Results show that 87% of the surveyed companies are engaged in IS offshoring. The most frequently offshored activities are

application development and maintenance services. 80% of companies are satisfied with their offshore service provider. However, the study is non-representative and detailed study results are not publicly available. (Lünendonk [33])

Summary

Our literature review shows that no academic paper and few practitioner-led studies from associations or consulting firms focus on the current state of IS offshoring in Germany. The most recent studies are relying on data from 2006, 2004, or 2002, and focus only on a macro but not on a project level (Moczadlo [40]; Schaaf and Weber [52]; ZEW [68]).

The studies share some research findings and provide an indicative picture regarding the state of IS offshoring in Germany with respect to (1) offshoring reasons, (2) countries of delivery, (3) determinants of success:

(1) *Reasons for engaging in IS offshoring*: The reasons of German companies for engaging in offshoring are to reduce costs and to overcome capacity or skill shortages (BIHK [7]; Deloitte & Touche [16]; Moczadlo [40]; Schaaf and Weber [52]).

(2) *Countries of delivery*: Two studies mention India as a dominating offshore location from Germany (Moczadlo [40]; Schaaf and Weber [52]). However, another study relying on a broader data sets states that the majority of companies in Germany source from countries within Europe (ZEW [68]).

(3) *Determinants of success*: Cultural differences between Germany and offshore delivery countries seem to have an impact on the success of IS offshoring projects as three papers mention (Deloitte & Touche [16]; Dibbern et al. [17]; Winkler et al. [66]). In contrast, one early paper did not find such a relationship (Kobitzsch et al. [27]).

Offshore project success

Research question 2 incorporates the specific construct "offshore project success". The following subsections embed this construct in existing research and establish how we measured it in the course of this paper

As Erickson and Ranganathan (2006) show, success can be understood and measured in multiple ways, including "the organization's satisfaction with the results of outsourcing (Grover et al. [21]), an expectations fulfillment view (Lacity and Willcocks [30]), a cost/benefit approach (Wang [59]), a psychological contract perspective on fulfilled obligations (Koh et al. [28]), and a strategic fit view of success (Lee et al. [31])" (Erickson and Ranganathan [18]).

Several studies measure success as the satisfaction of outcomes, sometimes calibrated by initial expectations (Balaji and Ahuja [6]; Grover et al. [21]; Dahlberg and Nyrhinen [15]; Wüllenweber et al. [67]). In their extensive review of IS outsourcing success definitions and measures, Dahlberg and Nyrhinen (2006) find that satisfaction with outcomes can be evaluated along four categories: strategic factors, economic factors, technological factors, and social factors. Additionally, overall satisfaction forms a part of their success definition.

Strategic, economic, technological, and social outcome factors may also apply to projects but they are not applicable in all cases. For example one might think of projects that completely lack a specific strategic proposition. Since a project is by definition an effort bound by schedule, budget, functionality, and quality (Erickson and Ranganathan [18]), it rather makes sense to use these dimensional factors together with overall satisfaction as an operationalization of offshore project success.

Therefore, this paper interprets offshore project success as the perceived satisfaction with the outcome of the offshore project in total, and with the dimensions of schedule, budget, functionality, and quality in particular.

METHODOLOGY

Research approach

Our paper is empirical by using a survey design for data gathering. Furthermore, we pursue a descriptive research approach regarding research question 1 and an exploratory research approach regarding research question 2. An exploratory approach is suitable because it allows methods and data to define the nature of a phenomenon's relationships. It specifies these relationships only in the most general form (Boudreau et al. [10]; Orlikowski and Baroudi [43]). Within this setting our research approach is of quantitative nature: we use basic descriptive statistics and the non-parametric Mann-Whitney test for data analysis.

Research design

Our research design followed four phases. In phase one we developed the research questions. In phase two we designed a questionnaire to gather the required data. We pre-tested the questionnaire with selected industry experts. Based on their feedback, we refined and finalized it. In the following third phase, we identified potentially relevant experts and sent the questionnaire to them.

This represented the data collection phase. Having finished the data collection, we analyzed the data in phase four regarding our initial research objectives.

Statistical procedures

We examine the sample data by using basic statistical procedures such as mean, median, and standard deviation. Furthermore we analyze differences regarding offshore project success levels between different subgroups. For these purposes we use the non-parametric Mann-Whitney test to test for significant differences (Mann and Whitney [34]).

The Mann-Whitney test as a non-parametric test is equivalent to the independent t-test. It is a rather common non-parametric test and was first developed by Wilcoxon (1945) for samples of similar size and later extended by Mann and Whitney (1947) for different sample sizes. It can be used to analyze whether the differences between scores are significant. The test builds on ranked data and the rank sums and compares their distribution to the known distribution of a test statistic U to determine whether the two samples belong to the same population. (Siegel and Castellan [53])

The American Psychological Association (APA) states that "reporting and interpreting effect sizes […] is essential to good research" (Wilkinson [63]). We adhere to this recommendation and report effect sizes where applicable.

Data collection

The unit of analysis for our paper is the individual IS offshoring project. The population is IS offshoring projects conducted at German companies. However, to the best of our knowledge, there is no database that aggregates data for IS projects across Germany. Thus it is difficult to access the population as defined above in order to draw a statistically representative sample. Therefore, we had to rely on an alternative approach for data gathering.

We adopted a key-informant approach (Kumar et al. [29]; Phillips [44]) and identified offshoring experts in Germany, asking them to contribute data about one specific completed IS offshoring project. We relied on the business social network XING, the largest German business social network, for expert identification. With regard to XING, we identified all people registered at XING who had an affiliation with IS near- or offshoring. Thus, the experts at XING are the survey population. Our sampling method is a convenient and non-stratified sampling (Fowler [19]; van der Stede et al. [58]). This negatively impacts the paper's external validity regarding its accurate representation of the population, i.e., the associated sampling error. However, from our perspective this approach is the only way to gather an adequate amount of cross-company data.

We used the search string "offshor* OR near-shor* OR off-shor* OR near-shor*"[1] in XING's "I offer" search field to identify experts with near- or offshore affiliation. The wildcard character "*" ensures that variations of the term are also found, such as offshor*ing* or offshor*e*. Furthermore, we limited the search to Germany in the "region" search field. In the end 1,472 experts with a potentially relevant expertise remained.

We contacted every expert with a personalized e-mail. The e-mail contained an explanatory text on the paper's rationale and a link to the web page that hosted the questionnaire. A second e-mail four weeks later courteously reminded experts to participate in the survey. Experts were asked to participate in the survey within 14 days.

The questionnaire itself asked for data of one specific completed project. It contained questions regarding the project's characteristics and incorporated five questions addressing offshore project success. These aspects were measured using a 7-point Likert-scale with anchors at both ends.

RESULTS

Participants

Of 1,472 e-mails we sent out, 997 experts or 67.7% did not react but 475 experts or 32.3% people did respond. Of those 475 experts, 171 did not participate in the survey. The three main reasons for non-participation were that experts' expertise did not relate to application development or maintenance (42 experts), that experts worked for an OSP (42 experts), and that they considered their expertise level as being insufficient for participating in the survey (12 experts). In the end, we could gather 304 analyzable expert responses for analysis purposes. This represents a response rate of 20.7% in relation to all 1,472 contacted experts. Regarding time to answer, 218 or 71.7% participants responded within the given time limit of 14 days; 86 or 28.3% participants answered after 14 days.

Study participants currently hold managerial positions (141 or 46% of all participants), are Vice Presidents / Directors (67 or 22% of all participants), and C*X*Os, i.e., C*I*Os, C*E*Os, or C*T*Os (17 or 6% of all par-

[1] The terms are used in their original English form in Germany as well and therefore no translation is required.

ticipants). The remaining 79 participants (26%) work in other non-managerial roles. Figure 1 illustrates the current job positions held by study participants.

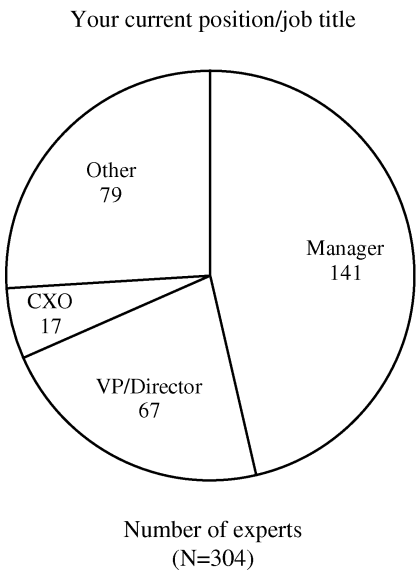


Figure 1: Job positions of study participants

Participants in the sample show a high level of experience in the field of IS in general and the field of IS offshoring in particular. Most of the participants (279 or 92%) have accumulated six or more years of personal experience in the field of IS. With regard to IS offshoring, 227 participants (75%) have three or more years of personal experience. Figure 2 illustrates the sample's experience profile. The left bar shows study participants' experience in the field of IS in general, the right bar shows study participants' experience specifically in IS offshoring.

Project characteristics

Most projects were conducted at companies in the sectors of telecommunications (91 projects), information technology (79 projects), and manufacturing (48 projects). Other sectors were banking and insurance (34 projects), transportation (25 projects), retail and distribution (24 projects), consulting (14 projects), healthcare (12 projects), public sector (9 projects), utilities (8 projects), construction (5 projects), and other sectors (20 projects). For 23 projects, study participants did not specify a sector.[2] Figure 3 illustrates the distribution of industry sectors.

Regarding company sizes, we asked for the number of employees and the number of internal IS staff of the company at the time the project was conducted. Data shows that primarily large companies populate the sample: 109 projects (36%) were executed at companies with more than 25,000 employees, 34 projects (11%) at companies with 5,001 to 25,000 employees, and 35 projects (12%) at companies with 1,001 to 5,000 employees. A recent but non-representative study in Germany also found that offshoring shares among large corporations are rather high (Lünendonk [33]). The left graph in Figure 4 shows the distribution of employees across different categories.

Similarly, the number of internal IS staff was rather high: 67 projects (22%) were conducted at companies with more than 5,000 internal IS employees, 30 projects (10%) at companies with 1,001 to 5,000 internal IS employees, and 41 projects (13%) at companies with 251 to 1,000 internal IS employees. The right graph in Figure 4 illustrates the distribution of internal IS staff members across different categories.

[2] We assured survey participants full anonymity. Therefore we needed to rely on their self-categorization regarding industry sector and cannot analyze the respective categories in further detail.

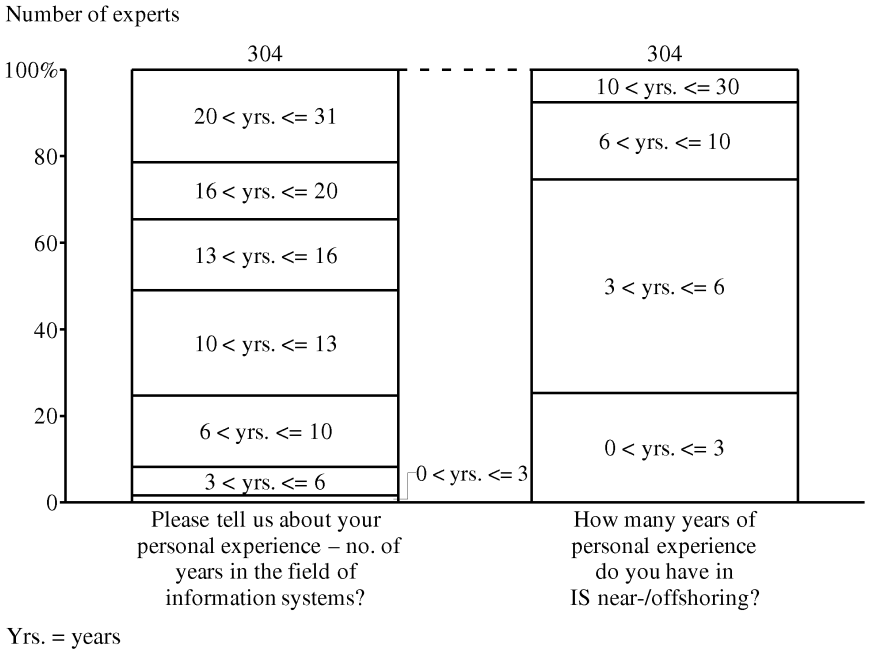


Figure 2: Experience levels of study participants

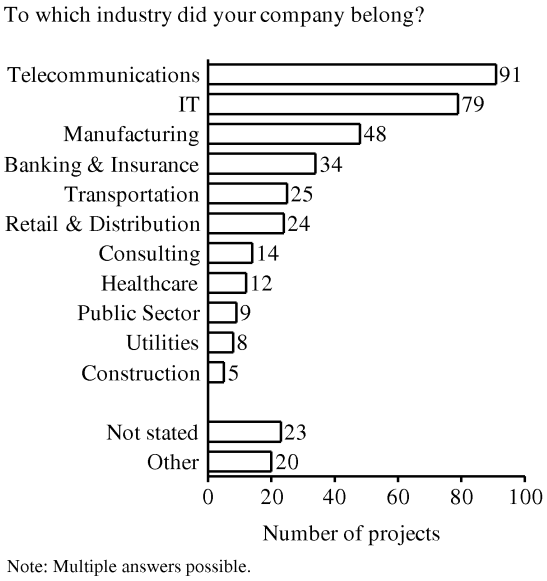


Figure 3: Industry sectors where projects were conducted

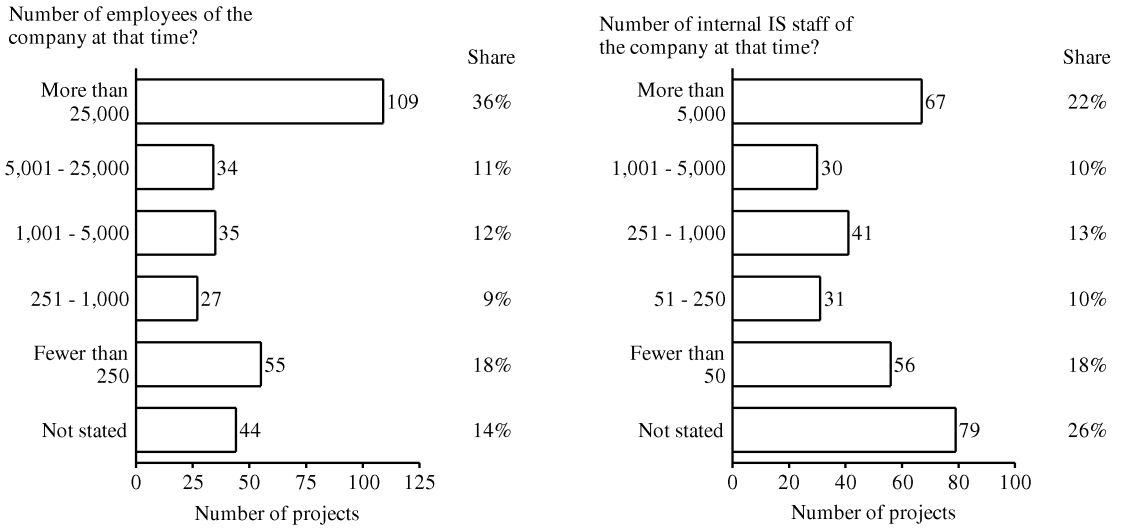


Figure 4: Employee demographics of companies where projects were conducted

The three main reasons for doing parts or the entire project offshore were cost reduction (285 projects), strategic reasons (159 projects), and perceived resource shortage (115 projects). This is in line with existing German and International research that mentions similar reasons why companies do IS offshoring (Apte et al. [2]; Bitkom [8]; Carmel and Agarwal [12]; Prikladnicki et al. [47]; Rao et al. [50]; Smith [54]; William et al. [64]). Figure 5 illustrates which reasons study participants mentioned for engaging in IS offshoring.

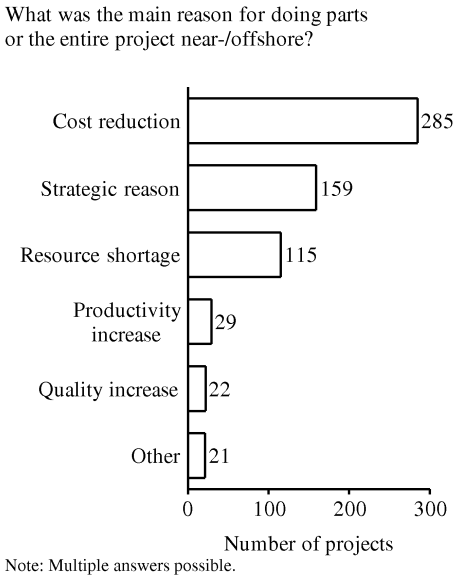


Figure 5: Reasons for doing projects offshore

In their *sourcing of IT work offshore stage model (SITO)*, Carmel and Agarwal mention that offshoring activities at companies usually start on an ad-hoc single project basis and evolve towards a more coherent integrated sourcing strategy over time (Carmel and Agarwal [13]). Therefore, we wanted to understand whether the project for which data was submitted was part of a larger offshoring program. Most projects (207 projects or 68%) were carried out within the context of a larger offshoring program. Ninety-two projects (30%) were stand-alone projects. Only five participants could not tell if the project for which they submitted data was part of a program. These results indicate that companies were at stage three (*Proactive Cost Focus*) or stage four (*Proactive Strategic Focus*), rather than stage two (*Offshore Experimenter*) within the framework suggested by Carmel and Agarwal – a finding not immediately inferable considering the low adoption of IS offshoring in Germany.

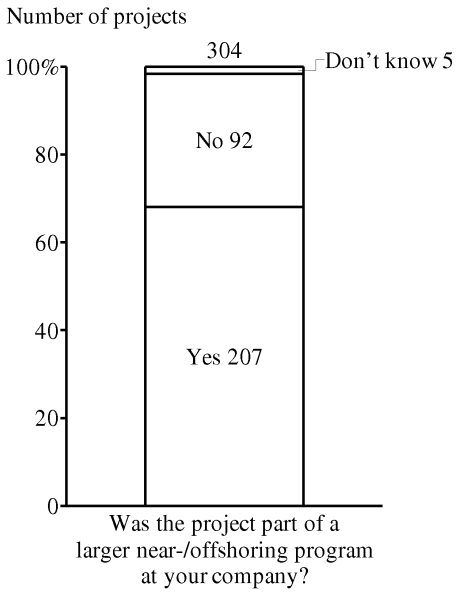
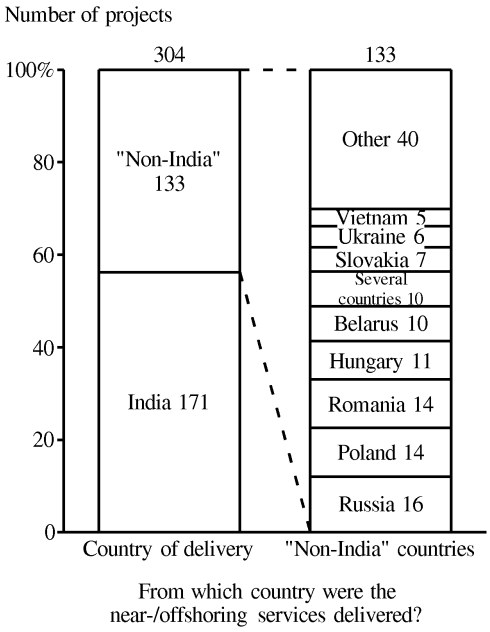


Figure 6: Embeddedness of projects in corporate program

India represents the most frequently mentioned single delivery country in the sample: 171 projects (56%) were delivered from there. Other countries serve less frequently as delivery countries, such as Russia (16 projects or 5%), Poland and Romania (each with 14 projects or 5%), Hungary (11 projects or 4%), Belarus (10 projects or 3%), and various other countries. The left bar in Figure 7 shows the large share of India as delivery country, the right bar illustrates the other countries' shares as delivery countries.



The 40 "Other" countries are:
Armenia 4, Bulgaria 4, Czech Republic 3, Spain 3, China 2, Indonesia 2, Lithuania 2, Serbia 2, Turkey 2, Argentina 1, Colombia 1, Egypt 1, France 1, Ireland 1, Italy 1, Korea 1, Latvia 1, Malaysia 1, Mexico 1, Pakistan 1, Philippines 1, Portugal 1, Singapore 1, Sri Lanka 1, Tunesia 1

Figure 7: Countries of delivery

Many studies define offshoring in the narrow sense of offshore outsourcing. Outsourcing implies that the service provider is an external third party. However, we examine offshoring in a broader sense, not limited to a certain ownership structure. In order to make this aspect transparent in the data, we asked for the relationship of the client to the offshore service provider. Data shows that 135 projects (44%) were delivered by an external third party company, 125 projects (41%) were delivered by an internal subsidiary, and 44 projects (14%) by a partially owned subsidiary, for example a joint venture. Figure 8 shows the ownership structure regarding the service providers in the sample.

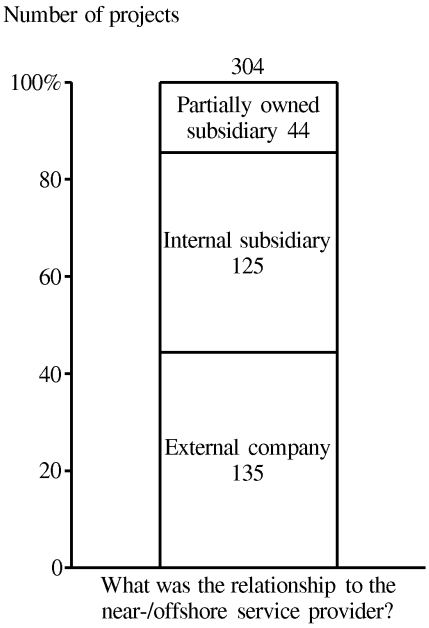


Figure 8: Ownership structure regarding OSP

To assess project size, we asked for a project's volume in person months. Most of the reported projects were smaller than 300 person months (195 projects or 64%). The left bar in Figure 9 shows the project sizes in person months. Looking at the offshored parts of the projects in terms of person months in relation to a project's total volume in person months, we can see that the majority of projects have an offshore share of 41% or more (213 projects or 70%). Thus, offshored project parts represented a significant amount of projects' overall volumes. The right bar in Figure 9 illustrates how many person months in percentage points were actually delivered from offshore of all 304 reported projects.

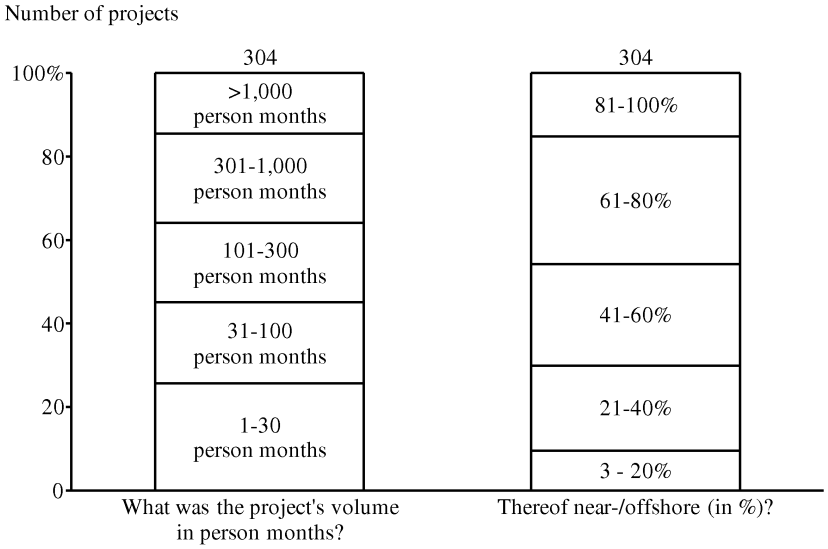


Figure 9: Project sizes and offshore shares

The majority of reported projects (220 projects or 72%) were finished between 2007 and 2009. Only 84 projects (28%) were finished before 2007. For study participants, offshore application development or maintenance projects seem to have occurred recently. Figure 10 illustrates the relative shares of projects with different finishing dates.

As Figure 11 shows, 258 (85%) study participants were in managerial roles on the projects for which they submitted data. Only 46 (15%) said they were in non-managerial roles. This result indicates that we correctly addressed the key informants regarding the projects in the sample because one can assume that individuals in managerial roles have access to the relevant project information we asked in the survey.

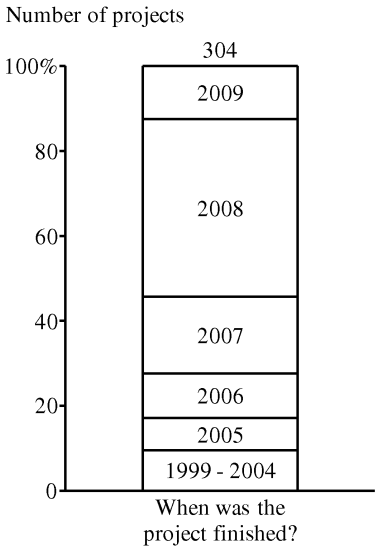


Figure 10: Finishing dates of projects

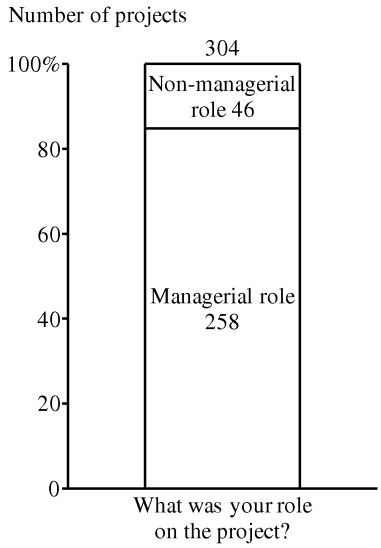


Figure 11: Study participants' roles in the project

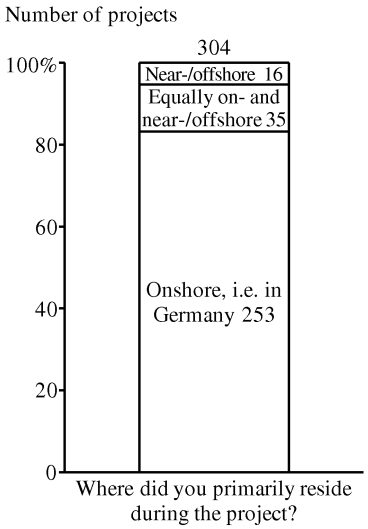


Figure 12: Residential location of participants

Finally, we inquired where survey participants actually resided while the project was conducted: 253 participants (83%) resided onshore, 35 participants (12%) equally on- and offshore, and only 16 participants (5%) exclusively offshore. This shows that the data incorporates, as originally intended, the German service-receiving, i.e., offshore client, perspective on the topic. Figure 12 illustrates where study participants resided during project execution.

Subgroup comparisons

This section focuses on offshore project success and analyzes whether and to what extent its indicator scores change for different subgroups. Since the data is not normally distributed, we use the non-parametric Mann-Whitney test (Mann and Whitney [34]) to assess significances of mean differences as implemented by statistic software package SPSS 16 (SPSS Inc. [55]).

Overall offshore project success

We measured success by assessing participants' levels of satisfaction regarding a project's time schedule (SUCCESS1), budget (SUCCESS2), functionality (SUCCESS3), quality (SUCCESS4), and satisfaction with the overall outcome of the project (SUCCESS5). Figure 13 shows the data for each indicator together with the corresponding median values, mean values, and standard deviations (STDV). Mean values regarding the dimensions time schedule (SUCCESS1: mean = 4.38) and expected quality (SUCCESS4: mean = 4.24) are slightly lower in comparison to the other dimensions. However, projects are perceived as being successful, demonstrated by an overall outcome satisfaction with mean = 4.63 and median = 5 (SUCCESS5).

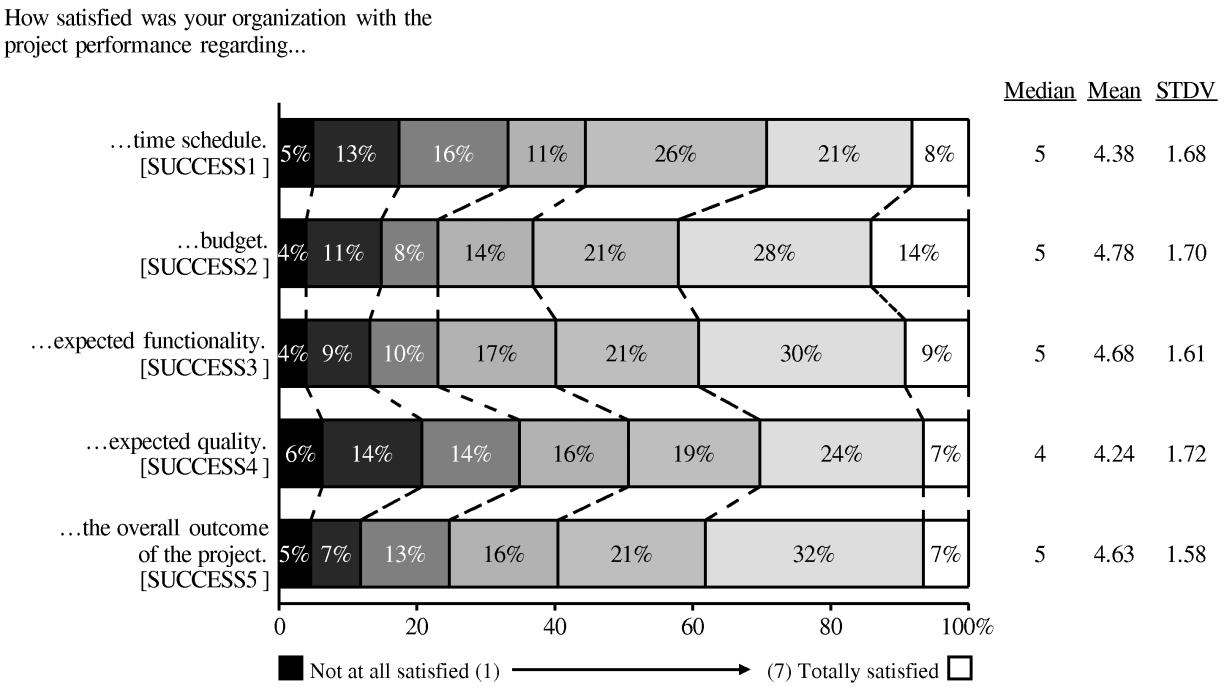


Figure 13: Indicator values for construct offshore project success (SUCCESS)

Nearshore versus offshore projects

The most frequently cited reason for engaging in IS offshoring is cost reduction (c.f. Figure 5). Nearshoring, i.e., delivery from a country nearby, comes with advantages regarding travel, communication, and infrastructure costs (Carmel and Abbott [11]; Gadatsch [20]; Nicklisch et al. [41]). Consequently, we would expect higher indicator values for success at nearshore projects in comparison to offshore projects[3].

India is one of the most popular offshore destinations (AT Kearney [5]; Metters and Verma [38]). India also dominates within the subset of offshore projects in our sample: 171 of 199 offshore projects were delivered from there. To account for this situation we compared nearshore projects (Group 1) with offshore projects delivered from India (Group 2) and only reported the mean success indicator values for the remaining 28 offshore projects. Since the later group's sample size largely differs from the other ones we did not include it in a comparison test for statistical reasons.

Table 1 illustrates the mean values of project success indicators for nearshore and offshore projects to India. It shows that indicator values are indeed higher for nearshore projects. This is in line with findings from previous studies in Germany that mention cultural and language-induced challenges arising from projects delivered from India (Deloitte & Touche [16]; Dibbern et al. [17]; Nicklisch et al. [41]; Winkler et al. [66]). These differences are significant for the functionality dimension (SUCCESS3: $U = 7097.50$, $p < .01$, $r = -.17$), the quality dimension (SUCCESS4: $U = 7338.50$, $p < .01$, $r = -.15$), and the overall outcome (SUCCESS5: $U = 6907.50$, $p < .001$, $r = -.19$). Effect sizes are small.

In contrast, the small group of 28 offshore projects (last column) shows the highest success scores in comparison to nearshore as well as offshore projects to India. This is a counterintuitive finding – especially since

[3] Classification into "nearshore" and "offshore" is based on geographic distance from Germany. Nearshore countries in our sample include: Armenia, Belarus, Bulgaria, Czech Republic, Egypt, France, Hungary, Ireland, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Spain, Tunesia, Turkey, Ukraine. Offshore countries include: Argentina, China, Colombia, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Philippines, Singapore, Sri Lanka, Vietnam, and the 10 projects incorporating offshoring to several countries because they all included offshore countries.

this group includes 10 multi-country sourcing arrangements where one could expect even higher additional cost and complexity. We primarily attribute this finding to a bias induced by the low sample size.

Table 1: Mean differences of offshore project success indicator values between projects delivered from nearshore, India, and offshore

	Mean values			
	Group 1	Group 2		
Statement	**Nearshore projects (n = 105)**	**India projects (n = 171)**	**Difference**	***Offshore projects (n = 28)***
How satisfied was your organization with…				
…the project performance regarding time schedule. [SUCCESS1]	4.52	4.19	0.33	*4.96*
…the project performance regarding budget. [SUCCESS2]	4.92	4.60	0.32	*5.32*
…the project performance regarding expected functionality. [SUCCESS3]	5.00	4.41	0.59 **	*5.14*
…the project performance regarding expected quality. [SUCCESS4]	4.51	3.96	0.55 **	*4.93*
…the overall outcome of the project. [SUCCESS5]	5.00	4.34	0.66 ***	*5.04*

* p < .05 ** p < .01 *** p < .001

Projects delivered by internal subsidiary, partially-owned, or external company

In our sample almost an equal number of projects were delivered by internal offshore subsidiaries (125 projects) and external OSPs (135 projects). Only 44 projects were delivered by partially-owned entities. Existing research argues that captive offshoring might result in more successful projects because interests of offshore client and service provider are more aligned and there is less organizational friction on a project level (Aron et al. [3]; Aron and Singh [4]; Jahns et al. [25]). However, the captive center as a whole might be more costly to set up and to operate (Henley [22]; Metters [37]). In contrast to that, recent research findings suggest that project participants do not necessarily perceive any differences between captive and external offshore service providers in terms of positive or negative impact on collaboration quality (Levina and Vaast [32]).

Due to unequal sample sizes we only compared indicator values for offshore project success between projects that were conducted by an internal subsidiary (125 projects, Group 1) and by an external OSP (135 projects, Group 2).

Table 2 shows the corresponding results. Indicator values for projects delivered by a partially-owned entity are reported in the last column.

Success indicator values for offshore project success are higher for projects that were conducted by an internal subsidiary (Group 1) than for projects that were conducted by an external OSP (Group 2). Values for partially-owned OSPs rank between the values for the previous to groups. Differences between Group 1 and Group 2 are significant for dimensions schedule (SUCCESS1: $U = 6636.50$, $p < .01$, $r = -.17$), functionality (SUCCESS3: $U = 6856.50$, $p < .01$, $r = -.15$), quality (SUCCESS4: $U = 7253.00$, $p < .05$, $r = -.11$), and overall outcome (SUCCESS5: $U = 7227.50$, $p < .05$, $r = -.12$). Similar to the previous subgroup comparisons, effects were small for all four significant differences.

Table 2: Mean differences of offshore project success indicator values between projects delivered by an internal subsidiary, partially owned compny, or projects delivered by an external company

	Mean values			
	Group 1	Group 2		
Statement	Internal subsidiary (n = 125)	External company (n = 135)	Difference	*Partially-owned (n = 44)*
How satisfied was your organization with…				
…the project performance regarding time schedule. [SUCCESS1]	4.73	4.08	0.65 **	*4.27*
…the project performance regarding budget. [SUCCESS2]	4.94	4.62	0.32	*4.80*
…the project performance regarding expected functionality. [SUCCESS3]	4.95	4.36	0.59 **	*4.89*
…the project performance regarding expected quality. [SUCCESS4]	4.43	3.99	0.44 *	*4.50*
…the overall outcome of the project. [SUCCESS5]	4.86	4.37	0.49 *	*4.80*

* p < .05 ** p < .01 *** p < .001

Stand-alone projects versus projects embedded in larger offshore program

We would expect that companies with offshore programs (Group 2) have accumulated more offshoring

Table 3 shows that indicator values for offshore project success are actually higher for stand-alone projects than for projects that were embedded in a larger program. However, these differences are not significant except for a low effect regarding the budget dimension (SUCCESS2) with mean = 4.99 for Group 1 and mean = 4.68 for Group 2 (U = 8620.00, p < .05, r = -.12).

Small versus large projects

Offshore projects require a certain minimum size to compensate for additional offshore-related cost and overhead. However, augmenting size also increases project complexity which has a negative impact on offshore project success. (Akmanligil and Palvia [1]; Bitkom [8]; Menon [35]; Westner and Strahringer [60])

Using the median value of project size in person months (median = 150) as a group formation criterion, we compare small projects with a size of equal or less than 150 person months (Group 1) and large projects with a size greater than 150 person months (Group 2). Table 4 shows that offshore project success indicator values are higher for Group 1. However, there is only a small significant effect for the functionality dimension (SUCCESS3) with mean values of 4.88 for Group 1 and 4.47 for Group 2 (U = 9855.00, p < .05, r = -.13).

expertise than companies where offshore projects are executed on a stand-alone basis (Group 1). (Carmel and Agarwal [13]; Trent and Monczka [57])

In contrast to these findings,

Projects with low versus high offshoring share

The right bar in Figure 9 shows that the projects in the sample are not exclusively delivered from offshore. Projects are rather a combination of activities conducted offshore and onshore, i.e., in Germany. Offshoring thereby adds complexity to a project, e.g., with regard to distance, cultural aspects, or time zone differences, and thus increases the risk of project failure. We would therefore expect that projects with low shares of offshoring in terms of person months tend to be more successful and show higher[4] indicator values for offshore project success.

[4] Only indicator SUCCESS2, focusing on the budget perspective, might possibly show different scores because one could expect lower cost savings for lower offshore shares.

Table 3: Mean differences of offshore project success indicator values between stand-alone projects and projects conducted as part of a larger offshoring program

	Mean values		
Statement	**Group 1 Stand-alone/ don't know (n = 97)**	**Group 2 Larger program (n = 207)**	**Difference**
How satisfied was your organization with…			
…the project performance regarding time schedule. [SUCCESS1]	4.49	4.32	0.18
…the project performance regarding budget. [SUCCESS2]	4.99	4.68	0.31 *
…the project performance regarding expected functionality. [SUCCESS3]	4.70	4.67	0.03
…the project performance regarding expected quality. [SUCCESS4]	4.41	4.16	0.25
…the overall outcome of the project. [SUCCESS5]	4.72	4.59	0.13

* p < .05 ** p < .01 *** p < .001

Table 4: Mean differences of offshore project success indicator values between small projects and large projects regarding person months

	Mean values		
Statement	**Group 1 Project <= 150 person months (n = 155)**	**Group 2 Project > 150 person months (n = 149)**	**Difference**
How satisfied was your organization with…			
…the project performance regarding time schedule. [SUCCESS1]	4.54	4.21	0.33
…the project performance regarding budget. [SUCCESS2]	4.94	4.60	0.34
…the project performance regarding expected functionality. [SUCCESS3]	4.88	4.47	0.41 *
…the project performance regarding expected quality. [SUCCESS4]	4.42	4.06	0.36
…the overall outcome of the project. [SUCCESS5]	4.80	4.46	0.34

* p < .05 ** p < .01 *** p < .001

Table 5 shows that this does not apply to the sample. The opposite is the case: projects with offshore shares below 50% of total person months (Group 1) have slightly lower success indicator values than projects with offshore shares of equal or greater than 50% of total person months (Group 2). However, none of these differences is significant.

Table 5: Mean differences of offshore project success indicator values between projects with low offshore share and projects with high offshore share

	Mean values		
Statement	**Group 1 Offshoring share < 50% (n = 93)**	**Group 2 Offshoring share >= 50% (n = 211)**	**Difference**
How satisfied was your organization with…			
…the project performance regarding time schedule. [SUCCESS1]	4.33	4.39	-0.06
…the project performance regarding budget. [SUCCESS2]	4.65	4.83	-0.19
…the project performance regarding expected functionality. [SUCCESS3]	4.51	4.76	-0.25
…the project performance regarding expected quality. [SUCCESS4]	4.16	4.28	-0.12
…the overall outcome of the project. [SUCCESS5]	4.55	4.67	-0.12

* p < .05 ** p < .01 *** p < .001

DISCUSSION

Project characteristics

In Germany, IS offshoring primarily occurs in sectors Telecommunications and IT. This is in line with findings from previous research (ZEW [68]) and not surprising because these sectors represent dynamic industries with a high intensity of information technology. Additionally, our data indicates that IS offshoring happens in the context of large corporations instead of small to medium enterprises. Previous studies found only indicative support for this observation (Lünendonk [33]). Potential explanations are that large companies can better cope with the complexity of offshoring projects, that they are more willing to take the associated project failure risks, or both.

Cost reduction is the main reason for doing projects offshore. This is a result similar to existing studies on IS offshoring in the international context. Apart from that, most projects are conducted as part of a larger offshoring program at a company. This indicates that German corporations that actually offshore exhibit a higher degree of offshore sourcing maturity (Carmel and Agarwal [13]).

Noticeably, most projects are delivered from India. One could have expected a larger delivery share of countries that are closer to Germany and where delivery can potentially happen in German language (ZEW [68]). However, this is not the case – rather the opposite applies: Indian vendors with English as delivery language constitute the major part of all offshoring projects in our sample. The dominance of India as delivery country is not totally surprising because it is one of the most popular offshore destinations in a global context (AT Kearney [5]; Moczadlo [40]; Schaaf and Weber [52]).

Regarding the organizational implementation, we observe captive offshoring as well as offshore outsourcing with almost equal frequency. Projects themselves are of

various sizes with offshore shares being mostly higher than 40%.

Subgroup comparisons regarding project success

Companies in our sample are rather satisfied with the outcome of their IS offshoring projects: satisfaction levels are on average high with the only exception being the aspect of project schedule and expected quality that exhibit slightly lower satisfaction levels. This is similar to previous studies that also reported rather positive perceptions of offshoring by German client companies at a company level. (Lünendonk [33]; Moczadlo [40]; Schaaf and Weber [52])

Subgroup comparisons regarding offshore project success using subgroup formation criteria based on the sample's demographics yielded interesting results. First, projects delivered from countries closer to Germany, i.e., nearshoring, show significantly higher satisfaction levels regarding their expected functionality, quality, and the overall outcome. Proximity in terms of culture, time, and travel distance seems to increase a project's success probability. Nevertheless, India as a delivery country dominated in our sample. Success scores for projects delivered from India are thereby lower. This might be due to cultural difference and language-induced problems (Deloitte & Touche [16]; Dibbern et al. [17]; Winkler et al. [66]).

The subgroups with the highest number of significant differences are projects delivered by an internal subsidiary in comparison to projects delivered by an external OSP: four of five success indicators show significant differences, with success being higher for projects in the first group. Apparently, internal subsidiaries are perceived as being more successful in delivering offshoring projects. This might be due to less organizational friction, knowledge discrepancies, or a higher degree of efficiency of internal subsidiaries – although there are different views in research on the role of captive entities' performances in particular and the role of organizational setups for success as already outlined. A previous case study on the setup of a captive offshore unit by a German company and the corresponding positive results support our findings (Kobitzsch et al. [27]).

Regarding project characteristics such as a project's embeddedness in a larger offshoring program, a project's size, or a project's offshoring degree in terms of relatively offshored labor hours we find few significant differences. Reversely, these results reveal that those characteristics are not per-se sources of project failure. For management practice this implies that, for example, stand-alone pilot projects with medium size and medium offshoring shares have equal chances of being successful. Thus, IS offshoring can be gradually introduced to a company without a systemic threat to the success of the projects that are executed in the beginning.

Table 6 provides an overview of the subgroup comparison results. It lists the actual subgroup comparison (first column), the direction of success indicator differences (second column), the number of significant differences (third column), and the corresponding effect sizes (fourth column).

LIMITATIONS AND RESEARCH OPPORTUNITIES

Our paper represents one of the few empirical studies on IS offshoring in Germany. It provides a view on the current state of IS offshoring in Germany and tentatively analyzes success patterns by comparing project subgroups. The quality of the results is increased by the large size of the analyzed sample.

However, our paper also comes with improvement potential. The applied data collection approach could be subject to criticism. We could not draw a statistical representative sample because there was no viable option to access the basic population. The large share of IT and Telecommunications companies in our sample might support this perceived limitation. However, if we compare our sample composition to the only representative study on IS business practices in Germany we find that the ICT sector does actually dominate when it comes to offshoring (ZEW [68]). An obvious sample selection bias can therefore not be inferred from the authors' perspective.

Furthermore, effect sizes for the observed significant success differences between subgroups were all small. Thus, the formed subgroups explain a small portion of indicator variances for offshore project success which limits their relevance. However, this is not a methodological issue pertinent to our study but rather an aspect inherent to the original data.

Potential directions for future research arise from the previously described limitations of the paper. First of all, it would be interesting to compare our results to other empirical studies on IS offshoring in Germany or other countries where English is not the native language. This could enhance the generalizability of our findings. In this context, one could also attempt to perform a statistically more representative sampling.

Table 6: Overview of subgroup comparison results

Subgroup comparison	Observed success indicator values	Significant differences	Effect sizes
Nearshore versus offshore projects	Higher for nearshore projects	2	small
Projects delivered by internal or partially-owned OSP versus external OSP	Higher for projects delivered by internal or partially-owned OSP	4	small
Stand-alone projects versus projects embedded in larger offshoring program	Higher for stand-alone projects	1	small
Small versus large projects	Higher for small projects	1	small
Projects with low versus high offshoring share	Higher for projects with high offshoring share	0	n/a

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AUTHOR BIOGRAPHIES

Markus K. Westner is a management consultant working for Bain & Company in its Munich office where he focuses on the financial services and technology sector. He obtained his Ph.D. at the European Business School (EBS), Germany, earned a Diploma in Business Administration (German MBA-equivalent) from the European Business School, and a master degree in computer science from UNITEC Institute of Technology, Auckland, New Zealand. His research interests focus on information systems offshoring and outsourcing as well as management of information systems.

Susanne Strahringer is a professor of information systems at Dresden University of Technology (TUD), Germany. Before joining TUD, she held positions at the University of Augsburg and the European Business School (EBS). She graduated from Darmstadt University of Technology where she also obtained her Ph.D. and completed her habilitation thesis. Her research interests focus on ERP systems, enterprise modeling and IS outsourcing. She is editor-in-chief of the German IS journal "HMD - Praxis der Wirtschaftsinformatik".