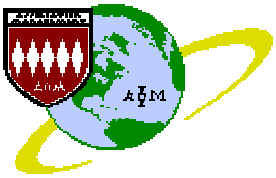

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EVALUATION CRITERIA FOR SELECTING OFFSHORING CANDIDATES: AN ANALYSIS OF PRACTICES IN GERMAN BUSINESSES

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

The identification of suitable applications or projects is a main initial step in any software development or maintenance related IS offshoring arrangement. This paper examines evaluation criteria and their importance for selecting application or project candidates for offshoring. Based on a literature analysis and interviews with 47 experts from 36 different German companies describing 64 case examples, we find that in contrast to the literature, "size", "codification", and "language" are perceived as important selection criteria by experts. Case examples additionally show that "business specificity" seems to be a main reason for application or project failures, that "business criticality" appears to be less important than suggested by the literature, and that adequate "size" might be a necessary prerequisite, but seems not to be a sufficient criterion for an application's or project's suitability for offshoring. These differences in comparison to findings from the literature may be explained by cultural and language differences.

Keywords: Offshoring, nearshoring, outsourcing, what to offshore, selection criteria, information systems

INTRODUCTION

Information systems (IS) offshoring describes the transfer of IS services to a service providing entity in a near or faraway country. This entity can be an internal subsidiary, a partially-owned unit, or an external service provider. The services themselves are partially or totally transferred. (Carmel and Agarwal [14]; Hirschheim et al. [23]; Jahns et al. [24]; Mirani [36]; Niederman et al. [40]; Rajkumar and Mani [43])

One of the first activities before engaging in an offshore sourcing arrangement is to identify application or project candidates that might be in-scope for offshore delivery. Once identified, these offshoring candidates then represent the core objects in the subsequent implementation of IS offshoring. Accordingly, research and practice perceive the identification of suitable application or project candidates as a main step in pursuing an IS offshoring endeavor. Therefore, "what to offshore" is one of the central IS offshoring questions. (Aron and Singh [6]; Bruhn [13]; Chua and Pan [15]; Dibbern, Winkler & Heinzl [19]; Kumar and Palvia [29]; Mirani [37])

Nevertheless, existing research in IS offshoring only partially examines what criteria are applied to select applications or projects for offshoring. There are studies that suggest respective evaluation criteria but they are often based on a low number of empirical observations

and are conceptual in nature. Several authors have already mentioned this deficit (Ben and Claus [8]; Dibbern et al. [18]; Hirschheim et al. [23]; Jahns et al. [24]; Kumar and Palvia [29]; Mirani [36]).

RESEARCH QUESTIONS

To the best of our knowledge very little research exists that examines criteria for selecting applications or projects suitable for offshoring. Moreover, there is a considerable lack of research on organizations in countries where English is not the native language. Considering this research situation, the study at hand intends to examine the following research questions:

- What are evaluation criteria for selecting application or project candidates for offshoring?
- How important are these criteria in relation to each other?

The answers to these research questions are relevant to research as well as management practice. For research, our paper addresses the research deficit regarding the aspect "what to offshore". It also adds to existing research because of its empirical foundation. For management practice, our paper gives indications on how to evaluate and select application or project candidates before further proceeding with the offshoring process. This may, for example, be useful for the screening of companies' application or project portfolios in order to determine candidates that may serve as pilots for an IS offshoring arrangement or later on in order to extend the arrangement's scope.

RESEARCH FOCUS

We employ a managerial point of view for approaching our research objectives. In doing so, we focus our research along three dimensions: "IS service", "region", and "arrangement":

IS service: we focus on application development and maintenance as well as the projects arising therefrom. Application development covers the development of new applications but also reengineering or recoding of existing applications. Application maintenance is understood in a development-near fashion subsuming, e.g., the functional extension of existing applications such as programming new modules. (Amoribieta et al. [2]; Apte et al. [5]; Fish and Seydel [22]; Wiener [52]; William et al. [53])

Region: we focus on enterprises in Germany. First, the amount of research focusing on German businesses' IS offshoring practices is limited. Second, Germany seems to be a follower country regarding the adoption of IS offshoring due to language and cultural barriers. (Dibbern, Winkler & Heinzl [19]; Mertens [34]; Moczadlo [38]; Wiener [52]; Zentrum für Europäische Wirtschaftsforschung GmbH [56])

Arrangement: we focus on the offshore consuming side in an offshore arrangement, referred to as the "client organization". This is usually a corporate IT department. We do not focus on offshore service providing (OSP) organizations.

METHODOLOGY

Research Approach

The paper at hand is empirical and pursues an exploratory-interpretive research approach. Offshored applications or projects are the unit of analysis. An exploratory-interpretive 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. Furthermore, it intends to examine a research area by accessing participants' perceptions of the phenomenon (Boudreau et al. [12]; Orlikowski and Baroudi [41]).

We sampled a series of small case studies with offshored applications being the unit of analysis via expert interviews in order to identify evaluation criteria. A case study research design fits into an exploratory-interpretive research type with an empirical component. Case studies are most suitable to explore and understand a phenomenon where research and theory are at a formative stage (Benbasat et al. [9]; Creswell [16]; Yin [55]).

The nature of our research question implies a multiple case-study approach aiming at a rather large number of cases in order to increase the empirical strength of our research. Insights arising from just one case or a limited number of cases have a higher likelihood to be biased and to be only applicable to these specific cases or very similar ones. In contrast to that, similar converging conclusions that evolve from multiple independent cases have a higher explanatory power and generalizability. (Yin [55])

Research Design

We first performed a database-driven literature analysis to examine evaluation criteria that can be used to select applications or projects for offshoring.

Based on this initial understanding we interviewed experts at different German corporations. The interviews were semi-structured. After questions regarding the experts' offshore expertise, we first asked them on an

abstract level what could be evaluation criteria for selecting applications or projects for offshoring. Afterwards we let the experts describe one or more brief real-live cases of offshored applications or projects from their professional experience. In these concise cases the experts illustrated the usage of evaluation criteria and whether the undertaking was perceived as successful.

We wanted our questions to avoid biasing the experts' statements. Therefore, we did not distribute the results of the literature analysis to them before the interview and used pre-formulated questions during the interview.

All interviews were tape-recorded, transcribed and anonymized afterwards. The interview transcripts consist of 156,000 words and we analyzed them using the software "NVivo 8". NVivo is software that supports text analysis in qualitative research and is especially suitable for case study research.

LITERATURE REVIEW

Initially, we conducted a database-driven literature search ("ProQuest", "ebsco Business Search Premier", AIS and IEEE digital libraries, and conference proceedings) to identify research in IS offshoring that examines evaluation criteria for selecting applications or projects for offshoring. We analyzed the resulting studies and manually coded the mentioned criteria. Then, we performed a meaningful aggregation of the individual results to common criteria.

In total, we identified 36 relevant studies addressing the aspect of offshore application or project selection criteria. 27 or 75% of these studies are of academic nature, the remaining 9 or 25% are practitioner contributions. Regarding their research approach, 26 or 72% are non-empirical, the other 10 or 28% employ an empirical research approach. This supports our perception of a considerable research gap in empirically grounded research.

As a final result of literature analysis we identified 17 common characteristics across all studies. Table 1 provides an overview on these characteristics, describes them, and indicates their impact on applications' or projects' suitability for offshore delivery as perceived by these studies.

Analyzing the citation frequency of all 17 characteristics, it is noticeable that only seven characteristics are cited more frequently than the citation frequency mean of 21% (or 7.5 citations).

These are, in order of citation frequency, "interaction", "business criticality", "complexity", "business specificity", "size", "stability", and "strategic importance". Especially "interaction", describing the degree of required personal contact during development and maintenance, is cited by 17 or 47% of all analyzed studies. Figure 1 illustrates these results. Each bar represents one criterion as mentioned in Table 1. The bar heights show the corresponding citation frequencies. Criteria that are mentioned more frequent than the citation frequency mean of 21% are highlighted in gray. Table 2 in the appendix lists in detail which studies mention which criterion.

Table 1: Criteria for Selecting Applications or Projects for Offshoring
(Based on Literature Analysis; Alphabetical Order)

Criteria	Description	Perceived suitability for offshoring high, if…
Business criticality	Importance for fulfilling daily business operations	…business criticality low
Business specificity	Inherent internal business process knowledge, proprietary industry knowledge or high customization	…business specificity low
Codification	Degree of documentation or specification	…codification high
Complexity	Scope, number and size of interfaces, number of users and sites involved or characteristics of inputs and outputs	…complexity low
Cost	Cost budget in comparison to other applications	…cost level high
Intellectual property	Inherent intellectual property	…intellectual property low
Interaction	Required personal contact with customer during development and maintenance	…interaction requirements low
Labor intensity	Labor effort in relation to total effort	…labor intensity high
Lifespan	Expected remaining lifespan of application or project	…remaining lifespan long enough to justify transition costs
Modularity	Separability of applications or projects	…modularity high
Process formalization	Development or maintenance activities' degree of specification and structure	…process formalization high
Proximity	Required proximity during development and maintenance, e.g., due to reliance on local knowledge or activities that can only be performed locally	…proximity requirements low
Regulation	Exposure to external regulatory constraints	…regulation low
Size	Scope and duration	…minimum size and duration achieved
Stability	Application stability, stability of requirements	…stability high
Strategic importance	Importance in terms of helping to implement a company's core competency and differentiate itself on the market	…strategic importance low
Technology availability	Technology and the availability of knowledgeable resources on the market	…technology availability high

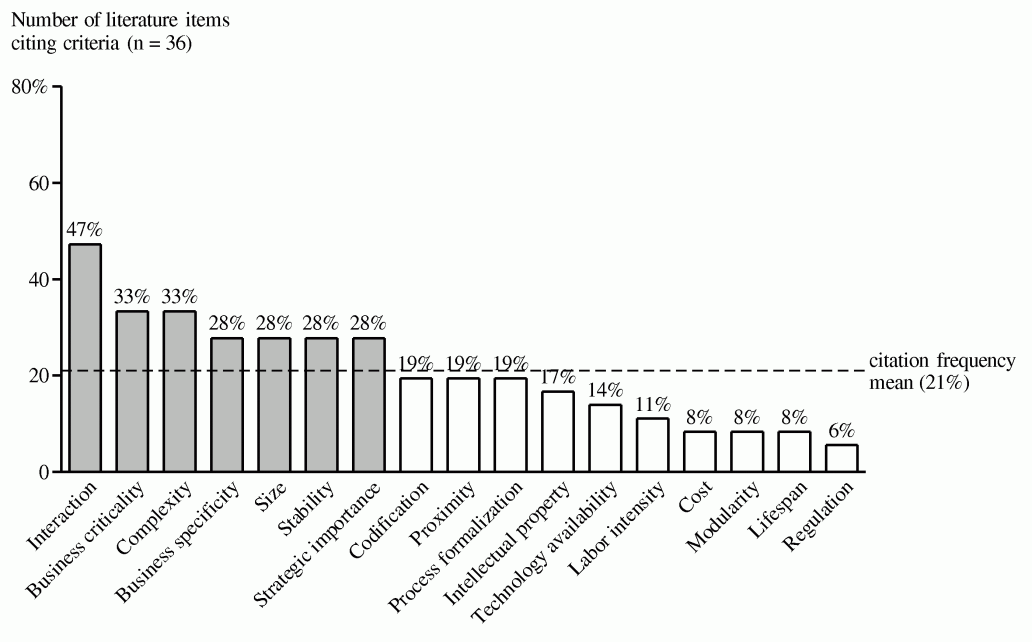

Figure 1: Citation Frequency of Criteria for Selecting Applications or Projects for Offshoring (Based on Literature Analysis, Ordered by Citation Frequency)

DATA COLLECTION

We focused on Germany's Top 100 companies (ranked by revenue), Top 20 banks (ranked by balance sheet total), Top 20 insurance companies (ranked by insurance premiums) and Top 20 IT firms (ranked by revenue) to find potential interview partners. Using these company names as keywords we conducted a search on Germany's most popular business social network "XING" (www.xing.com, over five million members as stated by company) to identify experts. We further refined the search by using the search term "offshor* OR nearshor* OR off-shor* OR near-shor*" in XING's "I offer" search-field. "*" ensures that also variations of the term are found such as "offshor*ing*" or "offshor*e*".

The search was conducted from November 26th 2007 to November 30th 2007. It yielded 246 experts. We contacted them using the XING-mail-function with a standard cover letter. 187 people did not respond. 15 rejected our interview request. During the interview phase (November 30th 2007 to February 5th 2008) we got referrals to 7 additional experts not previously identified via XING. In the end, we conducted 51 interviews of which 47 were content-wise relevant, i.e., complied to our research focus regarding "IS service", "region", and "arrangement".

The interviews lasted approximately 45 minutes. They consisted of three sections, which were a five minute introduction, 30 minute question part, and a final 10 minute feedback part. The interviews were semi-structured with guiding questions. A test-run of the questions before the actual interviews showed that the questions were understandable and unambiguous.

The interview's introduction served to introduce ourselves to the interview partner and illustrate the purpose of our research. In the question part, we inquired about the expert's years of personal expertise in IS offshoring. We then asked for useful evaluation criteria when selecting applications or projects for offshoring. This question was positioned on an abstract level and not related to a specific real-life case or example experienced by the expert. Afterwards we let them describe one or more brief cases from their current or past professional experience. During these case descriptions we noted whether the specific application or project was perceived successful and what evaluation criteria were applied. In the feedback part of the interview we provided preliminary results from the already conducted interviews to the experts. Table 3 in the appendix (page 33) contains the interview guideline.

ANALYSIS

Experts

As a result of our mailings we conducted relevant interviews with 47 experts. 38 or 81% of these experts hold managerial positions (i.e., managers, senior managers, or executives) in the companies they work for. Senior managers (19 or 40%) form the largest group among the experts. 26 or 55% of the experts have 1 to 3 years of personal expertise in the field of IS offshoring.

We also asked for the country or countries in which they have gathered their expertise (multiple answers were possible). 28 experts mention India as the country where they have accumulated their IS offshoring expertise. The latter is interesting because one could have expected low-wage countries in closer distance, e.g., in Eastern Europe, to be mentioned more often.

Figure 2 illustrates the positions the interviewed experts hold, their offshore expertise in number of years, and the countries with which they gathered their IS offshoring expertise. The bars in the figure are scaled to 100% to illustrate the relative distribution of the expert sample's characteristics. Table 4 in the appendix (page 33) is a disguised list presenting all interviewed experts and the companies they work for.

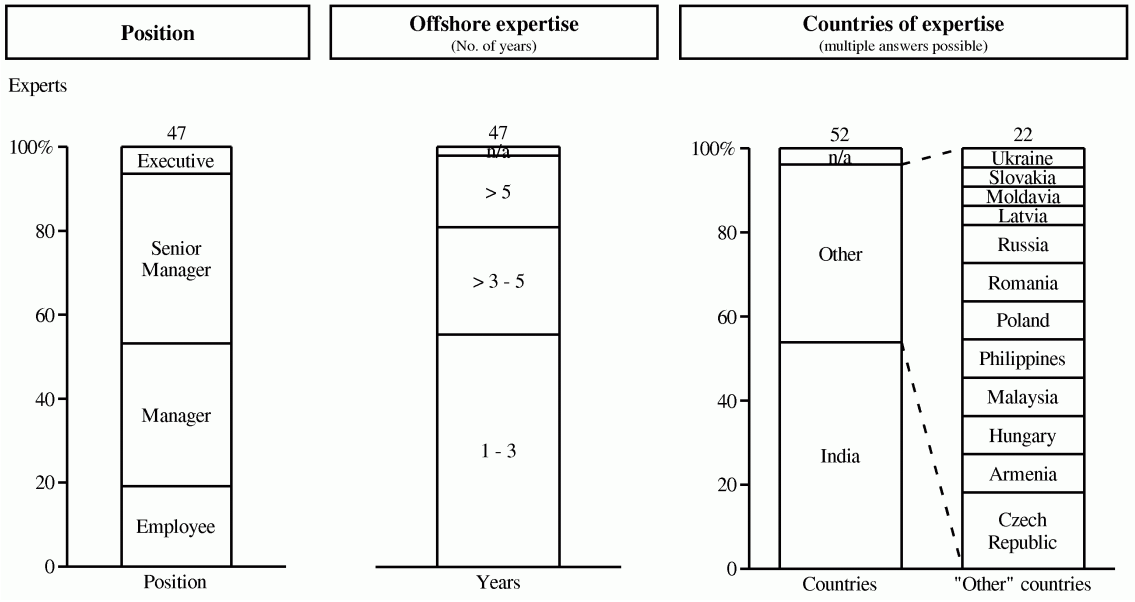

Figure 2: Experts' Positions, Their Offshore Expertise, and Countries of Expertise

The 47 interviewed experts work for 36 different German companies. 13 experts or 28% work in the IT sector. 11 or 23% work in financial services. 6 or 13% work in the automotive industry and 5 or 11% in the high tech industry. The remaining 12 experts work in other sectors such as transportation (3 experts), tourism (3 experts), logistics (2 experts), industrial goods (2 experts), utilities (1 expert), or telecommunication (1 expert). The left bar in Figure 3 illustrates the industry sectors in which the experts work. The right bar in Figure 3 shows how this corresponds to the industry sectors of the different companies where they are employed.

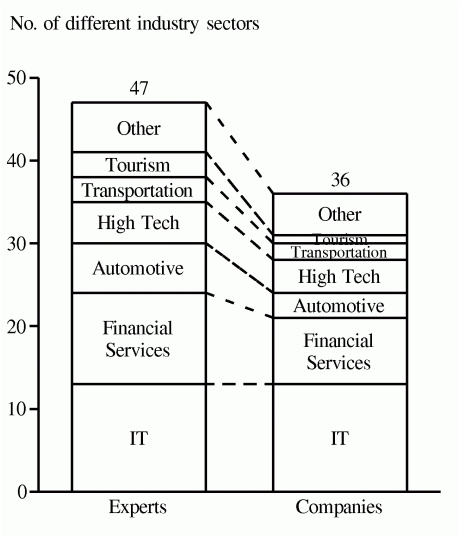

Figure 3: Industry Sectors Experts Work in and of the Companies Where They are Employed

Figure 2 and 3 together show that we covered a diverse variety of experts' positions and personal expertise as well as different industry sectors in our interview sample. This is in line with our objective to ground our qualitative research on a broader empirical basis than previous studies.

Evaluation Criteria

We asked the experts to describe potential evaluation criteria for selecting projects or applications as candidates for offshore delivery. When they mentioned these criteria we also asked for a short explanation of why they thought this specific criterion is considered important. We aggregated the mentioned criteria via content-wise analysis in NVivo. The starting point for aggregation was our initial categorization resulting from the literature review. This initial understanding was useful for coding the experts' answers. We could code almost all their responses within this taxonomy. Only one criterion was totally new, which was "language". In the "Comparison with literature analysis" section below we will discuss this specific finding in greater detail.

None of the experts had problems in naming and describing evaluation criteria. During the interviews the mentioned criteria converged to a set, with ten criteria being mentioned more frequently than the citation frequency mean of 26% of all experts.

The three most frequently cited criteria were "size" (27 or 57% of all experts), followed by "codification" (22 or 47%), and "language" (22 or 47%). 18 experts or 38% mentioned "business criticality" and 17 or 36% "technology availability". "Business specificity", "complexity", and "interaction" were each cited by 16 experts or 34%. Finally, 15 experts or 32% mentioned "modularity", and 12 or 26% "process formalization" as evaluation criteria. Figure 4 illustrates the citation frequency of the criteria showing the criteria as bars and the bar height indicating the citation frequency. The dotted line marks the threshold of more than 26% of all experts (citation frequency mean). The criteria mentioned by more than 26% of all experts are highlighted in gray. The remaining other criteria are white. The clear distinction between the two groups of criteria is quite remarkable. It seems that the ten most frequently cited criteria are perceived more important by experts than the remaining ones.

The subsequent sections of this paper describe these ten most frequently cited evaluation criteria as perceived by our expert panel together with representative quotes.

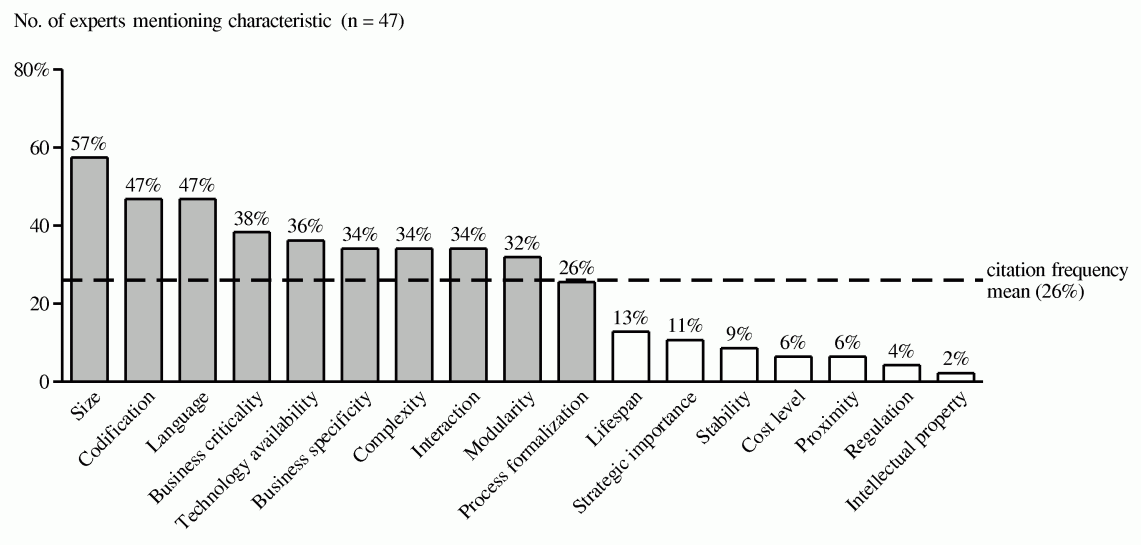

Figure 4: Citation Frequency of Evaluation Criteria

Size: refers to the scope and duration of an application or a project. Experts mentioned that applications or projects must have a certain significant size and duration to be suitable for offshore delivery.

The reason is that offshoring arrangements come with additional overhead in comparison to domestic sourcing arrangements. This overhead stems, for example, from communication, travel, or distant collaboration. Cost savings achieved from offshoring can only compensate for these additional overhead efforts if applications have enough volume. Another reason cited is the fluctuation of staff in offshore countries. Fluctuation among offshore staff is usually high. Thus, delivery from the offshore country might be at risk if the application or project is too small and many members of the offshore staff leave at once.

"From our perspective the size of a project is a decisive criterion. Projects that are too small do not make sense. The project rather needs a minimum size [for offshoring] to work." (Manager, Automotive Sector)

"The project needs a certain size, a critical mass. […] But it has to be something, a size, where it makes sense… the time and effort for interfaces that you need to implement for communication. So that it pays off afterwards." (Senior Manager, Logistics Sector)

"You have to take care, that you have a team consisting of multiple projects, which can compensate each other, approximately of ten to twenty people since fluctuation in India is tremendously high." (Senior Manager, IT Sector)

Codification: refers to the degree of documentation of an application or the level of requirement specifications on a project level. Experts mentioned that applications or projects exhibiting a high degree of codification are more suitable for offshore delivery.

If the level of codification is high, i.e., documentation is up to date and complete, it is easier for offshore staff to understand applications or tasks. Otherwise they have to create a sufficient level of codification by themselves which implies higher effort and cost. Additionally, complete and unambiguous documentation avoids misunderstandings between client staff and offshore staff.

"A very important criterion from my perspective is how well the whole application is documented from a functional or business point of view as well as technically. That is a very important criterion." (Senior Manager, Financial Services Sector)

"[…] already during system analysis, you have to document in a way that there is no opportunity for misinterpretations. Because afterwards, communication is only performed via telephone conferences or similar channels […]" (Employee, Financial Services Sector)

"The more ambiguous something is I hand over the worse is the result I get back. That is even worse with nearshoring." (Manager, IT Sector)

Language: comprises the language spoken between client staff and staff of the service provider from the offshore country. It also includes the language in which documentation and specifications are written. Experts perceived applications or projects where English is the operating language as being more suitable for offshoring.

If the operating language is not English, translations create additional efforts and communication inefficiencies which increase time to fulfill certain tasks. In addition, insufficient language skills increase the risk of misunderstandings between client and offshore staff. This lowers productivity, delivery quality, and increases the risk of failure.

"Usually, sooner or later the project language will be English; the whole communication is supposed to be in English – otherwise you will incur enormous transition costs." (Senior Manager, IT Sector)

"But one question also is what kind of documentation exists? Is it only in German? Do we still have to maintain it in German in the future? That is already bad. If it only exists in German, we can cope with it – we will have it translated. But when we have to maintain it in German in the future – it's impossible. You do not have to think about [offshoring] anymore. That would be nonsense." (Senior Manager, IT Sector)

Business criticality: refers to the importance of an application or a project for fulfilling daily business operations. Experts mentioned that low criticality for business makes applications or projects more suitable for offshoring.

The reasons are that high business criticality increases the corresponding application or project risk. If problems in service delivery occur, problem resolution might take longer in comparison to regular domestic sourcing. Such problems might impact business operations. Consequently, when business critical applications or projects are offshored, more effort has to be invested to ensure stable delivery. These additional efforts impact delivery costs and thus partially offset savings generated from offshoring.

"The more critical or the higher the strategic importance of an application, the less I would transfer it to offshore." (Senior Manager, Tourism Sector)

"[…] such [offshoring] projects tend to fail from time to time. Therefore, it is important that it is not the most critical application, for example, do not initially offshore an ERP system." (Manager, IT Sector)

Technology availability: describes the availability of required technology skills on the market. In the experts' opinions applications or projects with common technology, i.e., not too proprietary, not too exotic, and not too new are more suitable for offshore delivery.

This is because skills for uncommon technology are harder to find in offshore countries, thus making delivery in such cases impossible. Regarding new technology, experts perceive that new technology spreads slower to offshore countries, which makes corresponding skills harder to find.

"Technology is an aspect also as to what can our colleagues in India and Armenia offer us. The older a technology is, the more difficult it is to find skilled people there." (Senior Manager, IT Sector)

"Certainly, it is important that you focus on standards. It is certainly easier to find a java developer than something exotic." (Senior Manager, Logistics Sector)

"Then, of course, technology. […] They are always a bit slower than we are. […] That means the newer a technology is, the more it speaks against a nearshore partner." (Manager, High Tech Sector)

Business specificity: comprises the internal business process knowledge or proprietary industry knowledge inherent to an application or a project. Some researchers refer to this as "domain knowledge". Application or projects with a low degree of inherent business specificity are considered more suitable for offshoring by the experts.

A main reason for this perception is that business process or industry knowledge inherent in an application or project needs to be transferred to offshore staff in the course of service delivery. The more complex and proprietary the knowledge is, the more time and effort knowledge transfer requires. This leads to additional costs and prolongs delivery.

"Meaning, is it rather a technical thing? The more technical a project is, meaning the less business know-how it requires, the easier I can transfer it or parts of it." (Employee, Automotive Sector)

"Very specific, functionally highly complex things, when I am thinking of such projects […] where complexity is more related to business specifics, then I would refrain from offshoring." (Senior Manager, Financial Services Sector)

"An additional aspect is the overall process know-how that is required. Thus, is it a task that has its main focus in IT or is utility-related process know-how required?" (Senior Manager, Utilities Sector)

Complexity: refers to an application's or project's number and size of interfaces, number of users and sites involved or characteristics of inputs and outputs. Experts perceive applications or projects with a low degree of complexity as being more suitable for offshoring.

In the experts' view, transfer of knowledge to offshore staff requires more time and effort when applications or projects are complex. This leads to additional costs and longer transition periods.

"You can take a task's complexity. The less complex the better it is." (Executive, Financial Services Sector)

"If you have a very complex application at the beginning you have to allow for more time. If you do not have that time then it speaks - from my perspective - against [offshoring]." (Senior Manager, IT Sector)

Interaction: describes the required degree of personal contact between client staff and offshore staff for performing daily operations regarding the application or project. In the experts' views, applications or projects that require only a low degree of personal interaction are more suitable for offshore delivery.

A high degree of required interaction, for example by personal face-to-face contacts, creates additional costs and overhead. Additionally, language issues may become more prevalent if communication has to be increased due to interaction needs.

"And it is very important for the success of projects - if you imagine you would follow a prototyping approach where you sat together with your client on a daily basis – than it does not make sense to employ [offshore] staff at this stage." (Senior Manager, Tourism Sector)

"And, of course, it is important, if it is a software development project, a very consulting-intensive one – that is for us a criterion to say we do not do it [offshore]." (Manager, Automotive Sector)

Modularity: subsumes the separability of applications or projects and their low degree of interdependency with other ones. Experts perceive applications or projects that show a high degree of modularity as more suitable for offshoring.

If an application or a project exhibits low modularity, more information on interfaces and tasks needs to be transferred to offshore staff. This again increases the required effort for knowledge transfer, transition times and in the end delivery costs. Apart from that, applications or projects with a low degree of modularity often require onsite work, e.g., for integration tests. This may make offshore delivery impossible or require additional travel activities for offshore staff to do parts of the work onsite.

"If I got some change request running through the overall system. If I got many change requests and – because many teams are working on this application – it has high impact on the other teams, then it requires a lot communication between the teams. And that is not so easy considering the distance. Then it is often the case that something is neglected which leads to problems." (Executive, Financial Services Sector)

"There are often interdependencies, even more in software development. If it is not possible to work on an uncoupled task in an application's development, then it does not become totally impossible but more risky." (Employee, Industrial Goods Sector)

Process formalization: describes the degree of standardization, specification, and structure of the development and maintenance processes in a respective application or project. In the experts' perceptions, applications or projects with a high degree of process formalization are more suitable for offshoring.

The main reason for this perception is that offshoring represents some form of distributed collaboration that can be performed more easily if the modes of interaction are already formalized. If formalized and standardized processes are already in place, it facilitates the transfer of work to offshore staff.

"If the software development processes in an organization or in a multinational enterprise are already structured and explicitly designed in a way that everything is clear and for example multi project management is established, architecture management exists, then it [i.e., offshoring] is easier […]."(Manager, IT Sector)

"What degree of standardization does the organization exhibit? And how standardized do they conduct projects? The higher the degree of standardization, the easier it is to transfer things abroad." (Senior Manager, Transportation Sector)

Other criteria: as displayed in Figure 4 there were 7 more criteria mentioned less frequently than the average citation frequency. These were "lifespan", "strategic importance", "stability", "cost level", "proximity", "regulation", and "intellectual property". Considering their lower citation frequency, we do not describe them in greater detail at this stage since experts perceive them in a similar way as the literature does (c.f. Table 1).

Comparison with Literature Analysis

Using the citation frequency as an indicator for the perceived importance of the evaluation criteria, we can compare the findings from the literature analysis with the expert interviews. Figure 5 illustrates this analysis graphically by contrasting the relative citation frequencies of the literature review (left) with the citation frequencies of the expert interviews (right). Each bar represents one criterion. They are sorted in descending order based on expert citation frequencies.

It becomes obvious that "size" and "codification" are cited more frequently by our expert panel than in the literature. "Language" is a completely new criterion not mentioned in the analyzed literature at all. In contrast to that, "strategic importance" and "stability" are less frequently cited by the experts in comparison to the literature.

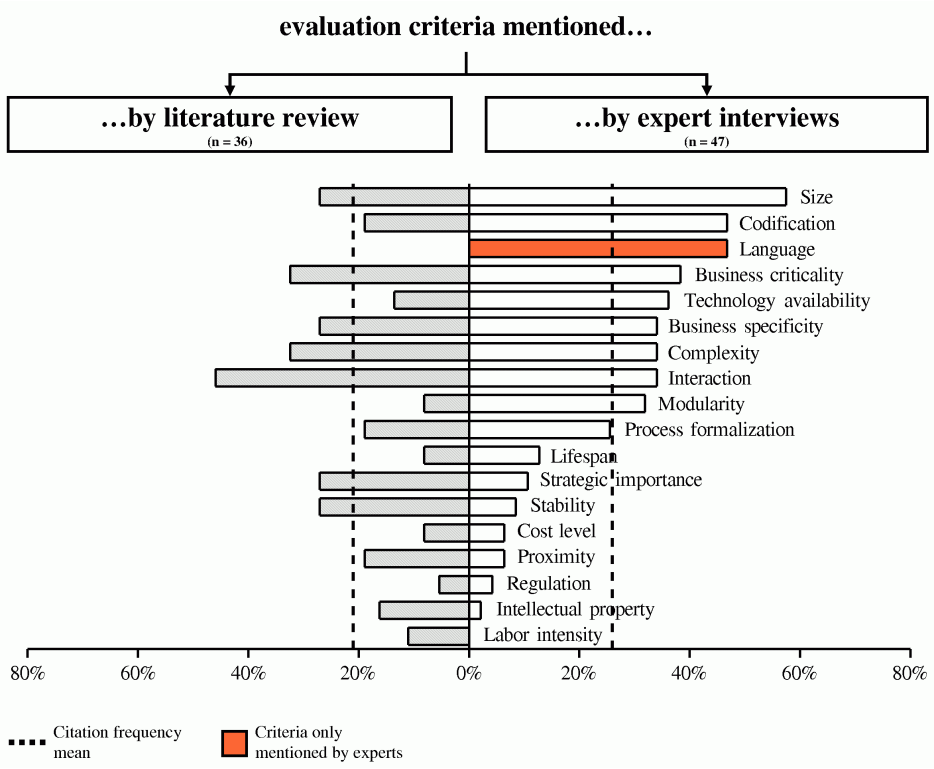

Figure 5: Comparison of Evaluation Criteria's Citation Frequencies: Literature Analysis vs. Expert Interviews

The appearance of "language" as a new criterion may be explained by cultural aspects. The literature is primarily influenced by research originating from English-speaking countries. Thus, language itself is usually not mentioned as an aspect to be considered in a special way. This marks a difference from the situation in Germany where language differences represent an issue. The reason is that English proficiency at German client organizations seems not to be high. However, the operating language in an offshore arrangement should be English because German is simply not widespread among offshore service providers. Therefore, sufficient English proficiency on the client side is perceived to increase offshore suitability.

The importance of "language" might also explain the perceived higher importance of "size" and "codification". The language gap increases communication and collaboration overhead. Consequently, larger offshoring volumes and durations in the affected applications or

projects are required so that savings can compensate for this additional overhead. Simultaneously, a high degree of codification helps to overcome the language gap for both parties, the knowledge transfer is made easier and properly codified communication helps to avoid misunderstandings due to language issues.

Sampled Case Studies

As part of our interviews we asked each expert to illustrate the evaluation criteria s/he mentioned by using one or more brief case examples from his or her professional experience. The intention was to deepen our understanding of the criteria, their application in practice, and their importance.

For each sampled case, we asked the experts to briefly describe the scope of the application or project and its technological context. Subsequently, we wanted to know what criteria were applied to select this respective application or project and how it performed regarding the criteria, i.e., whether the application or project was considered offshore-suitable or offshore-unsuitable in light of each criterion. Finally, we inquired whether the case had been perceived successful from a client perspective considering the classical project-related dimensions "time", "budget", and "scope". Operationalizing "success" in terms of individuals' success perceptions is in line with our qualitative-exploratory research approach (Balaji and Ahuja [7]; Erickson and Ranganathan [20]).

In total, the experts described 64 case examples. Of those, 39 or 61% were perceived successful and correspondingly 25 or 39% were perceived unsuccessful. Applying the same threshold level as in the analysis of the experts' criteria citation, Figure 6 illustrates which criteria were cited by more than 26% of all successful cases (left) and by more than 26% of the unsuccessful cases (right).

69% of the successful cases had a "size" suitable for offshoring. 49% exhibited suitable "language", 46% suitable degrees of "codification", 44% advantageously low levels of "business specificity", and 26% adequate degrees of "modularity". Interestingly, 33% of the successful cases showed levels of "business criticality" which should have made them unsuitable for offshore delivery, i.e., these applications or projects were rather business critical but were nevertheless perceived successful.

Looking at the unsuccessful cases, 56% exhibited unsuitable levels of "business specificity", 36% had unsuitable "language", and 32% had unsuitable degrees of "complexity". Remarkably, 40% of unsuccessful cases had an adequate "size" but still failed.

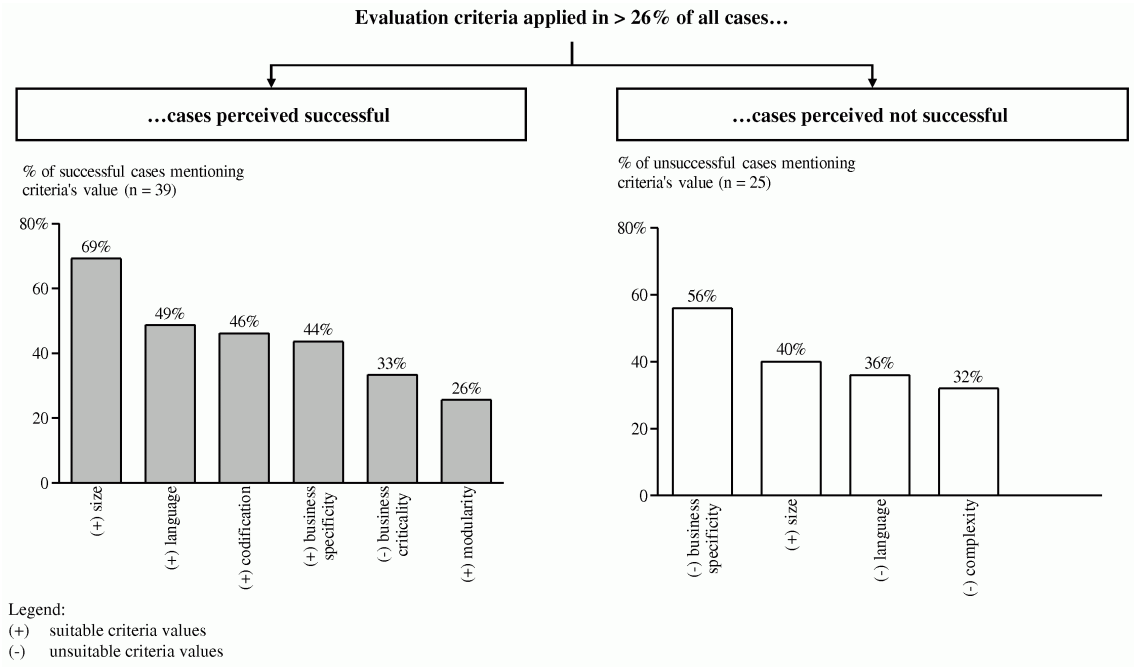

Figure 6: Perceived Case Success Related to Evaluation Criteria's Assessment

Comparing these results, it seems that "business specificity" has a high impact on case failure. It is the most frequently cited criterion in unsuccessful cases. The experts' statements showed that applications or projects with high "business specificity" come with increased risk, overhead, and require unexpected additional efforts for initial knowledge transfer and during delivery.

In contrast to that, "business criticality" seems to be less important. Although 38% of the experts mentioned "business criticality" as an evaluation criterion in the interviews (it is the 4th ranked criterion by citation frequency, c.f. Figure 4), the case examples do not clearly support this: one third of all successful case examples showed inadequate levels of "business criticality". Our interview partners stated that "business criticality" often stems from rather specific characteristics of an application or project. It might be possible to mitigate these rather critical characteristics by certain managerial and operational actions, so that "business criticality" is not *per se* an inhibitor for offshoring.

Finally, suitable "size" seems to be a necessary but not a sufficient criterion for an application's or project's offshore suitability: 69% of all successful cases came with suitable "size". However, 40% of all unsuccessful cases also had a suitable size but failed nevertheless. An interpretation could be that size might be a prerequisite for offshoring success (i.e., to compensate for offshoring overhead) but it might not offset impacts of other unsuitable criteria.

The other mentioned criteria such as "language", "codification", "modularity", or "complexity" show impacts on application or project success as previously expected based upon the literature review and the expert interviews.

IMPLICATIONS

Not mentioned in literature, "language" represents a new evaluation criterion only mentioned by the expert panel. Additionally, the perceived criteria importance varies between literature and experts. As described earlier this might result from cultural differences specific to Germany. However, the experts' perceptions do not contradict the literature completely: apart from "language", both mention the same criteria and to some extent similar degrees of importance, i.e., regarding "business criticality", "complexity", or "interaction" (c.f. Figure 5).

The sampled case studies represented a practitioner-oriented review of the described characteristics. To a large extent they confirmed the findings from interview analysis, for example, the importance of suitable "size", "language", and "codification" for case success. However, there also had been interesting and interpretable deviations, such as the previously unexpected high importance of "business specificity" for case failure and the effectively lower importance of "business criticality" in practice. Additionally, suitable "size" is confirmed as a criterion by the cases. However, it rather seems to be an essential prerequisite but not a sufficient criterion for success.

Reflecting on our paper's relevance for management practice, we can draw some tentative advice from our findings. First, it seems to make sense to consider sizeable application or project candidates for offshoring. These candidates should be documented and specified well in order to ensure a high degree of codification. Additionally, applications or projects where involved staff has a certain proficiency in English and/or where documentation is already available in English seem to be more suitable. Apart from that, applications or projects with low degrees of business specificity should be preferred. Finally, business criticality appears not to be an inhibitor *per se* because suitable actions can mitigate this aspect.

LIMITATIONS

Our study exhibits some limitations in certain dimensions. Regarding our sample, we actually performed an arbitrary selection of interview partners that might not be representative of our basic population.

Regarding the criteria, it is clear that they are not fully mutually exclusive and free of overlaps. However, we decided against a further aggregation in order to obtain richer results by avoiding loss of too much information from our data.

Furthermore, we decided to collect a rather large number (64 cases) of small cases instead of detailing a few cases selected on the basis of an explicit replication logic as it is usually done in case study research. As a consequence, we relied on the brief case descriptions by our experts and could not, for example, triangulate each case using different sources and different kinds of material. Our intention was to increase sample size on account of detail level. Thus, we could capture expert expertise arising from various industry sectors, career levels, and with different offshore countries.

Other limitations arise from our research approach. We could have biased the interviewed experts despite using a pre-formulated and semi-structured inter-

view guide and not telling our interview partners any research results or expectations beforehand. Apart from that, the impact of the identified criteria on success in terms of statistical significance and strength are aspects that cannot be properly addressed with qualitative research.

Finally, our regional focus was Germany and German corporations. It is unclear whether the presented evaluation criteria would apply similarly to a non-German environment. This might limit our findings' generalizability to other countries or language areas.

RESEARCH OPPORTUNITIES

The previously described limitations suggest opportunities for further research. It would be interesting to explore whether the perceived importance of the evaluation criteria changes depending on a client organization's accumulated offshore expertise. Correspondingly, one could evaluate the actual importance of application or project selection on success since there are other influencing factors for offshoring success such as vendor selection, contract design or project management. Comparing and evaluating the impact of these factors on success could result in valuable insights. Finally, further research in these areas could be enriched by a greater methodological variety, e.g., by a quantitative study using a broader data set or by detailing selected cases. In order to understand the influence of a specific culture or language area one could repeat our research design in an international context in other countries and compare the findings among results from different countries.

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AUTHOR BIOGRAPHIES

Markus K. Westner is a Ph.D. student at the European Business School (EBS), Germany. He 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".

APPENDICES

Table 2: Evaluation Criteria as Derived from Literature Analysis

Characteristic	Studies
Business criticality	Amoribieta et al. [2]; Bitkom [11]; Cusick and Prasad [17]; Klingebiel [27]; Kumar and Willcocks [28]; Matzke [31]; Menon [33]; Meyerolbersleben [35]; Schaffer [47]; Srivastava and Theodore [50]; Wiener [52]; William et al. [53]
Business specificity	Akmanligil and Palvia [1]; Bruhn [13]; Kakumanu and Portanova [26]; Kuni and Bhushan [30]; Matzke [31]; McLaughlin and Fitzsimmons [32]; Meyerolbersleben [35]; Murthy [39]; Pu Li and Kishore [42]; Wiener [52]
Codification	Jennex and Adelakun [25]; Kuni and Bhushan [30]; Menon [33]; Mirani [37]; Rajkumar and Mani [43]; Ravichandran and Ahmed [45]; Wiener [52]
Complexity	Cusick and Prasad [17]; Jennex and Adelakun [25]; Kumar and Willcocks [28]; Kuni and Bhushan [30]; Matzke [31]; McLaughlin and Fitzsimmons [32]; Meyerolbersleben [35]; Mirani [37]; Ramarapu et al. [44]; Ravichandran and Ahmed [45]; Scheibe et al. [48]; Wiener [52]
Cost	Cusick and Prasad [17]; Matzke [31]; William et al. [53]
Intellectual property	BIHK [10]; Meyerolbersleben [35]; Murthy [39]; Schaffer [47]; Stack and Downing [51]; William et al. [53]
Interaction	Amoribieta et al. [2]; Apte et al. [5]; Ben and Claus [8]; BIHK [10]; Cusick and Prasad [17]; Jennex and Adelakun [25]; Kumar and Willcocks [28]; McLaughlin and Fitzsimmons [32]; Meyerolbersleben [35]; Mirani [37]; Ramarapu et al. [44]; Ravichandran and Ahmed [45]; Schaffer [47]; Scheibe et al. [48]; Smith et al. [49]; Wiener [52]; Yan [54]
Labor intensity	McLaughlin and Fitzsimmons [32]; Ramarapu et al. [44]; Srivastava and Theodore [50]; Wiener [52]
Lifespan	Kumar and Willcocks [28]; Meyerolbersleben [35]; Ramarapu et al. [44]
Modularity	Mirani [37]; Sayeed [46]; Wiener [52]
Process formalization	Apte [3]; BIHK [10]; Kuni and Bhushan [30]; Meyerolbersleben [35]; Mirani [37]; Ramarapu et al. [44]; William et al. [53]
Proximity	Apte et al. [5]; Bruhn [13]; Hirschheim et al. [23]; Meyerolbersleben [35]; Scheibe et al. [48]; Stack and Downing [51]; William et al. [53]
Regulation	Kuni and Bhushan [30]; Stack and Downing [51]
Size	Akmanligil and Palvia [1]; Amoribieta et al. [2]; Bitkom [11]; Bruhn [13]; Cusick and Prasad [17]; Ferguson et al. [21]; Kumar and Willcocks [28]; Menon [33]; Rajkumar and Mani [43]; Schaffer [47]
Stability	Bitkom [11]; Bruhn [13]; Ferguson et al. [21]; Jennex and Adelakun [25]; Kumar and Willcocks [28]; Kuni and Bhushan [30]; Matzke [31]; Meyerolbersleben [35]; Mirani [37]; Wiener [52]
Strategic importance	Akmanligil and Palvia [1]; Apte and Mason [4]; Apte et al. [5]; Bitkom [11]; Klingebiel [27]; Kumar and Willcocks [28]; Menon [33]; Meyerolbersleben [35]; Wiener [52]; Yan [54]
Technology availability	Amoribieta et al. [2]; Bitkom [11]; Ramarapu et al. [44]; William et al. [53]; Yan [54]

Table 3: Interview Guideline

Question	Rationale
What is your position within the company?	Expert-related information
Please briefly describe your own expertise in IS offshoring regarding… …number of years. …number of projects you have been involved. …with which countries you could accumulate your experience.	Expert-related information
Imagine a CIO or IT department head that wants to identify project/application candidates for offshore delivery. Based on your personal expertise, what could be potential evaluation criteria? Could you also please give a brief description of each evaluation criteria?	Criteria-related information (abstract level)
If you think of a specific offshore application or project where you have or had been involved… …was it perceived a success in terms of time, budget and scope? …for each of the previously mentioned evaluation criteria: had criteria values been suitable or not?	Criteria-related information (case-specific level)

Table 4: List of Interviewed Experts and Corresponding Companies

Company ID	Industry sector	Expert ID	Position	Off-/nearshore expertise (years)	Countries
1	IT Services	23	Senior Manager	3	India, Armenia
2	Financial Services	24	Manager	2	India
3	Automotive	6	Senior Manager	8	India
4	Financial Services	2	Manager	8	Czech Republic
4	Financial Services	43	Senior Manager	3	Czech Republic
5	Automotive	16	Employee	4	India
5	Automotive	18	Manager	10	India
5	Automotive	33	Manager	3	Malaysia
6	Financial Services	11	Senior Manager	3	India
7	Transportation	13	Senior Manager	1	India
7	Transportation	41	Senior Manager	12	India, Philippines
8	Financial Services	1	Manager	4	India
8	Financial Services	3	Employee	4	India
9	Financial Services	12	Executive	5	Czech Republic
10	Logistics	20	Senior Manager	2	India
10	Logistics	40	Senior Manager	7	Czech Republic
11	Utilities	36	Senior Manager	3	Hungary
12	IT Services	8	Manager	4	n/a
13	Financial Services	14	Senior Manager	1	Latvia
14	Automotive	7	Manager	3	India
14	Automotive	9	Manager	2	India
15	IT Services	26	Executive	2	India
16	Financial Services	27	Employee	7	Moldavia
17	High Tech	25	Manager	2	Russia
18	Financial Services	31	Senior Manager	4	India
19	IT Services	28	Executive	4	Slovakia

Table 4: List of Interviewed Experts and Corresponding Companies (continued)

20	IT Services	44	Senior Manager	2	n/a
21	IT Services	21	Manager	2	Russia
22	High Tech	22	Employee	3	India
22	High Tech	32	Manager	7	Malaysia
23	IT Services	37	Employee	3	India
24	Telecommunication	10	Senior Manager	2	India
25	Transportation	29	Manager	4	Poland
26	High Tech	39	Senior Manager	n/a	Armenia
27	Industrial Goods	38	Employee	3	Romania
28	Financial Services	5	Manager	6	India
28	Financial Services	46	Employee	3	India
29	IT Services	19	Manager	4	India, Hungary, Poland
30	High Tech	45	Manager	4	Philippines
31	IT Services	34	Senior Manager	2	India
32	Industrial Goods	17	Manager	2	Ukraine
33	IT Services	42	Senior Manager	4	India, Romania
34	IT Services	47	Senior Manager	2	India
35	Tourism	4	Senior Manager	3	India
35	Tourism	30	Employee	1	India
35	Tourism	35	Employee	2	India
36	IT Services	15	Senior Manager	5	India