Markus K. Westner

IS Offshoring
Foreword

The industrialization of service industries is a phenomenon which industries such as banking and finance adopted several years ago. Although IT can be considered an enabler in these efforts, the IT industry itself has not yet taken much advantage of industrialization. As this is slowly changing, ideas like global sourcing and global value chains have entered the mindset of top and middle IT management. Although sourcing IT services from near or far away countries in order to profit from labor cost differentials is a topic frequently generating a lot of controversy, it can no longer be ignored as one of several options for staying globally competitive. Even though some businesses promise to refrain from offshoring in order to strengthen local economies, they might not be willing to accept the costs of IT services fully provided domestically. Thus, even businesses which are reluctant when it comes to directly offshoring their own IT services might be indirectly profiting from it as they expect their service providers to stay globally competitive – be it by offshoring or by any other means. With this controversy in mind, it is exceptionally important that offshoring endeavors turn out to be as successful as possible or at least as successful as expected. However, businesses indulging in offshoring do not necessarily report convincing outcomes. Particularly in the case of offshoring from non-English speaking countries, language barriers seem to be significantly impeding offshoring success. One or another of these thoughts made Markus Westner start thinking about the underlying reasons why some businesses manage to be quite successful with offshoring whereas others clearly fail to meet their expectations. His thinking eventually turned into a thoroughly conducted research project which resulted in the thesis at hand. Over a course of two years he studied and explored different aspects of offshore project success and competently summarized his results in three essays on project suitability and success. As a researcher he challenged himself by wanting to conduct both a qualitative-exploratory and a quantitative-confirmatory study and excellently mastered both. Supervising him was a very rewarding experience: to see him progress quickly and to observe his eagerness to raise the bar from essay to essay made my association with his work very rewarding and even made me enjoy the pressure to provide timely feedback. The results he came up with were always interesting to read and are certainly valuable to both researchers as well as practitioners. Both will certainly gain new insights from this thesis and will enjoy reading the three essays as much as I did.

Dresden, August 2009

Susanne Strahringer
Preface

“There is no great achievement that is not the result of patient working and waiting.”

- Josiah Gilbert Holland

My deepest gratitude goes to my advisor Susanne Strahringer for her mentoring and support during the last three years. Her commitment to my thesis was invaluable and far beyond what a doctoral student could have expected. She always provided timely, profound, and constructive feedback. This significantly increased the quality of my thesis and of the resulting conference and journal publications. It was a pleasure being granted the opportunity to work with you!

I also thank Frederik Ahlemann for accepting the role as a co-advisor. He provided invaluable comments regarding my publications and the further course of my research. Without him I would probably not have adopted a quantitative-confirmatory research approach in the third essay which – retrospectively – was a very rewarding and positive experience from a personal as well as an academic perspective.

Without naming each individual, I am grateful to the various other supporters of my thesis. I especially appreciated the feedback and comments from academicians under Dr. Strahringer's chairmanship, from my colleagues at Bain & Company, and from numerous anonymous reviewers at conferences and journals.

The editing services of my aunt Joyce Westner in Boston contributed to the thesis’ and the publications’ quality regarding language and style. My mother-in-law Rita Pohle supported me in transcribing several hundred pages of interview tapes which would otherwise had cost me several months instead of weeks (and presumably my nerves). Thank you both very much!

I thank my wife Anja for her love and unwavering support during all these years. Although he is probably not aware of it, the energy of my two-year old son Samuel and his incredibly good humor was a constant source of motivation and relaxation. Last but not least, I thank my beloved parents, Edeltraud and Konrad, who gifted me with the traits and education that fundamentally enabled me to accomplish this academic endeavor.

Munich, May 2009

Markus K. Westner
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Introduction

The thesis at hand consists of three essays. Each of them addresses different aspects related to information systems (IS) projects’ suitability for offshore delivery and to success in IS offshoring projects. The first essay is a non-empirical study and contains a review of the existing literature in the field of IS offshoring. Essays 2 and 3 are empirical studies. Essay 2 employs a qualitative-quantitative research approach and identifies criteria for selecting IS projects for offshoring. The third essay follows a quantitative approach and examines determinants of success in IS offshoring projects.

The essays logically build upon each other regarding their research objectives: Essay 1 identifies areas where there is a paucity of research, Essay 2 addresses one of these research areas, and Essay 3 further deepens it. Thus, the thesis – despite being composed of three essays – exhibits a coherent course of research.

Apart from that, the thesis incorporates a combination of research types and methods: Essay 1 is a database-supported literature analysis, Essay 2 is an exploratory-interpretive study primarily using expert interviews with text analysis for results generation, and Essay 3 is a confirmatory study employing a survey design for data gathering and using structural equation modeling for analyzing its research model.

The thesis is not only essay-based with regard to structure but also regarding its actual publication output: by now three publication attempts have been successful. Specifically, at the International Conference on Global Software Engineering (ICGSE) 2007 for Essay 1, the Journal of Information Technology Management (JITM) for Essay 2, and the European Conference on Information Systems (ECIS) 2009 for Essay 3.

The following paragraphs describe the main results of the three essays.

The first essay provides a consolidated view of existing academic research in IS offshoring from 1996 to 2006. It identifies relevant research, consolidates and categorizes its results, discusses them, and suggests future research directions. The results show that IS offshoring represents a new research area with most research being published during 2003 to 2006. Non-theory based descriptive research designs predominate. Most studies focus on the questions of why to offshore, how to offshore, and the outcome of IS offshoring. Other aspects such as what services to offshore or which decision to make are under-researched. The essay suggests that future research could focus on these areas. It states that more empirical-confirmatory research might enrich the IS offshoring body of knowledge by providing findings that are based on more diversified patterns of research designs.
The second essay addresses the paucity of research regarding the aspect what services to offshore. Following the notion that the identification of suitable applications or projects is a main initial step in any software development or maintenance related IS offshoring arrangement, the essay identifies evaluation criteria for selecting candidates for offshoring. It analyzes the importance of the criteria and relates them to an organization’s offshoring expertise. Based on a literature analysis and interviews with 47 experts from 36 different German companies, the essay identifies several evaluation criteria. The main findings are that in contrast to the literature, size, codification, and language are perceived as important selection criteria by experts. These differences might be due to cultural differences. Additionally, codification, business criticality, business specificity, and complexity seem to be less important in the case of organizations with more offshoring expertise.

The third essay incorporates research results of the previous one. Motivated by recent studies indicating that companies engaged in IS offshoring are not fully satisfied with their engagements’ performances, the essay examines determinants of IS offshore project success at German companies. It develops a research model based on the implementation process for IS offshoring and empirically tests the model by using structural equation modeling. Specifically, it examines the direct impacts of offshoring expertise and trust in offshore service provider (OSP) on success as well as their indirect impacts mediated by project suitability, knowledge transfer, and liaison quality. Results show that offshoring expertise plays only a minor role in explaining success and the mediating constructs. Trust in OSP, on the other hand, has a small direct positive impact on success but a medium to large impact on the mediating constructs. Project suitability, knowledge transfer, and liaison quality have a small positive direct impact on success. Essay 3’s originality thereby stems from its empirical-confirmatory research approach and its operationalization attempt for offshoring expertise, project suitability, and liaison quality.
IS Offshoring: A Systematic Review of the Literature

Abstract: This paper provides a consolidated view of existing academic research in Information Systems (IS) offshoring from 1996 to 2006. It identifies relevant research, consolidates and categorizes its results, discusses them, and suggests future research directions. The results show that IS offshoring represents a new research area with most research being published during 2003 to 2006. Non-theory based descriptive research designs predominate. Most studies focus on the questions of why to offshore, how to offshore, and the outcome of IS offshoring. Other aspects such as what services to offshore or which decision to make are under-researched. Future research could focus on these areas. More empirical-confirmatory research might enrich the IS offshoring body of knowledge by providing findings that are based on more diversified patterns of research designs.

Keywords: Offshoring, nearshoring, information systems, information technology, literature review, research approaches
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A Introductions

A.1 Background and Motivation

Information systems (IS) offshoring, the provision of IS services from foreign countries¹, receives growing attention. It appears that the delivery of IS services follows a trend already observed in the manufacturing sector. In this sector, companies economize on labor cost differences and transfer significant parts of their production to countries with lower wage levels. (Henley, 2006; Mithas & Whitaker, 2006; Schaaaf, 2004; Scheibe, Mennecke, & Zobel, 2006; Venkatraman, 2004)

IS offshoring’s economic benefits seem attractive by offering labor cost differentials up to 80% compared to hourly rates in western countries (Bitkom, 2005; Boes, Schwemmle, & Becker, 2004). Consequently, industry associations, consulting firms and analysts promote IS offshoring as a sourcing option for corporations (Amoribieta, Bhaumik, Kanakamedala, & Parkhe, 2001; BIHK, 2002; Bitkom, 2005; Schaaaf & Weber, 2005).

IS researchers and practitioners started to analyze and reflect on IS offshoring’s impact on their domain (Hirschheim, Loebbecke, Newman, & Valor, 2005; Mertens, 2005; William, Mayadas, & Vardi, 2006). However, the field of IS offshoring seems not as extensively researched as the related field of IS outsourcing (Dibbern et al., 2004; Smith & McKeen, 2004). This also applies to research in Germany, where only a limited number of academic studies exist (e.g., Dibbern, Winkler, & Heinzl, 2006; Mertens, 2005; Moczadlo, 2002; Wiener, 2006).

The current stream of international and Germany-focused research in IS offshoring particularly lacks a consolidated view of existing research results. The literature review at hand addresses this research deficit. It intends to provide a consolidated view on existing research in IS offshoring. Its main objectives are to identify relevant research contributions regarding IS offshoring, analyze their theoretical foundations and research designs, consolidate and categorize their findings according to IS offshoring stages, and discuss their findings as well as identify implications for future research. The literature review employs an IS managerial and business-oriented point of view and excludes technology-related aspects of offshoring. It partially follows the methodological approach employed by Dibbern et al. (2004) in their literature review for IS outsourcing. Thus, it ensures research continuity by building upon an existing approach and it enables comparability of research findings between studies.

¹ For a more detailed definition c.f. Section B.1, p. 11.
**A.2 Paper Structure**

Section B clarifies the term IS offshoring, points out how it relates to IS outsourcing, and outlines how the IS offshoring phenomenon developed in the past. Section C describes the research methodology applied. It explains the review approach and specifies the selection of literature sources, timeframe, and papers. Section D applies the review approach to the selected literature. It synthesizes its results according to the dimensions why to consider offshoring, what to offshore, which choice to make, how to offshore, and the outcome of offshoring. Section E discusses the findings and outlines possible implications for future research. Section F concludes the paper, shows its contribution to existing research, and its specific limitations.
B Conceptualization of IS Offshoring

B.1 Definition

The term offshoring is not specific to IS. The area of financial economics previously used it to describe locations that serve as tax shelters for international investors (Schaaf, 2004). In the field of IS, offshoring names the phenomenon of shifting IS service provision from one country to another, usually from high-wage countries in the western hemisphere to low-wage countries. Table 1-1 (p. 11) shows selected definitions for the term offshoring from IS/Information Technology (IT) research.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Definition of IS/IT offshoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carmel &amp; Agarwal, 2002, p. 65</td>
<td>“The term ‘offshore sourcing’ includes both offshore outsourcing to a third-party provider as well as offshore insourcing to an internal group within a global corporation.”</td>
</tr>
<tr>
<td>Chandrasekhar &amp; Ghosh, 2006, p. 92</td>
<td>“Offshoring refers to the relocation of outsourced activities across countries. Once the process of outsourcing a particular activity is generalized across firms, then the shift of the location of the vendor can cause offshoring.”</td>
</tr>
<tr>
<td>Fish &amp; Seydel, 2006, p. 96</td>
<td>“With this model (aka, offshoring) […] IT work takes place in a country different from that of the outsourcing firm’s IT department.”</td>
</tr>
<tr>
<td>Gopal, Sivaramakrishnan, Krishnan, &amp; Mukhopadhyay, 2003, p. 1671</td>
<td>“Offshore software development […] occurs when the contracting parties are in different countries and the software is developed in the developer’s country, and then shipped to the buyer’s organization.”</td>
</tr>
<tr>
<td>Hirschheim et al., 2005, p. 1003</td>
<td>“Global offshore outsourcing (or simply offshoring) is a relatively new phenomenon […] offering access to knowledge-worker skills often at reduced costs. IT offshoring refers to the migration of all or part of the development, maintenance and delivery of IT services to a vendor located in a country different from that of the client.”</td>
</tr>
<tr>
<td>Niederman, Kundu, &amp; Salas, 2006, p. 52</td>
<td>“Offshore outsourcing (offshoring) is the practice of distributing work, particularly in the area of information technology (IT) services and development, to workers outside the national borders of the host country.”</td>
</tr>
<tr>
<td>Pries-Heje, Baskerville, &amp; Hansen, 2005, p. 6</td>
<td>“Offshore outsourcing, also known as international or global outsourcing, takes place when organizations cross national borders to obtain these commodities.”</td>
</tr>
<tr>
<td>Rajkumar &amp; Mani, 2001, p. 63</td>
<td>“Offshore development of software occurs when the supplier is from a different country than the company outsourcing its development.”</td>
</tr>
<tr>
<td>Ramarapu, Parzinger, &amp; Lado, 1997, p. 1</td>
<td>“In its broadest context, foreign or offshore outsourcing is the sharing or transferring of responsibility for some or all IS services to a third-party vendor who operates from a foreign country.”</td>
</tr>
<tr>
<td>Wiener, 2006, p. 38</td>
<td>“Offshore software development [is] the relocation of software development services to an IT service provider which is located in a foreign country.”</td>
</tr>
</tbody>
</table>

Table 1-1: Selected definitions of IS offshoring
The definitions imply four dimensions of IS offshoring. Figure 1-1 illustrates these dimensions. They refer to (a) location from where services are provided, (b) transferred services, (c) degree of transfer, and (d) organizational implementation. (Dibbern et al., 2004; Wiener, 2006)

<table>
<thead>
<tr>
<th>Location</th>
<th>Services</th>
<th>Degree</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Near</td>
<td>- Infrastructure services</td>
<td>- Partial offshoring</td>
<td>- Internal</td>
</tr>
<tr>
<td>- Far</td>
<td>- Application development services</td>
<td>- Total offshoring</td>
<td>- Partial</td>
</tr>
<tr>
<td></td>
<td>- Other IS services</td>
<td></td>
<td>- External</td>
</tr>
</tbody>
</table>

Figure 1-1: Dimensions for IS offshoring

(a) All presented definitions agree on the characteristic of location, i.e., that the service-providing country is different from the service-receiving country. Other studies detail this aspect regarding distance. They differentiate between nearshore countries that are close and offshore countries that are far away. (Erber & Sayed-Ahmed, 2005; Fish & Seydel, 2006; Meyer, 2006; Schaaf, 2004)

(b) Most studies do not specify the transferred IS services. Instead, they use terms such as “IT work” (Fish & Seydel, 2006, p. 96), “development, maintenance and delivery of IT services” (Hirschheim et al., 2005, p. 1003), and “IS services” (Ramarapu et al., 1997, p. 1). Other studies focus on software services and limit their definition to “offshore development of software” (Rajkumar & Mani, 2001, p. 63) or “offshore software development” (Gopal et al., 2003, p. 1671). A categorization consisting of infrastructure services, application development services, and other IS services incorporates all the above-mentioned services (Fish & Seydel, 2006; Wiener, 2006; William et al., 2006). Infrastructure services refer to hardware infrastructure operation, such as networks, data centers, and servers. They also include software infrastructure operation, such as operating systems or enterprise software, often called application management. Application development services refer to the development of new individual applications, extension, and maintenance of existing ones. Finally, other IS services comprise IS-related services not included in the previous categories, such as user help desk or data entry. (Erickson & Ranganathan, 2006; Schaaf & Weber, 2005)

(c) Only some studies mention the degree of IS offshoring. They distinguish between “migration of all or part” (Hirschheim et al., 2005, p. 1003) or “some or all IS services” (Ramarapu et al., 1997, p. 1). Thus, they actually differentiate between partial offshoring on the one hand and total offshoring on the other hand.
(d) Regarding the organizational implementation, studies consider external contracting and speak of “vendor/s” (Chandrasekhar & Ghosh, 2006, p. 92; Hirschheim et al., 2005, p. 1003), “third-party vendor” (Ramarapu et al., 1997, p. 1), or “third-party provider” (Carmel & Agarwal, 2002, p. 65). However, internal provision of IS offshore services can also exist, for example, from a company branch in a low-cost country (Carmel & Agarwal, 2002; Mertens, 2005). This implies a distinction among internal, partial, and external offshoring arrangements. An internal arrangement incorporates wholly owned subsidiaries, a partial arrangement is typically a joint venture, and contracting with a third party vendor represents an external arrangement (Dibbern et al., 2004; Scheibe et al., 2006; Wiener, 2006).

The literature review deducts its working definition of IS offshoring from the four IS offshoring dimensions as displayed in Figure 1-1 (p. 12):

“IS offshoring occurs when the provision of IS services (i.e., infrastructure, application development or other IS services) is partially or totally transferred to a service-providing organization residing in a near or far away country different from that of the service-receiving organization. The service-providing organization can be an internal subsidiary, a partially-owned unit or an external service provider.” (Own definition)

\section*{B.2 Relation to IS Outsourcing}

Table 1-1 (p. 11) shows that several studies perceive IS offshoring as a variation of international IS outsourcing and name it IS offshore outsourcing. This perception does not contradict but rather fits with the previously defined dimensions in Figure 1-1. However, outsourcing usually requires a contracting relationship with an external party (Dibbern et al., 2004). By defining IS offshoring as a variation of IS outsourcing, definitions would limit themselves to external arrangements in the organization dimension.

In terms of this paper’s IS offshoring definition, we recognize IS offshore outsourcing not as a variation of IS offshoring but as a combination of both IS offshoring and IS outsourcing, or as Erber & Sayed-Ahmed mention:

“It is obvious that offshoring can take place either inside a single multinational corporation or through an outsourcing contract with a foreign company. [...] Thus, offshoring and outsourcing are independent options which, if they occur simultaneously, lead to offshore outsourcing [...]” (Erber & Sayed-Ahmed, 2005, p. 102)
B.3 History and Current Development

B.3.1 International Perspective

India, Ireland, and Israel are nations that first provided IS services to customers abroad in absence of a significant domestic market for these services (William et al., 2006). India therefore is a prime example for a developing country that became a noticeable supplier for global IS offshoring services. The country is the leader in the Asian IS offshoring industry (Hirschheim et al., 2005). Illustrating its development simultaneously provides an overview of the IS offshoring industry’s history.

The roots of the Indian IS offshoring industry are in the 1970s when Indian IS workers first went to the United States to perform programming tasks (Henley, 2006; William et al., 2006). Building on that experience, IS offshoring companies started to provide their services in the early 1980s (Trampel, 2004). With the economic deregulation in India in the end of the 1980s, the Indian government became aware of this new industry and started to promote and subsidize it (Hawk & McHenry, 2005). From that time on, the Indian IS offshoring sector experienced strong growth (Bhatnagar & Madon, 1997; Hirschheim et al., 2005; Kumar & Willcocks, 1996; Nidumolu, 1993).

Several reasons contributed to the country’s strong position in IS offshoring. As a main reason, labor cost differentials in comparison to western countries provided an economic benefit to Indian companies’ western clients. Additionally, the “[...] combination of English language skills, large numbers of skilled IS staff, and an excellent technical education system [...]” (Hirschheim et al., 2005, p. 1009) served as foundations for the experienced growth. Apart from these factors, better communication technology enabling international cooperation and data exchange, as well as increased software development and project management capabilities, bolstered the country’s position in the IS offshoring industry (Bhatnagar & Madon, 1997; Carmel & Agarwal, 2002; Henley, 2006). Finally, the demand for IS services in western countries increased in the late 1990s induced by the Internet Boom as well as the reprogramming efforts required by the millennium change. Indian IS professionals and companies met this demand, thereby further increasing India’s popularity as an IS offshoring location (Amoribieta et al., 2001; Bhatnagar & Madon, 1997; Bitkom, 2005; Carmel & Nicholson, 2005). Despite doubts regarding the actual size of the Indian IS offshoring industry, studies agree that the sector is a significant industry in India (Hirschheim et al., 2005). Offshore service providers, such as Wipro, Infosys, or TCS, became multinational corporations with several billion US dollars in revenues (Henley, 2006).

Apart from the development in India, IS offshoring received growing attention by the western public, due to the rising fear of job losses in white-collar professions previously regarded as
transfer-safe (Boes & Kämpf, 2006; Erber & Sayed-Ahmed, 2005; William et al., 2006). This fear is not new and already appeared in the 1980s and 1990s (Smith, Mitra, & Narasimhan, 1996). However, the actual effects of IS offshoring on the domestic labor market figures are still unclear and open for discussion (Hirschheim et al., 2005).

**B.3.2 German Perspective**

IS offshoring research in Germany faces similar challenges regarding reliable statistical data as in the international context (Hirschheim et al., 2005; Schaaf, 2004). Additionally, existing results regarding the phenomenon are rather anecdotal instead of thoroughly researched (Mertens, 2005). Despite this situation, studies seem to agree that IS offshoring is less adopted and developed in Germany than in English-speaking industrial countries such as the United States or the United Kingdom. Reasons cited for this situation are high cultural barriers to cooperation with classical IS offshoring countries in Asia such as India. The German language represents another barrier for collaboration (Schaaf, 2004). Simultaneously, IS offshoring providers mainly focused on clients in English-speaking industrial countries and less on clients in Germany (Ben & Claus, 2005; Bitkom, 2005; Söbbing, 2006). This leaves the German IS offshoring market underdeveloped. IS offshoring companies seem to play a minor role in the German IS services market (Computerwoche, 2006). However, analysts expect strong future market growth and increasing activity of IS offshore service providers in Germany (Schaaf & Weber, 2005).
C Methodology

C.1 Review Approach Overview

The review approach employed consists of four steps. The first step retrieves literature from electronic databases, examines it, and archives all literature items. The second step excludes non-relevant research from further analysis. This exclusion is necessary, since the database-driven search approach might return irrelevant results. Having identified relevant literature items, the third step classifies and tabulates them. The fourth and last step summarizes the research items’ findings in verbal as well as in tabular form. It subsequently interprets and discusses the findings. Figure 1-2 illustrates which study sections cover each review step’s methodological description and the corresponding results.

![Review steps diagram]

<table>
<thead>
<tr>
<th>Review steps</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Literature retrieval</td>
<td>Section C.2</td>
<td>Section D.1</td>
</tr>
<tr>
<td>(2) Literature exclusion</td>
<td>Section C.3</td>
<td>Section D.1</td>
</tr>
<tr>
<td>(3) Literature classification</td>
<td>Section C.4</td>
<td>Section D.2</td>
</tr>
<tr>
<td>(4) Results summary</td>
<td>n/a</td>
<td>Section D.3</td>
</tr>
</tbody>
</table>

Figure 1-2: Illustration of literature review approach

C.2 Literature Retrieval

C.2.1 Literature Source Selection

Journal articles and conference proceedings represent the main channels to share research results in the scientific community. This paper therefore focuses on those two publishing channels to identify relevant knowledge in the field of IS offshoring. The subsequent paragraphs explain the methodology applied for selecting (a) journals and (b) conferences.

(a) Initially, we intended to follow the approach by Dibbern et al. (2004) and search only the most relevant IS journals based on a scientific journal ranking (c.f. Saunders, 2007; Lowry, Romans, & Curtis, 2004). However, a pilot search in the 25 most highly-ranked journals yielded a very low number of results. Therefore, the source selection was adjusted to search in electronic databases for identifying relevant journal articles. The database employed is Ebsco’s Business Source Complete. It covers more than 1,200 scholarly business journals. Electronic database search comes with certain limitations, such as availability of journal issues in the database, and record completeness. Nevertheless, we finally opted for a database-driven search because it allows for a wide coverage of literature sources and assures repeatability of the search process by other researchers.
(b) The paper focuses on four renowned IS conferences: Americas Conference on Information Systems (AMCIS), European Conference on Information Systems (ECIS), Hawaii Conference on System Sciences (HICSS), and International Conference on Information Systems (ICIS) (Dibbern et al., 2004, p. 23; Hirschheim et al., 2005, p. 1015; Wiener, 2006, p. 47). AMCIS, HICSS, and ICIS represent important international conferences for IS research. ECIS is a renowned European IS conference. Table 1-2 illustrates the considered conferences and the corresponding data sources for proceedings search and retrieval.

<table>
<thead>
<tr>
<th>Conference</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Conference on Information Systems (ECIS)</td>
<td>London School of Economics, ECIS proceedings <a href="http://is2.lse.ac.uk/asp/aspecis/">http://is2.lse.ac.uk/asp/aspecis/</a></td>
</tr>
</tbody>
</table>

Table 1-2: Considered IS conferences

C.2.2 Literature Item Search

The ten years from January 1, 1996 to December 31, 2006 serve as the relevant timeframe for searching literature items from journals and conferences.² Article titles, abstracts, subject terms, and assigned keywords represent the relevant search fields for journal articles. For conference papers, their paper titles are searched.

The corresponding query string is “offshor* OR off-shor* OR nearshor* OR near-shor* OR (global AND outsourc*) OR (international* AND outsourc*)”. The wildcard symbol “*” reduces the terms to their principal forms (so-called stemming, c.f. Ferber, 2003). It ensures that the search also covers term variations such as offshoring, offshore, and offshored. The search term “global AND outsourc*” and “international* AND outsourc*” identifies literature items that address the aspect of offshore outsourcing but do not explicitly use the keyword offshoring (e.g., Apte, Sobol, Hanaoka, Shimada, Saarinen, & Salmela et al., 1997).

Using the keywords above yields more than 900 search results with low relevancy, for example, research regarding manufacturing offshoring or the oil drilling industry. Therefore, we use a database subject filter to focus on content-relevant research. The subject filter for journals is “Information Technology’ OR ‘Strategic Information System’ OR ‘Management

² Except for ECIS where proceedings of the 2006 conference were not yet available.
Information Systems”. The search excludes journal articles shorter than five pages. Additionally, the database filter “Scholarly (peer-reviewed) journals” ensures a minimum quality in research results. Table 1-3 shows the data sources and corresponding search parameters.

<table>
<thead>
<tr>
<th>Journals</th>
<th>Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ebsco’s Business Source Complete</td>
<td>AIS eLibrary (AMCIS, ICIS)</td>
</tr>
<tr>
<td></td>
<td>IEEE digital library (HICSS)</td>
</tr>
<tr>
<td></td>
<td>LSE ECIS proceedings (ECIS)</td>
</tr>
<tr>
<td></td>
<td>1996 to 2005 (ECIS)</td>
</tr>
<tr>
<td>Title (TI)</td>
<td>Title</td>
</tr>
<tr>
<td>Keywords (KW)</td>
<td>offshore* OR off-shor*</td>
</tr>
<tr>
<td>Abstract (AB)</td>
<td>nearshor* OR near-shor*</td>
</tr>
<tr>
<td>Subject terms (SU)</td>
<td>global AND outsourc*</td>
</tr>
<tr>
<td></td>
<td>international* AND outsourc*</td>
</tr>
<tr>
<td>Filters</td>
<td>Only scholarly (peer-reviewed) journals</td>
</tr>
<tr>
<td></td>
<td>No filter</td>
</tr>
<tr>
<td></td>
<td>Subjects (DE) “Information Technology”, “Strategic Information System”, “Management Information Systems”</td>
</tr>
</tbody>
</table>

Table 1-3: Overview of data sources and search parameters

C.3 Literature Item Exclusion

The literature review at hand excludes non-relevant research to assure that it only contains content-relevant literature. Research is non-relevant when it has a non-IS context or does not have an IS managerial or business-oriented research focus, such as studies on manufacturing offshoring or on IS education. Additionally, the analysis excludes conference papers that resulted in a journal article and conference papers with no original content such as announcements for discussion boards or research agendas and proposals.
C.4 Literature Categorization Framework

C.4.1 Categorization Framework Overview

This paper partially builds upon the literature categorization framework employed by Dibbern et al. (2004). Relevant dimensions for categorizing the identified research items are (a) the reference theories the items build upon, (b) their research approaches, (c) their research types, (d) their employed research methods in terms of data gathering and data analysis, (e) the specific IS offshoring stage(s) they address, and (f) the IS services they focus on. Figure 1-3 illustrates these dimensions. The following sections explain them in detail.

<table>
<thead>
<tr>
<th>Reference theory</th>
<th>Research approach</th>
<th>Research type</th>
<th>Research method</th>
<th>IS offshoring stage</th>
<th>IS service</th>
</tr>
</thead>
</table>
| - Strategic theories
  - Resource theories
  - Strategic management theories
| - Empirical
  - Non-empirical |
| - Economic theories
  - Agency theory
  - Transaction cost theory |
| - Social/Organizational theories
  - Social exchange theory
  - Power and politics theory
  - Relationship theory |
| - Other |
| - Confirmatory
  - Exploratory-interpretive
  - Descriptive
  - Formulative |
| - Data gathering
  - Survey
  - Interview
  - Case study
  - Other |
| - Data analysis
  - 1st generation statistics
  - 2nd generation statistics
  - Interpretation
  - Other |
| - Why
  - What
  - Which
  - How
  - Outcome |
| - Infrastructure
  - Application development
  - Other |

Figure 1-3: Dimensions for categorizing literature

All literature items are classified along these dimensions. Sometimes a piece of research covers more than one aspect of a dimension. In this case it is correspondingly classified in more than one category. As the results show (c.f. Section D.2., p. 25), this multi-classification does not happen often and primarily occurs in the dimensions IS offshoring stage and IS service.

C.4.2 Reference Theories

Reference theories act as a theoretical foundation for researchers to formulate their research hypotheses and explanation constructs. One can distinguish between strategic, economic, and social/organizational theories. “Strategic theories focus on how firms develop and implement strategies […] Economic theories focus on the coordination and governance of economic agents regarding their transactions with one another [and] Social/organizational theories […] concentrate on the relationships that exist between individuals, groups, and organizations”
In their literature review, Dibbern et al. (2004) tabulated the most relevant theoretical foundations, described their basic assumptions, main variables and listed the corresponding key authors. Table 1-4 shows their findings (for a more detailed description c.f. Dibbern et al., 2004, pp. 17–20).

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

Table 1-4: Overview of theoretical foundations (Dibbern et al., 2004, p. 18)
C.4.3 Research Approaches

Research approaches represent the general ways to conduct research. One can distinguish between (a) *empirical* and (b) *non-empirical* research approaches. Empirical research intends to generate knowledge by analyzing data resulting from observation. Non-empirical research, however, is more abstract in nature and relies on analytical reasoning. (Dibbern et al., 2004)

C.4.4 Research Types

Following previous studies regarding IS meta-research (Boudreau, Gefen, & Straub, 2001; Dibbern et al., 2004; Vessey, Ramesh, & Glass, 2002), this literature review differentiates (a) *confirmatory*, (b) *exploratory-interpretive*, (c) *descriptive*, and (d) *formulative* types of research.

(a) Confirmatory research attempts to test a priori specified relationships through structured scientific instruments of data gathering and analysis (Dibbern et al., 2004). (b) In contrast to that, exploratory-interpretive allows methods and data to define the nature of 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., 2001; Orlikowski & Baroudi, 1991). (c) Descriptive research is usually not theoretically grounded and does not try to interpret a phenomenon. It rather presents what the researchers believe to be objective, factual observations (Orlikowski & Baroudi, 1991). Finally, (d) formulative research’s primary objective is to construct a model or something other than a model such as an algorithm, a taxonomy, guidelines, concepts, or frameworks (Vessey et al., 2002).

Confirmatory and exploratory-interpretive research usually involves empirical approaches. Descriptive research occurs with empirical and non-empirical research approaches. Formulative research, however, primarily tends to employ non-empirical approaches.

C.4.5 Research Methods

Research methods are “more narrowly focused techniques and procedures for conducting research” (Dibbern et al., 2004, p. 20). They address the issues of *data gathering* and *data analysis*.

Data gathering research methods are (a) *surveys*, (b) *interviews*, (c) *case studies*, or (d) *other types* of data gathering. Interviews and case studies are, of course, not mutually exclusive. Case studies often also use interviews for data gathering. If this applied, we coded case study since it represents the primary data gathering method. Interview as a separate method, however, is still adequate, because some research relies on interviews in terms of a phenomenological study (Creswell, 1994, p. 13) but does not conduct a case study.
Data analysis research methods refer to quantitative statistical methods, including (a) \textit{first generation statistics} such as descriptive statistics or simple multiple regression analysis, (b) \textit{second generation statistics} such as structural equation modeling (Boudreau et al., 2001), qualitative non-statistical (c) \textit{interpretation} (Creswell, 1994), or (d) \textit{other forms} of data analysis.

C.4.6 IS Offshoring Stages

Reference theories, research approaches and research methods cover the methodological aspects of research. However, the content perspective is of equal importance. The following stage model for IS offshoring addresses this perspective.

IS offshoring represents a decision regarding the production or procurement of services within an organization, followed by its implementation. Therefore, it seems appropriate to follow Dibbern et al. (2004) and use their adapted version of Simon’s decision making model (Simon, 1960). They distinguish among five decision dimensions to categorize research items: (a) \textit{why} to consider offshoring, (b) \textit{what} to offshore, (c) \textit{which} decision to make, (d) \textit{how} to offshore, and finally (e) \textit{outcome} of offshoring. Stages (a), (b), and (c) cover the actual decision-making. Stages (d) and (e) address the implementation. Figure 1-4 illustrates the sequence of the five stages in the context of IS offshoring.

(a) Why to consider offshoring examines the determinants that lead to the consideration of offshoring as a sourcing option. Research at this stage tries to understand potential advantages and disadvantage or risks and benefits associated with IS offshoring.

(b) What to offshore looks at the aspects of the areas and functions, for example, IS department activities or applications, that are offshoreable but also addresses the structure of the offshoring arrangement, for example, regarding the degree of offshoring in terms of IS budget.

(c) Which choice to make refers to the decision whether to offshore or not. It examines the procedures, guidelines, and stakeholders involved to evaluate the available options and make the decision.

(d) How to offshore looks at the implementation of the offshoring decision, e.g., on setting up an offshore unit or selecting an offshore service provider, structuring the arrangement and managing it. Research at this stage solely focuses on the structure or conceptualization of the implementation but not on the outcome or its quality.

(e) Outcome of offshoring addresses the result of the implementation of offshoring relating to experiences such as best practices, types of success, and the various determinants for success of the offshoring decision (Dibbern et al., 2004).