

## INFORMATION SYSTEMS OFFSHORING: RESEARCH STATUS AND ISSUES

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The offshoring of information systems and services has been one of the most discussed phenomena in IS in recent years; it has significantly influenced the thinking of both academics and practitioners. The extent of offshoring of information technology-related services has been significant and the trend seems likely to continue in the foreseeable future.

Yet, there has been little in-depth study of information systems offshoring and its apparent impact on the nature of the work of, career options in, and the management of the information systems function. Although domestic IS/IT outsourcing has been prevalent for 15 or more years, there is only minimal research related to these issues in that context as well. The new realities of outsourcing and offshoring present information systems executives with legal, cultural, and managerial challenges that are not yet fully understood and educators with questions concerning appropriate curricula for the new environment.

Because, there is little empirical research published in scholarly IS journals about the offshore outsourcing of information system activities and its impact on education and practice, the intent of the editors for this special issue of *MIS Quarterly* is to bring together a set of high quality papers that will (1) describe the state of IS offshore outsourcing practice, (2) provide a select sample of research findings, and (3) suggest potential future research in this domain.

### Innovations in Editing the Special Issue

The deadline for the submission of papers to be considered for the Special Issue (SI) was September 1, 2006. At that time, both of the editors were participating in activities of the AIS Senior Scholars Consortium which was focusing on IS journal editorial strategy and practices including the feasibility of speeding up the journal reviewing process. We decided to implement some of the ideas that we had formulated and which we subsequently discussed with other senior scholars at the 2006 International Conference on Information Systems in Milwaukee (Saunders and Benbasat 2007). In effect, we decided to use the Special Issue as a testbed to investigate the feasibility of making some innovations in the review process while maintaining the quality of the papers that were accepted.

Forty-three papers were submitted by the deadline. A number of additional papers (not included in the 43) were submitted or proposed, but were rejected because they dealt with outsourcing, but not specifically with offshore outsourcing.

The final manuscripts for the SI were submitted to the Editor-in-Chief of the *MIS Quarterly* October 2007, so we were very

successful in significantly speeding up the normal review process duration. We leave it to readers to assess how successful we were in maintaining *MISQ*-level quality.

Authors were asked to nominate two associate editors (AEs) from a list of 14 and also to nominate six reviewers. We were able to assign about 85 percent of the papers to a nominated associate editor. The authors' nominees for reviewers were passed along to the AE to whom each paper was assigned with the admonition that they might use them or not at their own discretion. This resulted in an average of 1.1 of the nominated reviewers being appointed for each paper by the AEs. So, about 20 percent of the reviewers who were actually used were those nominated by the authors. (We did not collect data on how many nominated reviewers were asked to do a review and declined). The number of nominated reviewers who were actually used as reviewers varied greatly for different AEs and papers; the range was zero to five.

The implementation of the rapid review process was simple: we set deadlines, had AEs set deadlines for reviewers and the deadlines were enforced. We determined that we would not let the slowest reviewer or AE dictate the schedule for completion of the SI.

Of course, such a rigid process carries with it the possibility (for a SI, but not for a regular issue of a journal) that some authors may be unfairly treated. If one author is unfortunate enough to be saddled with slow reviewers, he or she may find that a very good paper does not complete reviews on time to be included in the SI.

We dealt with this fairness issue by reaching an agreement with the current Editor-in-Chief, Carol Saunders, and the incoming EIC, Detmar Straub, that would allow us to continue reviewing papers of merit for possible publication in subsequent issues of the journal if the reviews did not meet the schedule for the SI. In this way, we believe that we achieved a quality SI very rapidly without being unfair to any authors.

In processing the papers, we also chose to over-rule the recommendations of the AEs more often than is typical in *MISQ* reviewing. Some of these were related to the schedule in that some reject recommendations of AEs seemed to be based primarily on the perception that authors could not produce revisions to meet the schedule. Sometimes, these AEs were not aware of our agreement with the EICs. In other cases, we over-rode reject recommendations when the reviews seemed to be sufficiently positive to warrant it. In doing so, we were attempting to change the "*MISQ* review syndrome," which seems to consider rejection as the default unless there is proof positive that a paper is of high quality. In doing so,

we believed that we were fulfilling Carol Saunders's developmental objectives for the journal's review process (Saunders 2005).

To illustrate, we found in this review process and in our other experiences with *MISQ* that a paper that gets three reviews that are quite positive and one that is negative can readily be recommended for rejection by an AE who agrees with the negative review. This is certainly as it should be if the reason for the negative assessment is substantial and significant. However, in at least one such case, we believed that the one reviewer's and the AE's taste in research seemed to be the most important reason for the negative recommendation. So, we felt free to over-ride an AE's recommendation, to provide all reviews to the authors, and to assign the paper to another AE. In this manner, we made the (often surprised) authors aware that we had over-ridden the AE. (In one other such case, we were proved to be wrong when a second AE gave us the same reject recommendation that the first one had.)

## Assessment of the Submitted Papers<sup>1</sup>

Of the 43 papers that were submitted (not including a number that were proposed for submission but rejected because they did not specifically address the topic), nine appear in the SI and several are still being considered for publication in a subsequent regular issue of *MISQ*.

Because of the high esteem with which *MISQ* is held by IS researchers, when we viewed the rather broad range and scope of the 43 papers, we concluded that they might well be a representative sample of the best research that is currently being conducted on this topic by IS researchers. Of course, given the emphasis on empirical work that was stated in the call, any conclusions that might be drawn from this sample must be limited to that domain.

So, in parallel with having the papers reviewed, we conducted our own analysis of the paper topics, research methodologies, and other salient elements of each paper. For each paper, we constructed a profile of these descriptors. The profile did not include attributes of paper quality because we are, in this activity, not primarily interested in quality, but in the topics studied and the research methods that were used. (Of course, in the review process, we were primarily interested in the quality of each paper). We believe that for purposes of this

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<sup>1</sup>T. Rachel Chung of the University of Pittsburgh significantly assisted in making this assessment. This section is adapted from a conference paper: King, Torkzadeh, and Chung (2007).

analysis, we can ignore quality because given the high-quality perception that most IS researchers have of *MISQ*, there is significant self-selection bias with regard to quality that exists in any *MISQ* submission process. The vast majority of IS researchers “self censor” and do not submit papers to *MISQ* unless they believe them to be of first quality.

The 43 papers submitted are listed in Appendix A. Each is given a number which is for identification purposes only. Appendix A lists each of the papers by number and provides a succinct version of the profile of each in terms of

- Research question addressed
- Definition of offshoring (if given)
- Context of the study
- Theoretical perspective(s) used
- Level of analysis
- Vendor country(ies) considered
- Sample frame
- General research method
- Analysis method
- Findings

### **Definitions of Offshoring Used**

Twenty-five papers offered an explicit definition of *offshoring*. The most succinct definition is “inter-country outsourcing.” Most definitions view offshoring as a form of outsourcing performed outside the client organization’s home country.

The majority of the research concerns the offshoring of software development efforts. However, a few studies examine other kinds of IT projects, including business process outsourcing, automotive engineering work, and helpdesk services.

### **Level of Analysis**

Most studies examined research issues at the project level ( $N = 12$ ) and the organizational level ( $N = 7$ ). The macroeconomic-level ( $N = 3$ ) and the individual-level also drew some research interest. Three papers report event studies. Other units of analysis include the offshoring decision ( $N = 1$ ), the transaction ( $N = 1$ ), and the task ( $N = 1$ ). (See Figure 1.)

### **Offshoring Destination**

Not all papers explicitly stated the country in which the offshoring activities are studied. For those that did, it is not

surprising that India is the most frequently cited country of destination ( $N = 18$ ), with China being the next ( $N = 6$ ). Other countries discussed explicitly included Jordan, Barbados, Jamaica, Mexico, and South Africa. Four papers examine a range of countries that could have included some or all of these countries. (See Figure 2.)

### **Client Location**

The client firms studied in these papers were not all based in the United States. One is based in Norway, one in Germany, and one in Ireland.

### **Theoretical Lens**

As is the case in the outsourcing literature, the most commonly applied theoretical lens was transaction cost economics (TCE). However, creative applications of other theories are observed in the submitted papers. These include postcolonial theory, agency theory, social identity theory, knowledge management, national culture, theory of planned behavior, coordination, communication, collaboration, organizational learning, social exchange, relational exchange, psychological contracts, resource-based view of the firm, institution theory, control, and macroeconomics.

### **Research Approach**

Most papers took a qualitative approach, examining a small number of cases, often using an interview method ( $N = 21$ ). Some studies take a more quantitative approach, reporting results from survey studies ( $N = 8$ ). Four studies reported findings based on archival data. Other research methods employed include literature review ( $N = 3$ ), event study ( $N = 2$ ), economic modelling ( $N = 1$ ), and experiment ( $N = 1$ ). (See Figure 3.)

### **Research Topics**

A good number of studies examined factors that contribute to the outcome or success of offshored projects ( $N = 6$ ). The factors being examined range from vendor and client characteristics (papers #135 and #145), task characteristics (paper #153), incentive structures (paper #136), work practice arrangements (paper #143), the extent of IT deployment (paper #140), and the extent of knowledge codification (paper #140).

Other topics that were examined in the submitted papers include risk factors (papers #112 and #119), the role of ICT

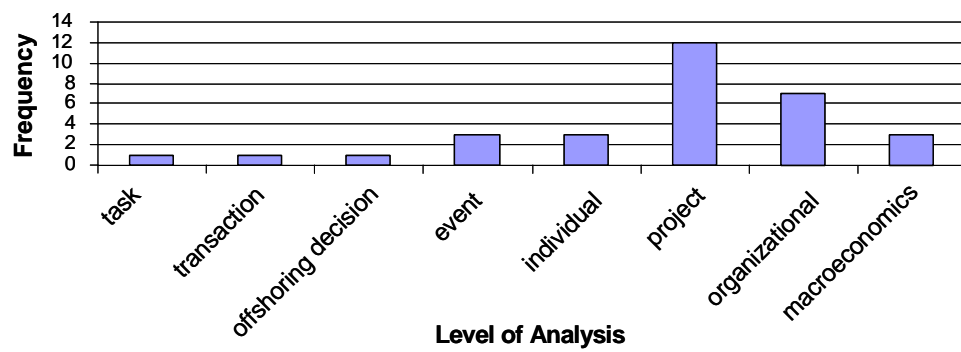


Figure 1. Level of Analysis

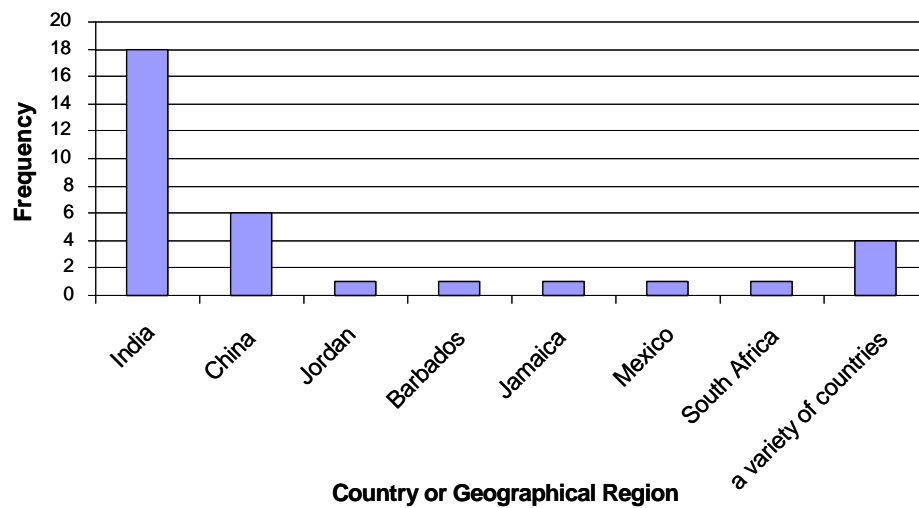


Figure 2. Offshoring Destination

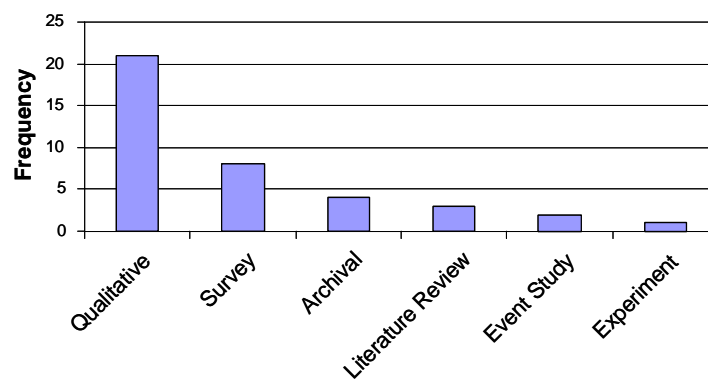
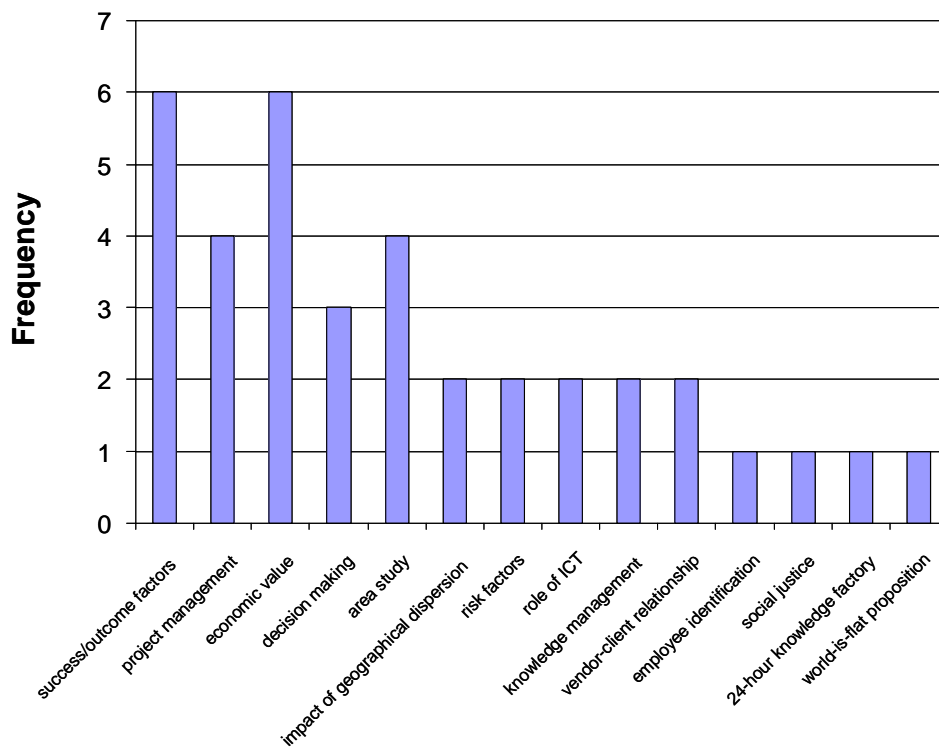


Figure 3. Research Approach



**Figure 4. Research Topic**

communication (papers #144 and #146), knowledge management (papers #127 and #142), vendor-client relationship (papers #137 and #138), employee identification (paper #132), social justice (paper #147), the concepts of 24-hour knowledge factory paradigm (paper #152), and the “world-is-flat” proposition (paper #117). (See Figure 4.)

A group of papers focused on project management issues within the context of offshoring. These issues include vendor selection and management (paper #122), organizational design and practices (paper #131), internal control mechanisms (paper #144), and project leader’s cultural characteristics (paper #144).

Another area of intense research interest is the economic value of offshore outsourcing. In particular, authors have examined the economic value of offshore outsourcing compared to onshore outsourcing (paper #128), the impact of offshore outsourcing announcement on firm value (paper #129), determinants of transaction costs in offshore outsourcing projects (papers #130, #134, and #153), and how IS work may be valued in a global economy (paper #149).

Authors took a variety of approaches to understand how the decision to offshore outsourcing can be made. One paper pro-

poses an analytical hierarchy process (AHP) methodology (paper #118). Another examines the knowledge-based view of the offshoring decision (paper #120). One paper examines the decision-making process using the theory of planned behavior, focusing on factors such as attitude, subjective norm, and perceived behavioral control (paper #123).

A fairly distinctive approach is to focus the analyses on a specific geographical location, such as Jordan (paper #113), Malaysia (#114), Barbados and Jamaica (#137), and India (#148). These analyses examine the strengths and weakness of these countries as offshoring locations. A related, but distinct, approach is to study the impact of geographical dispersion (papers #117 and #119) on outsourcing success.

## Summary of Findings

Studies that examined antecedents to the success or other outcome measures of offshored projects identified many important factors that are largely under the control of the client firm: For instance, vendor management capability and practices, such as quality-oriented performance measures and IT application deployment were found to significantly en-

hance outcome measures such as client-vendor relationship satisfaction. Other factors, such as the extent of task dispersion, negatively impact project outcomes. At the same time, factors on the vendor side, such as trust in client and service quality, positively contribute to the success of offshored projects, whereas perceived control by the client bears little relationship to project outcomes. Studies that focus on the dynamic relationship between the client and the vendor report that positive client-vendor partnership quality improves project outcomes, and that fixed-price contracts as opposed to time-and-materials contracts bring forward more favorable outcomes. Table 1 presents a summary of these findings.

A number of studies identified the risks and challenges involved in the management of offshored projects, such as those presented by the vendor selection process, and the geographical and cultural differences. One study reports that boundary-spanning practices by middle managers facilitate effective collaboration efforts. Other studies examine team management practices and report that team leaders' cultural characteristics are crucial for project success. Particularly, team selection with client representation from the same nationality as those on the vendor team reduces project cost. These findings are summarized in Table 2.

As one of the most widely cited assumptions for justifying offshoring initiatives is cost savings, many studies set out to gather empirical evidence that examines the validity of these arguments from an economic perspective. Findings from the papers submitted to the special issue are mixed. On the one hand, a set of studies report that financial markets favor offshoring in general. At the same time, other studies report that, rather than reducing cost, offshoring leads to increases in production and transaction costs. There is also evidence suggesting that financial markets favor onshore outsourcing over offshoring when the firm's motive is to improve process quality. Another fundamental debate of interest is how the valuation of offshored projects should be conducted. One submitted paper addresses this question by proposing a valuation methodology. These findings are summarized in Table 3.

Studies that scrutinize the decision-making process involved in offshore outsourcing took diverse approaches. One study illustrates an analytic hierarchy process (AHP) methodology to formalize the complicated process when firms must decide whether to offshore IT projects. Another study presents a set of propositions about the offshoring decision in relation to factors such as source governance, geographical proximity, the strategic value of offshored knowledge, and the maturity of offshored knowledge. Yet another study examines the offshoring decision using the theory of planned behavior (TPB),

and finds that attitude toward offshoring, subjective norm, and perceived behavioral control enhances management's inclination toward offshore outsourcing. These findings are summarized in Table 4.

Outsourcing IT projects to vendor firms in distant locations with different cultures is an inherently risky endeavor. What can firms do to mitigate the risks involved in offshoring efforts? One study reviewed the literature and postulated that task decomposition, explicit articulation, and knowledge codification by client firms help reduce risk levels, whereas dependence on offshore vendor and uncertainty and consolidation within the outsourcing industry increased risk levels. Another study observed that, although firms begin with a conservative approach to offshoring, with accumulated experience, firms are willing to engage in riskier projects. These findings are summarized in Table 5.

It is clear that the management of outsourced projects located in foreign countries cannot be accomplished without the application of information and communications technology (ICT). Researchers who set out to examine the role and impact of ICT on offshored projects, however, are surprised to find that, although the deployment of ICT is extensive, the usage is largely for tacit coordination as opposed to explicit communication. Rich media such as video conferencing are, in reality, rarely used. Instead, ICT is used primarily to ensure seamless coordination and collaboration and as a way to minimize the need for explicit communication. These findings are summarized in Table 6.

One paper that examined Thomas Friedman's "World-Is-Flat" thesis discovered that, contrary to the proposition, vendor selection in the contract decision process is based more on prior relationships as opposed to cost or location of labor. The authors also observed that U.S. firms favor offshoring over onshore outsourcing, whereas firms in other countries may do the reverse. Another research team examined the "24-hour knowledge factory" concept and argues that geographical dispersion can be viewed as an asset as opposed to a disadvantage. Finally, a study concerned about the social injustice between client and vendor countries discussed mechanisms that can be implemented to balance it.

In sum, the 43 papers reveal that rigorous research in IS offshoring is still in its nascent phase. Most research is still qualitative and/or exploratory. Indeed, most of the extant literature in the area is opinion-based, prescriptive, and/or anecdotal. However, the papers that are published here are rigorous in that they have a strong theory base and use formal analysis.

**Table 1. Success/Outcome Factors**

## Client Factors

- Vendor management capability
- Vendor management practices
  - Extent of IT application deployment
  - Quality-oriented performance measures
- Task dispersion (-)

## Vendor Factors

- Service quality
- Trust in client
- Perceived control by clients (ns)

## Client-Vendor Factors

- Client-vendor partnership quality
- Fixed price contracts as opposed to time and materials contracts

**Table 2. Project Management**

- There are various risks involved in multivendor selection and management
- Boundary-spanning practices by middle managers facilitate effective collaboration
- Team selection with client representation from the same nationality reduces cost
- Team leader's cultural characteristics are important

**Table 3. Economic Value**

- Financial markets favor offshoring when core IT processes are outsourced
- Global outsourcing is preferred when global processes are outsourced
- Financial markets favor offshoring in general, but when the motive is process quality improvement, onshore is preferred
- Investors usually show no reaction to outsourcing; but offshore outsourcing of business processes with high asset specificity generates sizable cumulative abnormal returns
- Offshoring leads to increased production and transaction costs with high asset specificity, cultural and geographical differences, and vendor characteristics
- Methods of IS work valuation

**Table 4. Decision to Offshore**

- AHP analysis
- Source governance
- Proximity
- Strategic value of offshored knowledge
- Maturity of offshored knowledge
- Attitude toward offshoring
- Subjective norm
- Perceived behavioral control

**Table 5 Risk Factors**

- Task decomposition, explicit articulation, and codification (-)
- Dependence on offshore vendor (+)
- Uncertainty and consolidation within the outsourcing industry (+)
- Firm-specific and industry-wide experience enablers firms to engage in riskier projects

**Table 6. Other Findings**

- Contract decision is based more on prior relationships as opposed to cost or location of labor
- U.S. firms prefer offshoring, whereas non-English speaking countries prefer local sourcing; other English speaking countries are in-between
- Geographical dispersion can be an asset (the 24-hour knowledge factory concept)
- Knowledge asymmetry exists between client and vendor countries; mechanisms must be implemented in order to balance it

## An “Offshoring Issues” Delphi Study<sup>2</sup>

As part of the production of the Special Issue, we conducted a Delphi study in which 101 authors, reviewers, and associate editors for the Special Issue were surveyed concerning their opinions of the most important current issues in offshoring.

In the first round of our three-round study, we e-mailed all editors, reviewers and authors of accepted papers to this special issue of MISQ about the forthcoming publication of the issue and invited them to participate in a Delphi study to delineate the current top issues regarding offshoring in IS. Respondents were asked to supply five issues and send them back to the authors at the indicated e-mail address.

For purposes of this Delphi study, an “offshoring issue” was defined as a question about offshoring that can lead reasonable people to disagree, or simply an important question that does not have a known answer.

Each individual was asked to begin with a “blank sheet” and to identify some important issues. In the first round, 42 people identified 199 issues. Then, the list of issues was edited by eliminating redundancies and consolidation, and sent out to the whole group for importance ranking. On each “round,” the issues were reedited and, with the importance rankings, were recirculated for further consideration. Participants were asked to suggest new issues on each round if they

thought that any important issues had been omitted from the evolving list. Appendix C describes the process in detail.

### **The Key Offshoring Issues**

The final “top 12” ranked list of offshoring issues is given in Table 7, where they are stated exactly as they were in the materials sent out in the Delphi study. The number 12 was chosen because there was a large gap in the final importance-ranking index between the twelfth- and thirteenth-ranked issues, indicating that these 12 were, as a group, significantly more important than the other issues that were identified.

**Offshoring’s Strategic Organizational Implications:** This issue relates to offshoring’s impact on the client organization in terms of the organization’s ability to learn, its knowledge, and its competitiveness. Since the eighth-ranked issue, related to core competencies, is closely related to the first-ranked one, there is a clear indication that the impact of offshoring on key organizational capabilities is unresolved. This suggests that while there may be an awareness that offshoring is beneficial on a project-by-project, short-term basis, there is concern for how the fundamentals of the organization will be affected in the long-run.

**Effects of Cultural Differences:** This issue addresses how the cultural differences between client and vendor, who are typically in different countries, affects management communications and coordination in offshored projects. Coupled with the seventh- and tenth-ranked issues, this cluster indicates that cultural differences and the problems of communicating over long distances, and perhaps in different languages, constitute important “unknowns” in offshoring.

<sup>2</sup>T. Rachel Chung and Greg Moody of the University of Pittsburgh were instrumental in the conduct of this study.



**Table 7. Ranked List of Offshoring Issues**

#	Issue
1	What are the strategic organizational implications (e.g., organizational learning, firm knowledge) of offshoring?
2	How do cultural differences between the client and the vendor affect management, communication, and coordination?
3	What practices can be developed to better manage the relationship with offshore vendors?
4	What theoretical framework can help the field better understand various types of offshoring and how offshoring differs from onshoring, backshoring, multisourcing, etc.?
5	How viable is offshoring as a competitive long-term strategy?
6	How can firms determine if offshoring a particular project is an appropriate strategy?
7	How does geographical distance impact coordination and communication between the client and the vendor?
8	What impact, if any, does offshoring have on retention of critical core competencies within the firm?
9	How can the costs and risks of offshoring strategies be assessed/mitigated?
10	What communication methods can the client and the vendor adopt in order to create or transfer expertise?
11	What are the critical success factors for offshoring?
12	What are the most important factors in the offshore vendor selection process?

**Better Management Practices:** Respondents evidently believe that better practices are needed to more effectively manage offshored projects. This is undoubtedly reflective of the on-the-job nature of most IS people's training in offshoring.

**Need for Theoretical Frameworks:** Frameworks that enable perhaps-subtle differences between offshoring, nearshoring, backshoring and multisourcing, etc. to be better understood are apparently desired. There is a clear focus on the lack of an overall "theory" of offshoring.

**Long-Term Viability of Offshoring:** While offshoring may be desirable in the short-run, respondents were concerned with whether it is viable as a long-term strategy.

**Identification of Appropriate Measures for Evaluating Whether to Offshore a Project:** This issue focuses on the appropriate measures and criteria to use to determine if a project should be offshored.

**Effect of Distance on Communication and Coordination:** Whether the geographical distance between the client's and vendor's location has an important impact on their communication and coordination is the focus of this issue.

**Retention of Core Competencies:** This issue relates to the impact of offshoring on the retention of the client firm's core competencies. Clearly, this is directly related to the top-rated issue, further supporting the importance of assessing the impact of offshoring on the client's organization.

**Assessing and Mitigating Costs and Risks:** Since offshoring involves unique costs and risks, this issue addresses how those costs and risks can be measured and mitigated.

**Communication Methods to Create or Transfer Expertise:** Since expertise might be created or transferred in an offshoring arrangement, this issue relates to identifying the best communication methods for doing so.

**Critical Success Factors in Offshoring:** This issue addresses the identification of the factors that are critical to the success of an offshoring project—those that when present, make offshoring success possible, and when absent, make success unlikely.

**Vendor Selection:** This issue involves the identification of the most important factors to consider in selecting an offshore vendor.

A number of key phrases can serve to summarize the top-12 issues.

- Long-term effects on the client organization
- Achieving and maintaining communication effectiveness across different cultures, languages, and time zones
- Frameworks, measures, and criteria
- Each of these areas might be considered as foci for training programs, educational courses, or discussion forums for IS students and professionals

## Conclusion

The issues identified in this study depict an evolving field which does not have an agreed-on framework to guide thinking. Neither is there a clear understanding of the long-term impacts and the measures and criteria that may be appropriately used to judge whether to offshore, to select a vendor, or to evaluate the degree of success of offshoring.

All in all, these issues suggest that there is a great deal of work to be done before we feel at all comfortable that we “have a handle” on this hugely important area.

## Summary of Contents of the Special Issue

***Cocreating Understanding and Value in Distributed Work: How Members of Onsite and Offshore Vendor Teams Give, Make, Demand, and Break Sense*** (Paul W. L. Vlaar, Paul C. van Fenema, and Vinay Tiwari)

The authors adopt a socio-cognitive perspective to study factors that affect the development of congruent and actionable understandings among onsite and offshore teams in information system development projects. Analyzing a case study of a geographically distributed information system development project at one of India’s largest offshore vendors, the authors suggest that knowledge and experience asymmetry as well as task complexity, instability, and ambiguity force onsite and offshore team members to engage in acts of sense making. Team members in that situation make sense of their tasks and environment, increasing the likelihood that congruent and actionable understandings will emerge. ICT-based tools are typically not used as channels of direct communication between locations. Instead ICT tools are used to avoid the need for direct communication by creating common ground across locations and thereby enabling tacit coordination.

***Two-Stage Offshoring: An Investigation of the Irish Bridge*** (Helena Holmström Olsson, Eoin Ó Conchúir, Pär J. Ågerfalk, and Brian Fitzgerald)

The authors examine two-stage offshoring cases in Ireland for two large U.S.-headquartered global companies with significant software development operations. The U.S. firms offshore work to Ireland and the Irish sites offshore work further to India. Thus, the Irish sites act as a “bridge” for offshoring arrangements and become both customer and vendor in two-stage offshore sourcing relationships. Using relational exchange theory (RET), the authors examine interactions, inter-

dependencies, and reciprocities between the parties involved. The authors suggest that the success of relationships is influenced by trust, interdependence, consensus, commitment, cultural compatibility, and flexibility. They further suggest that these factors are influenced by communication, coordination, cooperation, conflict resolution, and integration.

***Managing the Knowledge Supply Chain: An Organizational Learning Model of Information Technology Offshore Outsourcing*** (Hoon S. Cha, David E. Pingry, and Matt E. Thatcher)

The authors modify and adopt a learning model to serve as the basis of their IT offshoring study. The authors focus on long-run dynamic interactions of both the in-house and offshore production costs and coordination costs of offshoring after the offshoring decision has been made. The key assumptions of the learning model are that production costs decline as knowledge level increases and that the marginal change in knowledge level is a function of the quantity of output, the rate of knowledge depreciation, and the amount of knowledge transferred from the offshore firm to the domestic firm. The model is explored using four offshoring scenarios: (1) an optimistic case that illustrates favorable conditions for offshoring in the short and long term; (2) the case in which there is a disruption in the knowledge supply chain that results in an increase in coordination costs over time; (3) the case in which production costs increase over time because of impacts of the knowledge transfer rate and the innovation parameter; and (4) the knowledge and cost implications of bringing offshoring back in-house when firms are facing increasing coordination and/or production cost increases due to knowledge loss. Their findings suggest that although short-lived offshoring projects may generate substantial cost savings to the domestic firm, long-lived offshoring projects may cause a disruption in the knowledge supply chain, resulting in substantial losses in the later stages of the project. Firms that fail to realize the costs associated with such a disruption soon enough in the project life may find themselves locked into disadvantageous offshoring agreements without any recourse.

***Innovating or Doing as Told? Status Differences and Overlapping Boundaries in Offshore Collaboration*** (Natalia Levina and Emmanuelle Vaast)

The authors analyzed a case study of a large financial services firm to examine the argument that firms are better off keeping projects within their organizational boundaries by setting up captive offshore development centers, especially if these firms have sufficient scale. The paper highlights the kinds of organizational practices that helped this firm accomplish global collaboration. The study uses semi-structured interviews with

people from Western Europe, the United States, Russia, and India. Study findings suggest that achieving effective collaboration did not depend on whether the project was kept within the firm's boundaries, nor did it depend on choosing a specific offshore location. Instead, effective collaboration was facilitated by specific middle managers who engaged in boundary-spanning practices across country and firm borders.

***Explaining Variations in Client Extra Costs Between Software Projects Offshored to India*** (Jens Dibbern, Jessica Winkler, and Armin Heinzl)

The authors of this study examine why the realization of economic benefits varies substantially between offshored software projects. The authors suggest that many offshoring projects have failed to achieve expected cost savings, indicating that labor cost savings are offset by additional costs that arise in offshoring projects in certain situations. The authors use transaction cost economics (TCE) and empirical data from a case study that involved six software development and maintenance projects that were offshored to software vendors in India by a major German financial services firm. They specifically look at (1) what types of additional costs may arise in offshored software projects and (2) how and why additional costs vary between projects.

***Is the World Really Flat? A Look at Offshoring in an Online Programming Marketplace*** (David Gefen and Erran Carmel)

The authors analyze the history of transactions at one of the major online programming marketplaces, a marketplace for outsourcing small IT projects. What most determines the winning bid, the authors suggest, is the previous relationship between client and provider regardless of whether the provider is offshore or domestic. The authors suggest that contrary to the compelling flatness argument, their study makes the case for the primacy of relationships and nationalism when it comes to choosing the provider. The study also suggests that U.S. firms prefer offshoring, non-English speaking countries prefer local sourcing, and other English speaking countries are in between.

***Outsourcing to an Unknown Workforce: Exploring Open-sourcing as a Global Sourcing Strategy*** (Pär J. Ågerfalk and Brian Fitzgerald)

The authors of this paper use a psychological contract perspective on the use of the open source development model as a global sourcing strategy—*opensourcing*—whereby commer-

cial companies and open source communities collaborate on development of software of commercial interest to the company. The authors argue that three aspects of the psychological contract are particularly important in an outsourcing context: (1) the importance of mutuality and reciprocity of obligations in a social context, (2) psychological contracts are distinct from legal contracts, and (3) it promotes an individual level of analysis, focusing on the individuals' beliefs and expectations in a social relationship. The paper discusses issues such as *project ownership* and *authority structure*. The study findings suggest that the fulfillment of certain customer and community obligations is significantly associated with opensourcing success.

***Transformational Technologies and the Creation of New Work Practices: Making Implicit Knowledge Explicit in Task-Based Offshoring*** (Paul M. Leonardi and Diane E. Bailey)

The authors suggest that studies of information technology offshoring have focused on strategic issues of how, when and where to offshore work, leaving largely unexplored the tactical question of how to organize offshored work. They compare two models of organizing automotive engineering work to facilitate offshoring. Their findings suggest that computer-aided engineering (CAE) tools enable offshoring, but because the artifacts they produce encapsulate but do not make transparent engineering judgment and assumptions, individuals in both models developed new work practices to compensate for deficiencies associated with the technology. Three practices were common to both models: (1) defining requirements, (2) monitoring progress, and (3) fixing returns. Coordinators in the United States also enacted two other work practices: (1) routing work strategically and (2) filtering quality.

***Work Dispersion, Process-Based Learning, and Offshore Software Development Performance*** (Narayan Ramasubbu, Sunil Mithas, M. S. Krishnan, and Chris F. Kemerer)

The authors develop a learning mediated model of offshore software project productivity and quality to examine whether widely adopted structured software processes are effective in mitigating the negative effects of work dispersion in offshore software development, and to explain why some offshore software development process improvement initiatives may be more effective than others. The authors describe how the key process areas of the CMM (capability maturity model) process model could be potentially utilized as a platform to launch beneficial learning routines in an offshore software development context.

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We are also thankful to more than 100 reviewers, listed in Appendix B, for their valuable reviews and timely response. We appreciate the willingness of the associate editors and the reviewers to work with our tight schedule for the timely production of this special issue. We feel that it has been worth the extra effort.

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# Appendix A

## Assessments of Papers Contributed to the Special Issue

- 111 Research Question:** Develop a theory driven model of the labor supply chain in a generic offshoring vendor in order to study the workforce sizing issue. **Theoretical Perspective:** Systems dynamics. **Level of Analysis:** System. **Method:** Simulation. **Findings:** Contrary to common understanding that unused capacity hurts the bottom line, experiments with the model show that it is indeed necessary to maintain a not-insignificant fraction of workers idle "on the bench" to sustain financial performance. The model also provides insights into barriers to long term growth in offshoring.
- 112 Research Question:** Explore the changing profile of the client-side risks of present and future BPO and to raise the issue whether BPO will likely to increase long-term strategic risks for an outsourcing client. **Theoretical Perspective:** Technology design, market failure, resource dependence, dynamic capabilities, and complementarity in organizational design. **Level of Analysis:** Macro and organizational level. **Method:** Literature review. **Findings:** The outsourcer-client co-evolution centers around outsourcers' advantage in developing its competences due to economies of scale and scope in learning, complementarity in organizational design, and modularization and standardization in technology development as well as clients' focus on core activities and knowledge transfer preferences. Clients prefer decomposition, explicit articulation and codification of their activity, function and process in order to better leverage outsourcer's expertise. The desire to reduce outsourcing project risks and enhance client's short-term performance sets a positive-feedback loop for the co-evolution, which in turn increases client's dependence on outsourcer, reduces the value of client's strategic assets, shrinks its dynamic capability, weakens its ability to profit from innovation, and stifles its long-term strategy. Uncertainty and consolidation within the outsourcing industry are likely to elevate those strategic risks.
- 113 Research Questions:** (1) How do Jordanian IT companies look at global software outsourcing (GSO). (2) The strengths of Jordanian IT companies, which enable them to compete in the field of GSO. (3) The weaknesses of Jordanian IT companies, which reduce their ability to compete in the field of GSO. (4) Factors in the local environment, which increase or decrease the ability of Jordanian IT companies competing in GSO. **Definition of Offshoring:** Global software outsourcing (GSO) is the outsourcing of software development to subcontractors outside the client organization's home country. **Context:** Software development. **Offshore Country:** Jordan. **Sample:** IT professionals in Jordan. **Method:** Survey. **Findings:** Various specifics of the Jordanian environment.
- 114 Research Questions:** (1) Examine Malaysia as a destination to outsource call centers. (2) Explain what is a call center in contemporary term. (3) Examine the call center development in Malaysia. (4) Examine the working environment of a typical call center. (5) Describe how to cope with working in a call center environment. **Context:** Call center. **Offshore Country:** Malaysia. **Findings:** Malaysia has distinctive advantages as an offshore outsourcing destination.

- 115 Research Questions:** (1) How do knowledgeable participants view project outcomes? (2) Which project attributes explain differences in participants' ratings of project outcomes? (3) How do contextual issues explain offshore outsourcing experiences? **Definition of Offshoring:** Outsourcing work to a supplier located on a different continent than the client. **Context:** IS projects. **Level of Analysis:** Project and organizational. **Offshore Country:** India. **Sample:** 44 interviews and over 2000 documents from a Fortune 500 biotech firm. **Method:** Case study. **Analysis Method:** Interpretive. **Findings:** At the project level of analysis: (1) Participants rated projects that engaged one large offshore supplier higher than projects that engaged one small offshore supplier or multiple suppliers. (2) Participants rated both development and maintenance/support projects equally. (3) Participants rated projects with some offshore supplier employees onsite higher than projects with all supplier employees offshore. (4) Participants rated projects with greater-valued contracts higher than projects with lesser-valued contracts. (5) Participants rated larger-sized projects higher than smaller-sized projects. (6) Some organizational units had higher participant-rated projects than other organizational units. (7) Participants rated recent projects higher than older projects. At the organizational level of analysis: (1) Strong social networks between biotech IT employees and domestic contractors could not easily be replicated with offshore suppliers. (2) Biotech's "sneaker-net" culture among business users and IT employees.
- 116 Research Question:** Offshoring from vendor perspective, and in historical context. **Definition of Offshoring:** The transfer of IT services from a local company to a foreign country. **Context:** Software development. **Theoretical Perspective:** Postcolonial theory. **Offshore Country:** India. **Sample:** Field observation, collection of documents, e-mails, the Internet, field notes, and other artifacts; interviews. **Method:** Interpretive ethnography. **Analysis Method:** Qualitative. **Findings:** Informants are extremely sensitive to the larger issues of power, control, knowledge ownership and identity, which they believe underpin the IT offshoring phenomenon; the postcolonial theory is helpful in understanding the offshoring phenomenon.
- 117 Research Question:** Whether there is empirical support for the world-is-flat proposition. **Definition of Offshoring:** The proposition that IT providers from low-wage nations can now underbid providers from high-wage nations and win contracts. **Context:** Online programming marketplace. **Theoretical Perspective:** Agency theory; social identity theory. **Level of Analysis:** Transaction. **Offshore Country:** Different countries. **Sample:** Rent-A-Coder marketplace—all transactions from May 2001 for a period of 38 months through July 2004; over 20,000 usable project transactions. **Method:** Statistical analysis of archival data. **Analysis Method:** Stepwise logistic regression. **Findings:** Contract decision is based more on prior relationship as opposed to cost or location of labor; clustering of client-provider dyads in terms of their outsourcing preference: US firms prefer offshoring, whereas non-English speaking countries prefer local sourcing, and other English speaking countries are in between.
- 118 Research Question:** How AHP can help with the where to outsource decision. **Definition of Offshoring:** The practice among U.S., European, and Japanese companies of migrating business processes overseas to India, China, the Philippines, Mexico, and elsewhere to lower costs without significantly sacrificing quality. **Theoretical Perspective:** Decision making. **Level of Analysis:** Decision. **Method:** Mathematical modeling. **Analysis Method:** AHP and PROMETHEE II. **Findings:** AHP can be useful for analyzing offshoring decision making.
- 119 Research Question:** How the location and accompanying risk profile of country location selection by IS service offshoring firms is determined. **Context:** IS foreign direct projects. **Theoretical Perspective:** International business and multinational management. **Level of Analysis:** IS project. **Offshore Country:** Different countries. **Sample:** More than 860 IT and software offshoring projects in 56 host countries worldwide during the period 2000-2005. **Method:** Analysis of archival panel data. **Analysis Method:** Hierarchical linear modeling. **Findings:** Firm-specific and industry wide experience increases the likelihood of companies investing in progressively riskier markets, but that the core "risk gap" between home and host country dissipates as both types of experience are incorporated into our model.
- 120 Research Question:** How knowledge-based view affects the evaluation of outsourcing decisions. **Definition of Offshoring:** Outsourcing as "outside resource using," subcontracting a part, or all, of an organization's IS work to external vendor(s) to manage on its behalf. **Theoretical Perspective:** Knowledge-based view vs. transaction cost, resource-based theory, institutional theory. **Analysis Method:** Literature review. **Findings:** 16 propositions about outsourcing decisions in terms of source governance, proximity, the strategic value, and maturity of knowledge.
- 121 Research Question:** How resource allocators use information knowledge to wield power in the ISD process, and achieve goals of self interests. **Context:** Software development. **Theoretical Perspective:** Cultural perspective on power issues in ISD, particularly the Chinese Power Game – Face & Favor Theory. **Level of Analysis:** Event. **Sample:** One firm (TaiWire). **Method:** Interview and archival data. **Analysis Method:** Qualitative. **Findings:** Relationship (quanxi) and favor (renqing) play considerable roles in IS politics in a Chinese family firm.

- 122 **Research Question:** Selection and management of multivendors in software production. **Definition of Offshoring:** The use of outside vendors, who are physically located in foreign countries, to produce parts or whole of the software. **Context:** Software development. **Theoretical Perspective:** Authors developed their own all-encompassing model of vendor selection, **Sample:** A large multinational telecom company. **Method:** Interview. **Analysis Method:** Qualitative. **Findings:** There are various risks involved in international outsourcing using multivendors.
- 123 **Research Question:** Factors influencing vendors' intention to offshore outsourcing. **Definition of Offshoring:** The practice of contracting with third party vendors for the provision of IT services, with the vendors located in countries other than that of the buyers. **Context:** IT decision makers in Fortune 1000 companies. **Theoretical Perspective:** Theory of planned behavior. **Level of Analysis:** Individual. **Sample:** 139 IT decision makers. **Method:** Survey. **Analysis Method:** PLS. **Findings:** IT decision-makers' attitude toward offshore outsourcing, subjective norms, and perceived behavioral control are good predictors of the intention to outsource offshore; the expectation of IT cost savings and competitive benefits influence attitude towards offshore outsourcing while the perception of an offshore vendor's reputation plays a role in influencing perceived behavioral control.
- 124 **Research Question:** Whether there is a problem in the IS discipline related to dropping student numbers and what if anything the field can do about it. **Definition of Offshoring:** The migration of all or part of the development, maintenance and delivery of IT services to a vendor who is located in a low cost and different country from that of the client. **Context:** The IS discipline. **Method:** Literature review and macro data summary. **Analysis Method:** Simple descriptive statistics. **Findings:** Organizations will increasingly need "customer-facing" IT personnel which the academic IS community needs to produce. The authors offer guidelines for what students, faculty, and governments can do to preserve and improve the IS field despite the irreversible trend towards offshoring.
- 125 **Research Question:** How ICT is used in offshore SD projects. **Definition of Offshoring:** Geographic dispersion of value chains. **Context:** Software Development. **Theoretical Perspective:** Coordination and communication in distributed work; ICT media richness. **Level of Analysis:** Project. **Offshore Countries:** One U.S. firm and one India firm. **Sample:** 18 collocated and 42 distributed projects in two large software development firms. **Method:** Interview and archival data. **Analysis Method:** Qualitative. **Findings:** Video conferencing rarely used (co-presence is required which is hard across time zones); ICT mostly for tacit coordination & for generating common ground, as opposed to supporting communication.
- 126 **Research Question:** How ICTs are actually used in distributed software development. **Definition of Offshoring:** Geographic dispersion of value chains. **Context:** Software development. **Theoretical Perspective:** ICT and communication. **Level of Analysis:** Project. **Offshore Country:** India. **Sample:** Qualitative data from 60 distributed and collocated software services delivery projects. **Method:** Interview. **Analysis Method:** Qualitative. **Findings:** ICT based tools are typically not used as channels of direct communication between locations. Instead ICT tools are used to avoid the need for direct communication by creating common ground across locations and thereby enabling tacit coordination.
- 127 **Research Questions:** How expertise is institutionalized in different team working settings within software development environments taking into account the increasing internationalization of the ICT Industry. How is expertise synchronized and coordinated among intercultural teams? Which grade of expertise standardization corresponds to differently professionalized occupational fields within the ICT industry? Which is the relation between innovation patterns and expertise requirements? **Context:** Software development. **Theoretical Perspective:** Meuser and Nagel's (1991) theory of experts. **Sample:** (1) Open interviews with 13 female and 17 male software developers; (2) six enterprises. **Method:** Interview and case study. **Findings:** Institutional patterns of expertise and professionalism are embedded in innovation paths that include different transformation rhythms and are marked through national and international regulations.
- 128 **Research Question:** What is the economic value of offshoring relative to onshore or global outsourcing. **Definition of Offshoring:** Utilizing skilled labor primarily located in distant foreign nations to supplement or replace in-house resources and activities. **Context:** IT outsourcing announcements. **Theoretical Perspective:** Transaction cost economics, organizational learning, agency, contingency theory. **Level of Analysis:** Event. **Sample:** 133 outsourcing announcements from 111 firms 1996-2004, stock returns of firms in the event windows and financial variables. **Method:** Event study. **Analysis Method:** Econometrics. **Findings:** Financial markets favor offshore vs. global outsourcing when core IT processes are outsourced; global outsourcing is preferred when global processes are outsourced; financial markets respond favorably to offshoring in general; but if the motivation is process quality improvement, onshore and global sourcing is preferred.
- 129 **Research Question:** What is the effect of IT outsourcing and offshoring announcements on firm value. **Definition of Offshoring:** Outsourcing is the use of external agents to perform one of more organizational activities; offshoring is a special case of outsourcing. **Context:** IT outsourcing announcements. **Theoretical Perspective:** Transaction cost economics. **Level of Analysis:** Event. **Sample:**

196 announcements from 1998-2004. **Method:** Event study. **Analysis Method:** Econometrics. **Findings:** Not all outsourcing announcements generate a positive market reaction. In many cases, investors had no reaction, indicating that outsourcing is expected and part of normal business operating procedures; The offshore outsourcing of business processes with high asset specificity, however, did result in sizeable cumulative abnormal returns.

- 130 **Research Questions:** What are the reasons for relatively higher transaction costs for offshore outsourcing as compared to onshore outsourcing? What can be done to reduce these high transaction costs?. **Context:** IT services. **Theoretical Perspective:** Transaction cost economics. **Offshore Countries:** China and India. **Sample:** China based firms. **Method:** Case study. **Analysis Method:** Qualitative. **Findings:** A number of gaps were identified as the causes of higher transaction costs, and a number of potential solutions were provided.
- 131 **Research Question:** Which organizational designs and practices facilitate effective collaboration in offshore settings. **Context:** Software development. **Theoretical Perspective:** Multiparty collaboration, outsourcing; offshoring, global virtual work. **Offshore Countries:** India and Russia. **Sample:** 67 interviews with both onshore and offshore staff. **Method:** interview. **Analysis Method:** Qualitative. **Findings:** Achieving effective collaboration did not depend on whether the project was kept within the firm's boundaries, nor did it depend on choosing a specific offshore location. Instead, effective collaboration was facilitated by specific middle managers who engaged in boundary-spanning practices across country and firm borders.
- 132 **Research Question:** Whether the employees may develop dual identification with the vendor and the client, the antecedents and consequences of such dual identification, and the relationship between them. **Definition of Offshoring:** A practice in which an organization (client) contracts all or part of its IS operations to one or more external service providers (vendor) outside its own country. **Context:** Call center. **Theoretical Perspective:** Social and organizational identity theory. **Level of Analysis:** Individual. **Offshore Country:** China. **Sample:** 195 members of an Association of Chinese IT Call Centers through its online forum. **Method:** Survey. **Analysis Method:** PLS. **Findings:** Employees' dual identifications with both the vendor and the client could promote offshored IT service performance.
- 133 **Research Question:** Issues in IT offshore outsourcing. **Context:** IT outsourcing. **Offshore Countries:** Australia, China, India, Pakistan, Sri Lanka, United States. **Sample:** 12 "participants"—vendors or clients. **Method:** Interview. **Analysis Method:** Hermeneutics. **Findings:** Most IT outsourcing relationships endure communication problems, cultural differences, and lack of trust.
- 134 **Research Questions:** (1) What additional costs may arise in offshored software projects? (2) How and why do additional costs vary between projects? **Context:** Software Development. **Theoretical Perspective:** Transaction cost economics. **Level of Analysis:** Project. **Offshore Countries:** Germany outsourced to India. **Sample:** Three application and three maintenance projects. **Method:** Case study. **Analysis Method:** Content categorization (Nvivo). **Findings:** Offshoring can lead to increased effort on client side in terms of production costs and transaction costs; these costs are high when assets are highly specific; cultural and geographic differences and vendor characteristics can lead to additional costs.
- 135 **Research Question:** What are the antecedents to vendor performance. **Definition of Offshoring:** Outsourcing outside the boundaries of one's country—near shore, off shore, and far shore. **Context:** IT services. **Theoretical Perspective:** Resource-based view, resource dependency theory, information processing view, agency-cost, social exchange, and power and politics. **Level of Analysis:** Firm. **Offshore Countries:** China and India. **Sample:** 169 vendor firms. **Method:** Survey. **Analysis Method:** LISREL. **Findings:** Vendor management capability, service quality, and client-vendor partnership quality have significant influence on vendor and client satisfaction, vendor market growth and vendor process improvement.
- 136 **Research Question:** How different incentive structures inherent in two contract types: time and materials vs. fixed price, influence the quality provided by vendor. **Context:** Software development. **Theoretical Perspective:** Production-based approach? Not very clear what theory is used. **Level of Analysis:** Project. **Offshore Country:** India. **Sample:** 100 projects from a single vendor (60 FP and 40 T&M). **Method:** Survey. **Analysis Method:** Regression. **Findings:** Providing higher quality is associated with higher profit margins for vendors under fixed price contracts as opposed to time and materials contracts.
- 137 **Research Question:** What are the critical customer and community obligations in an opensourcing relationship? **Definition of Offshoring:** Outsourcing to a global workforce. **Context:** Opensource development. **Theoretical Perspective:** Psychological contract theory. **Level of Analysis:** Customer-vendor relationship. **Offshore Countries:** Different countries. **Sample:** Three cases and 207 usable responses for the survey. **Method:** An exploratory qualitative multiple case study, followed by a quantitative survey study. **Analysis Method:** Qualitative and principal component factor analysis. **Findings:** Fulfillment of certain customer and community obligations is associated with opensourcing success.

- 138 Research Question:** Implications and opportunities afforded by the bridge role of being both customer and vendor in a two-stage offshoring relationship. **Definition of Offshoring:** Shifting of tasks to low-cost nations often referred to as “developing nations” or “emerging nations.” **Context:** Software engineering. **Theoretical Perspective:** Relational exchange theory. **Level of Analysis:** Project. **Offshore Countries:** Irish → India. **Sample:** The Irish sites of two large U.S.-based companies. **Method:** Workshops, meetings, and interviews. **Analysis Method:** Interpretive. **Findings:** The Irish sites hold a dual role of communicating and managing both the U.S. and Asian teams, thus having experience of being both customer and vendor in an IS offshoring relationship; depth of expertise and experience is more important than location for competitiveness.
- 139 Research Question:** What characteristics of a location may make it an effective site for nearshore development? **Definition of Offshoring:** Involves client and vendor companies that are located in different countries. **Context:** Software development. **Theoretical Perspective:** Two opposing views of “place of work”—not very theoretical. firm or country. **Offshore Countries:** Barbados and Jamaica. **Sample:** Two nearshore firms. **Method:** Case study. **Analysis Method:** Content categorization (NUDIST). **Findings:** Many characteristics of a location matter, not just at the region or country level, but at a high level of detail (e.g., size of existing Indian population).
- 140 Research Question:** Antecedents and performance outcomes of onshore and offshore BPO. **Context:** Business process outsourcing (BPO). **Theoretical Perspective:** Transaction cost economics, business process management, strategy and international business. **Level of Analysis:** Firm. **Sample and Method:** Data from the InformationWeek 500 survey and the InformationWeek BPO survey. **Analysis Method:** Regression. **Findings:** (1) A broader IT application deployment is associated with an increased likelihood of both onshore and offshore BPO. (2) BP codification is associated with an increased likelihood of onshore and offshore BPO. (3) No relation between degree of internationalization and offshore BPO. (4) IT application deployment and quality-oriented performance measures and vendor management practices are positively associated with BPO benefits.
- 141 Research Questions:** What legitimacy management strategies are adopted during the institutionalization of offshoring? What role does trust play in the ensuing legitimacy dynamics? **Definition of Offshoring:** Outsourcing of software production globally. **Context:** Software development. **Theoretical Perspective:** legitimacy, institutional theory; trust. **Level of Analysis:** Offshore arrangements? **Offshore Country:** India. **Sample:** Globalco and its Indian vendors. **Method:** Case study. **Analysis Method:** Case analysis. **Findings:** Legitimacy development and trust building are closely connected in offshoring projects.
- 142 Research Questions:** (1) What influence does the glocal environment have on knowledge transfer? (2) How do organizations manage to develop and retain the evolving knowledge held in the minds of individuals within organizational boundaries? (3) How do organizations manage their learning processes given the participative nature of building knowledge in software development work? **Context:** Software development. **Theoretical Perspective:** Knowledge management. **Level of Analysis:** Firm. **Offshore Country:** India. **Sample:** Six organizations (four medium and two large size). **Method:** Qualitative observations and semi-structured interviews. **Analysis Method:** Qualitative. **Findings:** Meta-learning is the core to building knowledge in distributed software development processes.
- 143 Research Questions:** (1) How do work practices vary under and evolve within different organizational models for offshoring work? (2) To what extent and in what ways do differences in work practice associated with different organizational models affect satisfaction with and performance in offshoring arrangements? **Context:** Automotive engineering work. **Level of Analysis:** Task. **Offshore Countries:** Mexico and India. **Sample:** Offshoring projects. **Method:** Case study and survey. **Analysis Method:** Content categorization. **Findings:** CAE tools enable offshoring, but because the artifacts they produce encapsulate but do not make transparent engineering judgment and assumptions, individuals in both models developed new work practices to compensate for deficiencies associated with CAE.
- 144 Research Questions:** (1) How do informal control mechanisms of team composition, client-vendor interactions and client liaising affect total development costs (TDC)? (2) How do project leaders’ cultural characteristics affect the relationship between team composition and TDC? **Definition of Offshoring:** A client organization’s outsourcing of a development project to a vendor located in another country. **Context:** Software development. **Theoretical Perspective:** Agency, informal control, national culture. **Level of Analysis:** Project and project leader. **Offshore Country:** India. **Sample:** 131 projects by 22 project leaders from a single firm. **Method:** Survey and archival project data. **Analysis Method:** Hierarchical linear modeling. **Findings:** (1) Team selection with client representation from the same nationality reduces cost; (2) leader’s cultural characteristics are important.
- 145 Research Question:** The effects of offshore vendors’ sense of trust in their clients and perception of control on performance. **Definition of Offshoring:** The migration of all or part of an organization’s IT assets, people, and/or activities to vendors located in a country different from that of the organization. **Context:** Software development. **Theoretical Perspective:** Social exchange theory and trust and control. **Level of Analysis:** Project. **Offshore Countries:** Japan → China. **Sample:** 110 returned questionnaires from vendor project managers. **Method:** Interview and survey. **Analysis Method:** Hierarchical regression. **Findings:** Trust in the offshore clients was key determinant of project quality, but perceived control by clients is not.



- 146 Research Question:** What are the key capabilities required for a successful offshore outsourcing of IS application development? **Definition of Offshoring:** Outsourcing arrangements, involving cross-border flows and linkages that utilize resources such as technology, know-how, and human capital from IS vendor organizations abroad, for accomplishment of specific goals of the client firm. **Context:** IS projects. **Theoretical Perspective:** Capability thinking. **Level of Analysis:** Firm. **Sample:** Five focus groups, and IS managers from 18 organizations. **Method:** Focus group and interviews. **Analysis Method:** Qualitative. **Findings:** Dimensions of offshoring capabilities.
- 147 Research Questions:** (1) Analyze conditions and strategies for software development models that imply countries in the South to actively participate and leverage on the potential that offshoring provides. (2) Develop models that can effectively support the implementation of ICT based solutions to address local and pressing national development needs such as in health and education. **Definition of Offshoring:** Making arrangements with an external entity for the provision of goods or services to replace or supplement internal efforts. **Context:** HISP. **Theoretical Perspective:** Socio-political theory. **Offshore Countries:** Norway → South Africa. **Sample:** HISP software development projects. **Method:** Interpretive research and action research. **Analysis Method:** Interpretive and action research. **Findings:** Knowledge asymmetry exists and mechanisms must be implemented in order to balance it.
- 148 Research Question:** Is India's lead in offshoring sustainable over time. **Definition of Offshoring:** The practice of hiring an external organization to perform some or all business functions in a country other than the one where the product will be sold or consumed. **Context:** IT outsourcing. **Theoretical Perspective:** Macro economics. **Level of Analysis:** Country. **Offshore Country:** India. **Findings:** Offshoring is a win-win situation for most stakeholders; India's cost advantage will erode over time unless they develop advantages in higher level skills.
- 149 Research Question:** How IS work may be valued in a global economy where the sponsor companies and the host companies reside in different countries. **Definition of Offshoring:** Intercompany outsourcing. **Context:** Software valuation. **Theoretical Perspective:** Valuation of intellectual capital. **Level of Analysis:** Software. **Analysis Method:** Theoretical development and analysis of likely scenarios. **Findings:** The proposed valuation makes sense with the examined scenarios.
- 150 Research Question:** Critical success factors for IT outsourcing. **Context:** Helpdesk service. **Sample:** A provider company that provides helpdesk service. **Method:** Case study and survey. **Analysis Method:** Descriptive summary statistics. **Findings:** The authors present a conceptual model which allows companies to homogenize the concepts regarding this area by using an abstract representation.
- 151 Research Question:** Impact of knowledge levels on the trade offs between short-term labor costs and long-term coordination costs. **Theoretical Perspective:** Economic models of learning. **Level of Analysis:** Firm. **Method:** Economic modeling. **Analysis Method:** Economic modeling. **Findings:** Although short-lived offshoring projects may generate substantial cost savings to the domestic firm, long-lived offshoring projects may cause a disruption in the management supply chain, resulting in substantial losses in the later stages of the project.
- 152 Research Question:** Viability of the 24-hour knowledge factory paradigm. **Context:** Software development. **Theoretical Perspective:** Group dynamics and tacit knowledge. **Level of Analysis:** Team. **Offshore Country:** India. **Sample:** Two teams from IBM. **Method:** A quasi field experiment. **Analysis Method:** Descriptive comparisons of the two teams. **Findings:** Geographical constitution does not determine team success; geographical distribution can be an asset.
- 153 Research Questions:** (1) How effective are structured, high maturity process platforms deployed by offshore software firms in mitigating risks of distributed work? (2) Why are some offshore improvement initiatives more effective than others? **Context:** Software development. **Theoretical Perspective:** Organizational learning. **Level of Analysis:** Project. **Offshore Country:** India. **Sample:** 42 projects from one offshore software service company with level five CMM. **Method:** Analysis of archival performance data and interviews. **Analysis Method:** Regression. **Findings:** (1) Effect of systems development improvements on offshore projects are mediated through the capability to design and implement learning routines. (2) Task dispersion negatively impacts systems development performance even in high maturity environment.

## Appendix B

### Reviewers for the Special Issue (Partial)

Animesh, Animesh, McGill University  
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# Appendix C

## Offshoring Delphi Study Methodology

We utilized a Delphi-method that has also been used in previous IS studies (King et al. 2002; Brancheau et al. 1996). Our response set was limited to the editors, reviewers, and authors of this special issue ( $n = 101$ ). By using experts and researchers currently researching and involved in this topic, we are confident that these issues reflect the issues of interest to the larger academic community regarding offshoring.

In the first round, 42 respondents identified and submitted 199 issues. This response rate was somewhat high for an initial wave in a Delphi study. However, this is probably due to sampling researchers that are currently researching in this area and as such already have topics and issues that each individual feels is important to understand. Additionally, since each respondent had already been in contact with the authors at some point, we had an increased chance of a response from each individual as compared to other Delphi studies that contact individuals that have not previously interacted with the researchers.

Three researchers working together subjected the initial responses to a sorting procedure based on issue similarity. Initial reviews sorted the 199 items into 24 categories. With feedback from four graduate students in MIS, the categories were refined and consolidated into 20 topics. Two of the researchers then independently coded the responses into one of the 20 topics. The inter-rater reliability was initially around 75 percent. All discrepancies between the two researchers were resolved by one of the authors. The final set from the first wave resulted in 20 distinct issue statements (shown in Table C1) based on the initial submissions.

In the second round, we sent the 20 issue statements to the original 101 study participants who were now asked to provide a rating of the top 10 issues in off-shoring in IS. Participants were asked to select 10 issues from the list of 20 and to then rank them in order of importance. The second round lasted for a week and gathered responses from 46 participants.

Participants were instructed to rank the issues through the use of a GUI-driven website. Issues were presented in random orders to avoid any ordering effects. Alternatively, participants could send us their responses via e-mail. Ranking data from the second round were reverse coded to provide an overall ranking of the 20 issues. Additionally, participants were also asked to suggest other issues they felt should be included in the set. Five new issues were submitted, which were then included in the last wave of the Delphi study. The 20 issues are listed in Table C2 in the order of their ranked importance, with the five new issues included at the bottom of the list.

In the third and final round, we again e-mailed the original participants in the study and requested that they provide a top 10 ranking of the issues displayed, in ranked order, on the study website. In the final round, issues were presented in the order of ranked importance based on results from the second round, with the five new issues included at the bottom of the list. Clear instructions as to how the issues were presented were given to the participants. A total of 40 responses were received during the final round. Similar to the second wave, all data obtained from the final round were reverse coded to obtain raw scores for each issue, which was then ranked in order from most important to least important. The results of this wave are shown in Table C3.

**Table C1. The Initial 20 Issue Statements from the First Round**

1. What are the strategic organizational implications (e.g., organizational learning, firm knowledge) of offshoring?
2. How can firms determine if offshoring a particular project is an appropriate strategy?
3. How can an organization anticipate changes in the value proposition due to offshoring?
4. How viable is offshoring as a competitive long-term strategy?
5. What are the most important factors in the offshore vendor selection process?
6. How do clients manage contract formation, stipulation, and negotiation?
7. How do cultural differences between the client and the vendor affect management, communication and coordination?
8. How does geographical distance impact coordination and communication between the client and the vendor?
9. What communication methods can the client and the vendor adopt in order to create or transfer expertise?
10. What practices can be developed to better manage the relationship with offshore vendors?
11. How can clients effectively manage the operational aspects of an offshoring project?
12. How can the costs and risks of offshoring strategies be assessed?
13. How can the costs and risks of offshoring strategies mitigated?
14. How can the client and vendor jointly identify and define specific project success criteria?
15. What are the critical success factors for offshoring?
16. What is the impact of offshoring on IT programs in higher education?
17. What are the legal implications of offshoring for the client?
18. How can international legal systems be improved to keep up with the emerging challenges of offshoring?
19. What are the impacts of IT offshoring on international labor markets?
20. What theoretical framework can help the field better understand various types of offshoring, and how offshoring differs from onshoring, backshoring, multisourcing, etc.?

**Table C2. Results from the Second Round**

1. What are the strategic organizational implications (e.g., organizational learning, firm knowledge) of offshoring?
2. What practices can be developed to better manage the relationship with offshore vendors?
3. How do cultural differences between the client and the vendor affect management, communication and coordination?
4. How can the costs and risks of offshoring strategies be assessed?
5. How viable is offshoring as a competitive long-term strategy?
6. How can firms determine if offshoring a particular project is an appropriate strategy?
7. How does geographical distance impact coordination and communication between the client and the vendor?
8. What theoretical framework can help the field better understand various types of offshoring, and how offshoring differs from onshoring, backshoring, multisourcing, etc.?
9. How can the costs and risks of offshoring strategies be mitigated?
10. What communication methods can the client and the vendor adopt in order to create or transfer expertise?
11. How do clients manage contract formation, stipulation, and negotiation?
12. What are the critical success factors for offshoring?
13. What are the impacts of IT offshoring on international labor markets?
14. How can clients effectively manage the operational aspects of an offshoring project?
15. What are the most important factors in the offshore vendor selection process?
16. How can an organization anticipate changes in the value proposition due to offshoring?
17. What is the impact of offshoring on IT programs in higher education?
18. How can the client and vendor jointly identify and define specific project success criteria?
19. How can international legal systems be improved to keep up with the emerging challenges of offshoring?
20. What are the legal implications of offshoring for the client?
21. How can firms protect strategic and customer information/intellectual property?
22. Does offshoring help firms expand their offshore customer base in addition to their supplier pool?
23. What impact, if any, does offshoring have on retention of critical core competencies within the firm?
24. How does offshoring shape the evolution of economies and public policies?
25. By careful choice of clients and the substance of contract work, how can offshore vendors maximize their learning so that they can successfully apply the knowledge to future projects?

**Table C3. Results from the Third Round**

1. What are the strategic organizational implications (e.g., organizational learning, firm knowledge) of offshoring?
2. How do cultural differences between the client and the vendor affect management, communication and coordination?
3. What practices can be developed to better manage the relationship with offshore vendors?
4. What theoretical framework can help the field better understand various types of offshoring, and how offshoring differs from onshoring, backshoring, multisourcing, etc.?
5. How viable is offshoring as a competitive long-term strategy?
6. How can firms determine if offshoring a particular project is an appropriate strategy?
7. How does geographical distance impact coordination and communication between the client and the vendor?
8. What impact, if any, does offshoring have on retention of critical core competencies within the firm?
9. How can the costs and risks of offshoring strategies be mitigated?
10. How can the costs and risks of offshoring strategies be assessed?

