Understanding service quality and relationship quality in IS outsourcing: Client orientation & promotion, project management effectiveness, and the task-technology-structure fit

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UNDERSTANDING SERVICE QUALITY AND RELATIONSHIP QUALITY IN IS OUTSOURCING: CLIENT ORIENTATION & PROMOTION, PROJECT MANAGEMENT EFFECTIVENESS, AND THE TASK-TECHNOLOGY-STRUCTURE FIT

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ABSTRACT

A national survey of firms that participated in outsourcing relationships was conducted, and service quality and relationship quality were found to be significantly and positively related to each other and both had a significant impact on user satisfaction. However, the intricacies of the causal effects between the two autonomous constructs, service quality and relationship quality, are a source of interest. In post-analysis theory building, we give a conceptual model that proposes that the positive causal effect of service quality on relationship quality would be positively moderated by the client orientation and promotion effectiveness of the vendor, while the positive causal effect of relationship quality on service quality would be mediated by the project management effectiveness. Hence, this paper comprises of two related parts: first an empirical study, and secondly developing a theory and conceptual model that delve into the causalities involved in service quality, relationship quality, and the role of Internet technologies and collaboration tools.

Keywords: Service quality, relationship quality, outsourcing, Internet_

INTRODUCTION

The Internet has considerably promoted opportunities for outsourcing and offshoring of IT and IT enabled work [5]. The Internet and various modern communication technologies such as emailing, teleconferencing, videoconferencing and instant-messaging are enabling collaborative work among global virtual teams in spite of the barriers due to geographic distances [10], and is boosting the viability of outsourcing and offshoring by enabling the involved personnel to effectively interact, share and manage project related information.

When face-to-face meetings are difficult to arrange, the Internet provides a low-cost and widely accessible medium that can be used to enhance the effectiveness of the vendor to better understand the client, and to promote its services effectively such that the outsourcing relationship improves. The effectiveness of various interactions can be enhanced by overcoming the barriers that arise due to the geographical distance in domestic or offshore outsourcing, and by taking advantage of the advances in the Internet technologies (such as emailing, instant messaging, voice-over-IP, online video conferencing). Pauleen and Yoong (2001) suggested that though *emailing* is the primary communication channel among remote teams, it is more appropriate for coordinating projects and communicating information than for building relationships. On the other hand, the *telephone* is considered as a reliable way for building relationships. Moreover, *video-conferencing* is regarded an affordable alternative to face-to-face meetings, which can potentially help in building relationships by placing a face and voice next to a name; however, it has been noted that Internet based video-conferencing has been slow to diffuse due to its greater bandwidth requirements. *Chat* programs have been observed to facilitate opportunities for casual and spontaneous communication that enabled greater socialization and participation in informal activities involving exchange of feelings and emotions (Pauleen and Yoong, 2001).

The *project management effectiveness* and hence the *service quality* of the vendor can be enhanced through better knowledge management, quality assurance and control, management of costs, personnel distribution, and most importantly through effective use of various Internet technologies and collaborative tools that enable the same [43]. It is well acknowledged that numerous CASE (Computer Aided Software/Systems Engineering) tools are used for effective project management in various stages in the life-cycle of custom software development and also software maintenance [43]. But what is most important is the growing number of Internet-based tools and technologies that can enhance project management effectiveness and hence lead to better service and relationship quality. For example, www.web-based-software.com (n.d.) is a specialized web-based business software directory. As of today, the web directory lists: (i) 289 Project Management tools — for Gantt charts, team collaboration, (ii) 175 Customer Service tools — for helpdesk/call center, technical support, ticket handling, (iii) 110 Timesheet Management tools — for time tracking, payroll/billing, expense/cost/invoicing management, (iv) 97 Bug Tracking tools — for issue/defect/task, workflow system management, (v) 93 Online Calendar tools — for event/meeting planning, scheduling/appointment management, and (vi) 110 Document Management tools — for file sharing/storage, version control, check-in/check-out management.

Cutkosky et al (1996) provided a case study on collaborative work over the Internet for geographically distributed design and prototyping. Several types of types of Internet driven tools were used to facilitate better interactions among the geographically distributed teams. A *multimedia authoring environment* was used to help in the creation and management of documents, and various *collaboration tools* were used for effective document sharing and interaction. The *multimedia authoring environment* is classified into three categories: (a) *authoring* of HTML web documents using tools that *support structured editing, multimedia capture and conversion, and hypertext link browsing, all integrated via*

a drag-and-drop user interface, (b) *document control* with tools for better access with proper check-in/check-out mechanisms and version control, and (c) *document navigation* with tools for better searching and sharing of documents [15]. The *collaboration tools* enabled two forms of interactions: (a) *asynchronous* interactions with tools for emailing and also posting multimedia messages on the web (similar to blogs) that include graphics/animations, audios, videos, and various data files, and (b) *synchronous* interactions with tools that enable real-time interactions using a web-browser, text chat, audio, and video conferencing [15].

Hence, in the outsourcing and offshoring context, various Internet technologies and collaboration tools can aid in better client orientation, interaction, promotion of service quality, and project management effectiveness by enabling repeated and effective interactions between the client and vendor, and also make project management more effective through tools that allow better information and knowledge management, scheduling and effort estimation, and software quality assurance and control.

However, the success of outsourcing is not just a result of the prevalence of the Internet alone. The quality of *relationship* between a client and a vendor, and quality of the *service* provided by a vendor to the client, has been shown to influence the success or failure of the respective outsourcing initiative [26]. The Internet technologies and various collaboration tools can provide a strong foundation for better project management across geographical and organization boundaries, can help the remote or distant vendor to exhibit better client orientation and help it promote its service quality, and can therefore aid in improving the relationship quality. High relationship quality involves high levels of trust and commitment, quality communication, cultural similarity, and balanced interdependence between the client and the vendor. High service quality from the vendor to the client would involve high reliability, responsiveness, tangible, assurance, and empathy. Of course, these aspects of relationship quality and service quality would be positively influenced by the effective utilization of various Internet tools and technologies for better interactions between the client and the vendor, and for better management of globally distributed project work.

A traditional mail survey of U.S. companies involved in information systems outsourcing was conducted. Service quality was measured using the established SERVPERF scale [14] which includes multiple measures of each of the five identified service quality dimensions (tangibles, reliability, responsiveness, assurance, and empathy). Relationship quality was measured using established measures of the five previously mentioned dimensions of relationship quality documented in the literature. All scales were assessed for validity and reliability and the strength of the relationship between service quality and relationship quality was evaluated using structural equation modeling methodology.

A review of the literature related to service quality and relationship quality follows in the next section, which culminates with a statement of the theory and empirical testing of the hypotheses stating the correlation between service quality and relationship quality. However, not satisfied with the simplistic cause-effect or correlation explanations between service quality and relationship quality, we propose that the client-specific capabilities, project-management [20] and the task-technology-structure fit (Powell, Piccoli & Ives, 2004) be taken into consideration. A conceptual model is then presented that attempts to clearly explain the findings of the empirical study, by proposing that the positive causal effect of service quality on relationship quality would be positively moderated by the 'client orientation & promotion', while the positive causal effect of relationship quality on service quality would be mediated by the project management capabilities. The task-technology-structure fit would have a causal affect on the mediator and the moderator.

LITERATURE REVIEW

Outsourcing

An outsourcing relationship is defined as "an ongoing linkage between an outsourcing vendor and customer that has a long-term orientation and a mutual recognition and understanding that the benefits attained by each firm are at least in part dependent on the other firm" [25]. As the previous definition implies, outsourcing arrangements, though differing in a number of ways [36], are all exchange relationships [26]. While outsourcing transactions have always been exchanges between two entities, recently the client-vendor relationship in an IT context has received attention [35]. Information systems research has identified major dimensions of quality in outsourcing relationships, and especially the links among service quality, relationship quality and successful outsourcing arrangements [26]; [33]; [41]; [50].

There are two broad kinds of outsourcing: (1) *domestic-outsourcing* or *onshore outsourcing*, where the client organization outsources work to a vendor organization located in the same country, and (2) *global-outsourcing* or *offshore-outsourcing* where the client organization outsources work to a vendor organization located in a different country. *Offshoring* is simply the sending of organizational work to another country, and can be classified into (1) *offshore-outsourcing* and (2) *offshore-insourcing*, where offshore-insourcing involves the setting up of a captive center or subsidiary in the other country from where work is then insourced. In simple terms, work is *"outsourced to vendors"* and *"offshored to another country"* [12].

Various kinds of IT projects are outsourced, where the vendor is primarily responsible for executing a significant portion of the project such as application development, application maintenance, user training, and network management [39]. Technological uncertainty and volatility in the IT job market hampers the ability of companies to realistically estimate effort, cost and schedule of IT projects, and this risk can be better managed by selectively outsourcing to a IT vendor with greater expertise in the technology skills and related personnel management in a rapidly changing environment [58]; [47]. However, the uncertainties in project management and the required services can be well managed only when there is active participation and interaction between the client and the vendor(s) in the relationship [64], and where a vendor has the ability to effectively promote the value of its services towards satisfying the needs to client and hence leading to a growth in the relationship. Sabherwal [55] suggested that a 'psychological contract' consisting of unspoken and undocumented expectations exist in outsourcing relationships, and that both trust and structural controls are essential for good performance. In other words, it is essential that the quality of the relationship exhibits high degrees of trust to complement the structural or project management controls. When the project management capabilities of a vendor are bolstered by high relationship quality with the client, it enhances the vendor's performance towards providing high quality service.

Relationship Quality

An investigation of the extant literature indicates trust, commitment, communication quality, cultural similarity, and balanced interdependence all positively impact the quality of the relationship [1]; [19]; [33]; [48]; [49]. Each of these factors has been found to be significantly and positively related to relationship quality. Various factors or dimensions have been used to study relationship quality within marketing and IS research [14]; [19]; [60]. A synthesis of the extant literature indicates that trust, commitment, communication quality, cultural similarity, and balanced interdependence will all positively impact the quality of the relationship. De Wulf, Odekerken-Schroder, and Iacobucci (2001) calculated correlation coefficients between communication, trust, and commitment and relationship quality as .63, .87, and .94 (all with a $p < .05$) respectively in a retailer-consumer relationship, thus providing evidence of a positive relationship between these dimensions and relationship quality. Lee and Kim [41] found communication quality positively associated with relationship quality (ß = 0.236 and $p < .10$), while also finding interdependence negatively associated with relationship quality (ß = -0.241 and $p < .05$). Although no quantitative data exist which associates cultural compatibility with relationship quality, case research provided by Willcocks and Kern [68] does support this proposition. In sum, support is found in the literature to support the positive association of trust, commitment, communication quality, cultural similarity, and balanced interdependence with the quality of the relationship.

Agency theory and Transaction Cost Economics (TCE) can be used to assist in the understanding of the relationship between relationship quality and the application development outsourcing decision. As transaction costs increase due to the agent behaving opportunistically and shirking responsibility, principals are more inclined to switch vendors or backsource. Lower transaction costs resulting from higher relationship quality should be associated with more successful application development outsourcing relationships. An examination of the marketing and IS research has indicated a link between relationship quality and relationship success [1]; [19]; [33]; [48]; [49]. Specifically related to IT outsourcing, success has been shown to depend not only on a high level of service quality, but also other factors such as the relationship between the client and the vendor [33]. Quality relationships between firms and outsourcing vendors have positively influenced the success of the outsourcing agreement [26]; [33]; [41]. The quality of the relationship impacts the success of the outsourcing arrangement; higher quality relationships leading to successful outsourcing and lower quality relationships ending in failed outsourcing

Service Quality

Service quality can be defined as the conformance to customer requirements in the delivery of a service. Since quality is capable of being engineered into manufacturing processes using statistical quality control processes, progress in manufacturing quality control has evolved relatively rapidly [24]. The measurement of quality in service delivery has proved more difficult. Services tend to be performance oriented, thus making precise specifications to a uniform quality difficult to implement and measure [34].

Service quality has been the most researched area of services marketing [21]. A key point in the service marketing literature began with a series of interviews conducted in the 1980s by Parasuraman, Zeithaml, and Berry [50]. They undertook an exploratory investigation of service quality by beginning with a series of focus group interviews with consumers and executives at four nationally recognized service firms. The SERVQUAL instrument emerged from the Parasuraman, Berry, and Zeithaml research as a frequently used measure of service quality.

Service quality has been shown to result in significant benefits, such as profit level increases, cost savings, and increased market share, to firms [50]. Firms assign considerable significance to service quality as evidenced by some firms' use of service quality to strategically position themselves in the market [9]; [50]. Although the analysis of the correlation between service quality and post hoc decisions is limited, service quality has been shown to affect purchase intentions [14]; [61]. The results of research concluded by [71] indicate a strong influence of service quality on customers' behavioral intentions, which was measured as the willingness of a client to remain with the current vendor.

Specifically related to outsourcing success, service quality research has led to mixed results. Grover, Cheon, and Teng [26] concluded that service quality significantly and negatively interacted with application development outsourcing in its relationship with outsourcing success. The measurement of service quality was limited in the Grover *et al*., study, due to their use of only two of the five SERVQUAL constructs. McFarlan and Nolan [46] suggest that service quality in an outsourcing relationship is positively associated with outsourcing success.

Service quality has been shown to affect purchase intentions within the banking, pest control, dry cleaning, and fast food industries [14]. In a simulated hotel service research environment, customer's overall perceptions of service quality were positively and significantly (t = 2.18) correlated with behaviors beneficial to strategic dimensions of a firm such as positive word of mouth and recommendation of the service provider [8]. In a study investigating the role of service quality as it relates to customers' behavioral intentions, operationalized as remaining with a vendor or switching to another, results strongly indicate an influence of service quality [71].

AN INTERPRETIVE EMPIRICAL STUDY

Relationship quality is operationally defined as a relationship between service provider and customer that involves high levels of trust and commitment, quality communication, cultural similarity, and balanced interdependence between entities in the service partnership. Such quality leads to successful long-term relationships that are operationally beneficial to both service provider and consumer. The components of a quality relationship are somewhat difficult to attack directly causing service providers to seek controllable antecedents. Service quality is such an antecedent. The components of service quality (tangibles, reliability, responsiveness, assurance, and empathy) are relatively more controllable from a managerial perspective. When the client sees that the vendor is providing high service quality, it would develop a positive impression of the vendor, and could lead to a growth in relationship with the vendor and improved relationship quality. Hence, *the quality of IT services provided by a vendor to the client would positively impact the quality of the relationship between the vendor and the client.*

Often, a client selectively outsources certain functions of the custom software development project [38] to a vendor. Since the client is paying the vendor for the service, when a project slips

in schedule or fails to deliver certain desired functionalities, the vendor is inadvertently made the scapegoat for the failure [40]; [59]. Though the vendor plays a subservient role to the client, it is important to understand that for outsourcing to be successful, the onus for the project's success or failure should be borne by both the client and the vendor. It is important for the vendor to realize that the client is heavily dependent on it for the successful execution of the project which can potentially impact the client's performance in the competitive business environment. At the same time, it is important for the client to realize that it should make sincere efforts to cooperative with the vendor by providing well thought out & realistic project plans, schedules, requirements, etc. Every effort should be made by the vendor to garner maximum support and knowledge from the client such that it can deliver high quality services to the client. An atmosphere of distrust, slackness, intolerance, and miscommunication would hamper the service quality of the vendor. Hence, *the quality of the relationship between vendor and client positively would positively impact the quality of IT services provided by the vendor to the client.*

In the absence of any moderating or mediating variables, it would follow that the bidirectional causality between service and relationship quality discussed in the preceding paragraphs is well represented by a correlation between service quality and relationship quality in a cross-sectional study:

H1: The quality of the relationship between vendor and client positively correlates with the quality of IT services provided by the vendor to the client.

Relationship quality & service quality have been shown to influence IT outsourcing success [26]; [33]; [41]. Outsourcing success, in terms of satisfaction of the user with software system developed by the vendor, does not depend exclusively on a certain service quality level being achieved, but also depends on the quality of the relationship between the parties [33]. In this paper, the 'users' are the client personnel who evaluate the performance of the application/software system developed by the vendor.

H2: The quality of the relationship between vendor and client would positively impact the satisfaction of the client personnel (the users) evaluating the performance of the application/ software system developed by the vendor.

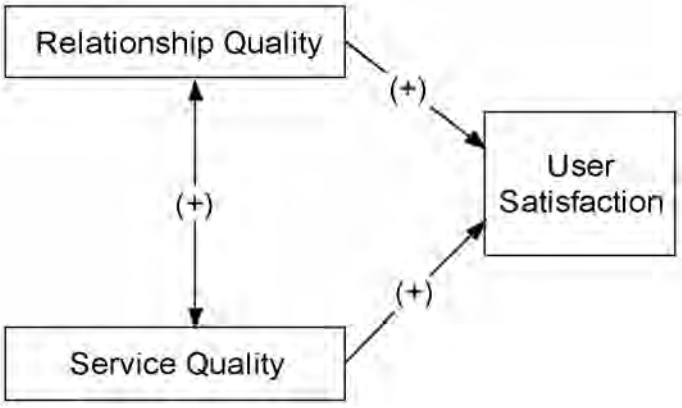


Figure 1: Model for Hypotheses Tests

H3: The quality of IT services provided by the vendor to the client would positively impact the satisfaction of the client personnel (the users) evaluating the performance of the application/software system developed by the vendor.

Methodology

Scale Development

Most of the survey items were collected from existing research, with additional items included related to demographics. Items used to measure relationship quality and service quality were drawn from a literature review in these areas. Later discussions with three executives with IT outsourcing experience assisted in validating the items selected. After all items were included in an instrument, the instrument was pilot tested with a group of Business faculty at two universities as well as participants in an IT research symposium. Both groups were asked to evaluate the instrument as well as add comments related to improvement of the instrument. Modifications were made to the instrument iteratively after each group responded.

Ultimately, four sections were included in the instrument. The first section consists of items used to capture demographic information. Examples include information such as organization size, years of outsourcing experience, and size of the contract.

Service Quality

The second section is a refined version of the SERVPERF instrument. Service quality is defined as the conformance to customer requirements in the delivery of a service [51]. The SERVQUAL and SERVPERF instruments are the premiere instruments used to measure perceived service quality by customers [62], [66]. They have a rich tradition in the marketing literature and have been validated numerous times in a variety of situations.

The SERVPERF instrument has been proposed as an alternative to the SERVQUAL instrument due to the elimination of gap scoring problems with SERVQUAL, greater variance explanation with SERVPERF, and the smaller number of items used [7]; [13]; [14]; [70]. The SERVPERF has yet to be tested though in an application development outsourcing environment. Based on a review of the literature, it seems that the SERVPERF instrument is the most appropriate instrument to use in the measurement of service quality. The most recent version tested in the IS literature has been used by Jiang, Klien, and Carr [30], and has proven reliable and valid.

In deciding whether to use SERVQUAL or SERVPERF, one must consider the selection of the most appropriate one. "The perceptions-only operationalization is appropriate if the primary purpose of measuring service quality is to attempt to explain the variance in some dependent construct; the perceptions-minus-expectations difference-score measure is appropriate if the primary purpose is to diagnose accurately service shortfalls" [71]. The purpose of this research is to examine the variance in outsourcing outcomes, therefore the perceptions-only measure is used. Table 1 shows the service quality scale. Respondents were asked to rate each statement using a seven-point Likert-type.

Table 1: Service Quality Scale

Questionnaire Item (Likert Scale: 1=Strongly Disagree, 7-Strongly Agree)	**Service Quality Attribute**
1. The outsourcing vendor had up-to-date hardware and software.	Tangibles
2. The outsourcing vendor's physical facilities were visually appealing.	
3. The outsourcing vendor's employees were well dressed and neat in appearance.	
4. The appearance of the physical facilities of the outsourcing vendor were in keeping with the kind of services provided.	
5. When the outsourcing vendor promised to do something by a certain time, they did.	Reliability
6. When users had a problem, the outsourcing vendor showed a sincere interest in solving it.	
7. The outsourcing vendor was dependable.	
8. The outsourcing vendor provided their services at the times they promised to do so.	
9. The outsourcing vendor insisted on error-free records.	
10. The outsourcing vendor told users exactly when services would be performed.	Responsiveness
11. The outsourcing vendor employees gave prompt service to users.	
12. The outsourcing vendor employees were always willing to help users.	
13. The outsourcing vendor employees were never too busy to respond to users' requests.	
14. The behavior of the outsourcing vendor employees instilled confidence in users.	Assurance
15. Users felt safe in their transactions with the outsourcing vendor employees.	
16. The outsourcing vendor employees were consistently courteous.	
17. The outsourcing vendor employees had the knowledge to do their job well.	
18. The outsourcing vendor gave users individual attention.	Empathy
19. The outsourcing vendor had operation hours convenient to all their users.	
20. The outsourcing vendor had employees who gave users personal attention.	
21. The outsourcing vendor had the users' best interest at heart.	
22. The employees of the outsourcing vendor understood the specific needs of their users.	

Relationship Quality

The third section was developed to measure the quality of the relationship between the outsourcing organization and the outsourcing vendor. Relationship quality has been measured with a variety of factors in both marketing and IS research. A meta-analysis was thus performed in both the marketing and IS literatures to determine the most common dimensions used to measure relationship quality. The resulting factors include trust, commitment, communication quality, cultural similarity, and degree of interdependence.

A relationship quality scale was selected from which the items included in the current scale were chosen. The items were taken from a general IS outsourcing environment (Lee and Kim 1999) and included items measuring the five relationship quality factors selected (trust, commitment, communication quality, cultural similarity, and degree of interdependence). Table 2 contains the items comprising the relationship quality scale utilized in the current research.

User Satisfaction

The fourth section of the instrument is composed of items from the UIS instrument, which measures information systems satisfaction. The UIS scale is derived from the work of Bailey and Pearson [3] and Ives, Olson, and Baroudi [29] and further tested in an IS and ERP environments more recently [65]; [72]. These researchers describe information systems satisfaction as the sum of feelings resulting from users' beliefs regarding the extent to which an information system allows them to meet their information requirements. Ives, Olson, and Baroudi [29] developed a short-form UIS which reduced the number of items from 39 (with 4 responses each) to 13 items (with 2 responses each), while still maintaining an overall reliability for the scale of 0.89 [4]. The UIS scale has previously been used and validated in an IT outsourcing environment by Sengupta and Zviran [56]. Cronbach's alpha scores for the four factors were 0.89, 0.68, 0.87, and 0.75 for the staff, contractor services, information product output, and

Table 2: Relationship Quality Scale

Questionnaire Item (Likert Scale: 1=Strongly Disagree, 7-Strongly Agree)	Relationship Quality Attribute
1. In our relationship, the outsourcing vendor made decisions beneficial to us.	Trust
2. In our relationship, the outsourcing vendor was always willing to provide assistance to us.	
3. In our relationship, the outsourcing vendor was always sincere.	
4. In our relationship, the outsourcing vendor performed prespecified agreements very well.	Commitment
5. In our relationship, my firm faithfully provided support prespecified in the contract.	
6. In our relationship, both the outsourcing vendor and the company always tried to keep promises.	
7. Both the outsourcing vendor and the company communicated well with each other.	Culture
8. In our relationship, both the outsourcing vendor and the company had different corporate cultures from one another.	
9. In our relationship, both the outsourcing vendor and the company had a hard time understanding one another's business rules and forms.	
10. In our relationship, both the outsourcing vendor and the company were similar in regards to the processes of problem solving, decision making, and communication.	
11. Both the outsourcing vendor and the company effectively supported activities that required mutual participation.	Interdependence
12. In our relationship, the outsourcing vendor supported and managed most of the core information technologies the company needed.	
13. The manner and methods of communication quality between both the outsourcing vendor and the company were timely.	Communication
14. The manner and methods of communication quality between both the outsourcing vendor and the company were accurate.	
15. The manner and methods of communication quality between both the outsourcing vendor and the company were complete.	
16. The manner and methods of communication quality between both the outsourcing vendor and the company were credible.	

knowledge and involvement factors respectively [56]. The instrument was slightly reworded to fit within an application development outsourcing context. Table 3 presents the UIS scale used in this study, which does not include the contractor services dimension due to it's similarity with the service and relationship quality scales.

Data Collection

The data collection began with the gathering of contact data from the Directory of Top Computer Executives. The respondents represented a range of industries, including manufacturing, education, healthcare, and public administration and were requested to respond to each survey item in regard to an outsourcing relationship in which they were involved with in the past three years. A total of 160 responses were received for a response rate of 26%.

Assessment of Non-Response Bias

Testing for non-response bias is important to identify any potential bias due to the failure of members of the sample to respond. Non-respondents have been found to descriptively resemble late respondents [2], thus it is important to determine if the early and late responders are similar.

Respondents were categorized by response time. Early responders were considered those whose instruments were received in the first 25% of responses within each phase, while late responders were those whose instruments were received in the last 25% of responses within each phase. A comparison of the means

Table 3: User Satisfaction Scale

Questionnaire Item	User Satisfaction Attribute
1. Processing of requests for changes to existing systems. (Slow vs. Fast, Untimely vs. Timely)	Time
2. Time required for new systems development. (Unreasonable vs. Reasonable, Unacceptable vs. Acceptable)	
3. Reliability of output information. (Low vs. High, Inferior vs. Superior)	Information Product
4. Relevancy of output information. (Useless vs. Useful, Irrelevant vs. Relevant)	
5. Accuracy of output information. (Inaccurate vs. Accurate, Low vs. High)	
6. Precision of output information. (Low vs. High, Uncertain vs. Definite)	
7. Completeness of the output information. (Insufficient vs. Sufficient, Inadequate vs. Adequate)	
8. Degree of IS training provided to users. (Incomplete vs. Complete, Low vs. High)	Knowledge and Involvement
9. Users' understanding of systems. (Insufficient vs. Sufficient, Incomplete vs. Complete)	
10. Users' feelings of participation. (Negative vs. Positive, Insufficient vs. Sufficient)	

Table 4: ANOVA Results to Test for Non-response Bias

	Early Responder's Mean	Late Responder's Mean	F	Sig.
# of organizational employees	3,202.2	2,732.5	0.664	0.418
# of IT employees	178.3	111.9	0.411	0.523
# of years outsourcing	10.3	11.3	1.652	0.203
# of years with the outsourcing vendor	5.7	4.263	0.112	0.739
Total dollar amount of contract	3,817,078.9	2,957,565.8	0.968	0.328

of sample classification variables and summary variables for the two groups was conducted using one-way ANOVA.

Variables used in the analysis include the number of employees in the organization, number of IT employees in the organization, the number of years the organization has practiced outsourcing, the number of previous outsourcing contracts the organization has signed in the last five years, and the total dollar amount of the contracts. All comparisons between groups returned insignificant differences as seen in Table 4. The insignificance indicates that non-response bias has not impacted the data set.

Results

Measurement of Constructs

Scales used to measure relationship quality and service quality were adapted from the perceptions-only SERVPERF (Jiang et al. 2000). Items were included to measure the service quality dimensions of reliability, responsiveness, tangible, assurance, and empathy. Relationship items were taken from Lee and Kim [41]. The items measured trust, commitment, culture, interdependence, and communication. Items was measured using a 7-point Likert scale anchored with 1 = strongly disagree and 7 = strongly agree.

Scale Assessment Process

Prior to assessing the study hypotheses, it is necessary to ensure that the scales are reliable and valid measures of the intended constructs. Specifically, measurement scales must exhibit content validity and reliability.

CONTENT VALIDITY

Content validity results from developing scale items based upon the theory described in the associated literature and based upon expert opinions of knowledgeable researchers and practitioners [57]. The SERVQUAL scale was derived from a careful review of the literature and assessed with both exploratory and confirmatory samples [51]. The relationship quality items were also developed in response to a careful review of the pertinent literature. Specific dimensions of relationship quality were selected

based on an assessment of existing relationship quality research [33], [26], and [68]. The dimensions of relationship quality utilized include commitment, trust, culture, interdependence, and communication.

RELIABILITY

Garver and Mentzer [23] recommend computing Cronbach's coefficient alpha and the SEM construct-reliability and variance-extracted measures to assess scale reliability. They indicate that alpha and construct-reliability values greater than or equal to .70 and a variance-extracted measure of .50 or greater indicate sufficient reliability. Reliability assessment of the service quality scale returned alpha values that exceeded the minimums for Tangible (.83), Reliability (.82), Responsiveness (.88), Assurance (.86), and Empathy (.91). The relationship sub-scales also returned alpha scores greater than or equal to .70 for Trust (.92), Commitment (.90), Culture (.70), Interdependence (.72), and Comunication (.93). The user satisfaction scales also returned alpha values that exceeded the minimums for the dimensions of Time (.88), Information Product (.91), and Knowledge and Involvement (.86).

Structural Equation Modeling Results

AMOS 4.01 was utilized to assess the relationships between service quality, relationship quality, and user satisfaction as hypothesized. Summary values for each the study constructs were computed by averaging across the items in the measurement scales. The service quality, relationship quality, and user satisfaction measures are second order constructs each with multiple underlying dimensions. The structural model fits the data well. Figure 2 illustrates the outcome model as structurally assessed.

Results from the structural equation modeling analysis provide information necessary to evaluate the study hypothesis. The significant path identified from service quality to relationship quality exhibits a standardized estimate of 0.27 (significant at < 0.01). Service quality and relationship quality are related (hypothesis 1).

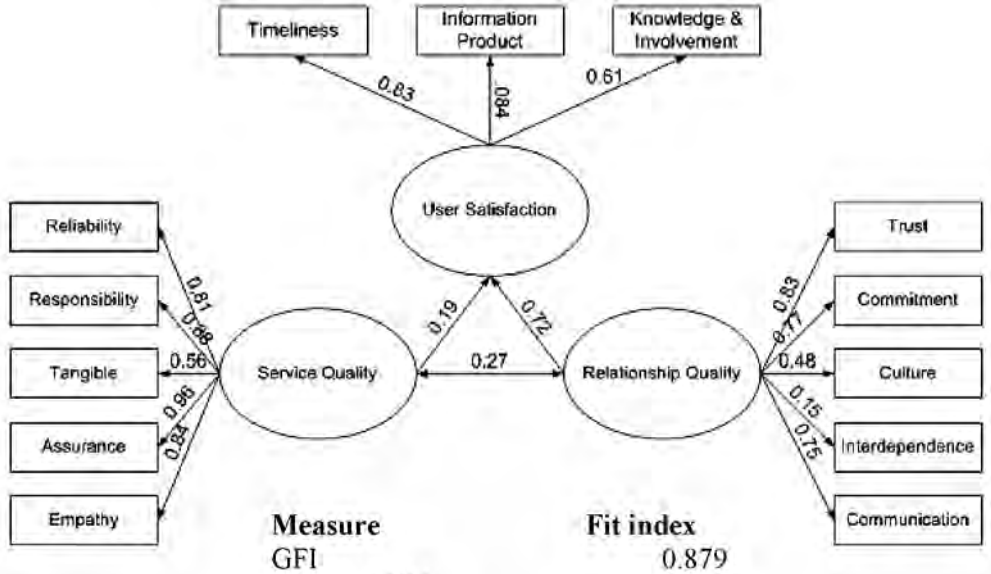
Hypothesis 2 is supported, as evidenced by the standardized estimate of 0.72 (significant at < 0.01). This indicates that relationship quality is positively and significantly related to end user satisfaction. Hypothesis 3 is supported, as evidenced by the standardized estimate of 0.19 (significant at < 0.01). This indicates that service quality is positively and significantly related to end user satisfaction.

An acceptable fit of the model to the data is examined using several goodness-of-fit measures. A χ/df value less than 5.0 is preferred [6]; [31]. Additional goodness-of-fit measures were used, each of which are independent of sample size. Values greater than 0.90 are preferred for NFI, GFI, IFI, TLI, and CFI (Anderson and Gerbing, 1988). Values greater than 0.80 are desired for AGFI, while RMSEA values are desired to be less than 0.10 (Anderson and Gerbing, 1988).

Figure 3 displays the goodness of fit indices for this project. The GFI and NFI values are slightly below the desired thresholds. Other indices such as the χ/df , IFI, TLI, CFI, and RMSEA all are within the thresholds as suggested. This suggests that the model as outlined in Figure 2 is sufficiently supported.

As indicated by the χ/df value of 1.51 and comparative fit index (CFI) of .952, above the generally accepted .90 threshold (Bentler 1992). The fit of the measurement model to the data is evidence of both convergent and discriminant validity among the latent constructs (Anderson and Gerbing 1988). Discriminant validity assesses if the measure is distinct from related constructs and convergent validity determines whether the individual indicators refer to the same construct.

Table 2: Relationship Quality Scale



Discussion — causal effects between service and relationship quality

The results of this study support the hypothesized correlation between service quality and relationship quality, and their causal effect on user satisfaction. Since it has been previously established that relationship quality and service quality impacts a client's (or service consumer's) decision to maintain an IT outsourcing relationship with the vendor (or service provider), strategies that improve relationship quality and service quality are of vital importance to IT service providers. Service providers who adopt strategies to improve the quality of the services that they provide can expect to experience improvement in the quality of the relationships with customers. Service quality incorporates five relatively controllable dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Service providers can design and implement strategies aimed at improving in each area. For example, refurbishing the physical setting in which the service is provided will improve the tangibles dimension, and increasing the knowledge level of service providers through an expanded in-service training program will improve the assurance dimension. Such managerially controllable strategies will lead to improved levels of service quality which, based on study results, will enhance relationship quality. Managerially, the relationship quality dimensions such as trust, commitment, and communication are more difficult to attack. Hence, both the client and vendor managers must make efforts to improve the relationship quality through various means like increased formal socialization (meetings and conferences) and informal socialization (parties, get-togethers, and joint celebrations of success) between the vendor and client personnel, and therefore attempt to improve the atmosphere of trust, commitment, cultural tolerance, interdependencies and communication.

A CRITIQUE: THE SERVICE AND RELATIONSHIP QUALITY CAUSALITIES

Important questions arise about the hypotheses that were earlier shown to have statistically significant results, and eventually led to establishment of a correlation between service quality and relationship quality. The idea of service quality being positively related to relationship quality is a simplistic postulation without the necessary explanations of the dynamics on how and why the two constructs are correlated.

The earlier adopted approach considered that relationship quality and service quality are simply strongly correlated, and that the possibility of bidirectional causality is superfluous. But would it be right to simply accept that service quality and relationship quality are correlated constructs, and move on without inspecting the possibility of well explained bidirectional causality? Accepting this correlation argument, though it may seem acceptable, is not necessarily the right approach since it would limit the opportunity of inspecting the causalities between the two very distinct constructs of service quality and relationship quality. Adopting a correlation approach might amount to suggesting that, to a significant degree, service quality and relationship quality are measuring the same underlying phenomena. However, this is not necessarily true, and they were strongly distinguished in the earlier sections of this paper. Service quality and relationship quality measure different aspects, and should be treated as two autonomous constructs. Service quality measures the quality of the "service" that is delivered by one entity to another. Alternatively, relationship quality measures the attributes of the "relationship" between the involved firms, and is certainly not the same as the quality of the services being exchanged.

Another approach, the approach that we adopt, is to accept that bidirectional causality can exist between service quality and relationship quality, and then make sincere attempts to question why this bidirectional causality exists, and what the mediators and moderators in this bidirectional causality could be.

THEORITICAL DEVELOPMENT — UNDERSTANDING THE SERVICE AND RELATIONSHIP QUALITY CAUSALITIES

We believe that the bidirectional causalities between service quality and relationship quality can be well explained when the *'client orientation and promotion effectiveness'* (in socializing with the client, communicating the virtues of its services, and ultimately making the client realize the value it can gain from the relationship), and also the *'project management effectiveness'* (in the planning, execution, monitoring, and controlling of the outsourced project by optimally using time, finances, personnel, infrastructure, documented knowledge, tacit knowledge, and tacit management skills to achieve the desired quality within the budgetary and schedule constraints) are taken into account.

Client Orientation & Promotion Effectiveness

We have suggested previously that service quality does have a causal effect on relationship quality. But is the causal effect always of the same strength? Does a perception of good service quality always translate to growth in relationship quality?

Ethiraj et al, [20] found modest support for their hypotheses that "development of client-specific capabilities based on repeated interaction with clients is positively related to project performance." Client-specific capabilities of a vendor reflect the capabilities of the vendor to 'better understand the client' so that it can 'be better understood by the client' through repeated interactions. By understanding how the software project being developed would fit into the client's needs and business environment, the vendor would be able to provide a service in such a manner that would delight the client. By better understanding "what the client wants" over repeated interactions with the client, the vendor would make efforts to deliver the desired service. The service delivered to the client would be most meaningful to the client only when it fits well with the client's aspirations. Hence, it is very important for the vendor to make efforts to impress upon the client on how its service is actually meeting and even exceeding the client's expectation. This can be done only through repeated interactions with the client, and is termed as "client orientation & promotion."

A vendor with high "client orientation & promotion effectiveness" would attempt to learn the specific needs of the specific client, provide services to the client to address those needs, and then try hard to impress the client on how its service can effectively address those needs. Ethiraj et al, [20] believes that having client-specific capabilities give the vendor both revenue and cost advantages. For example, if the vendor is able to convince the client how their high quality services can effectively meet the needs of the client, and therefore convince the client how valuable their outsourcing relationship is, then the client would be more willing to pay higher prices that add to the vendor's revenue. Additionally, repeated interactions with the client can help forestall

many of the costs associated with providing the service, such as the costs involved in resolving last-minute conflicts over requirements interpretations, repeated change requests from clients, delayed project completion, and poor estimation of manpower requirements. A vendor with high "client orientation & promotion capabilities", would have a very clear understanding of client needs, and would be very good at convincing the client how the provided services are truly meeting (or even surpassing) the needs of the outsourcing relationship. A vendor with poor "client orientation & promotion capabilities" would fail to impress upon the client how the provided service adds value to the client and hence their outsourcing relationship, even when the quality of the software service itself is very high.

Effectiveness of Client Orientation and Promotion of Service Quality

Let us assume that a client has outsourced to its vendor the responsibility of developing some software with multiple functionalities and features. Of course, the client would then build a perception of the quality of this delivered service by measures such as reliability, responsiveness, tangible, assurance, and empathy associated with the service being delivered. If the vendor wants the client to form a favorable opinion of the service it has delivered, then it would *interact* with the client and make earnest attempts to promote the various positive features of the service. During its interaction with the client, the vendor would try hard to impress upon the client how the latest software and hardware were used, how impressive their software development facilities are, how the vendor employees that develop this software are knowledgeable, courteous and smart, how they have met their promises and addressed the needs of the client, how sincere/dependable/punctual/error-free their service is, and how they have tried hard to provide maximum assistance to the users (see scale for measuring service quality in Table 1).

During this interaction, the vendor would therefore try hard to convince the client of the great value it is providing in the outsourcing relationship. The vendor would attempt to convey to the client that since the provided service quality is very good, the client can *trust* the vendor, can have faith in its *commitment*, can be guaranteed of efficient *communication* at all times, can expect good management of any *interdependencies*, and can overcome the fear of problems due to differences in *culture* (which are the attributes of a high quality relationship). In other words, the vendor in its interactions with client would attempt to promote the positives of its service quality, and make the client realize that the vendor is adding value to the relationship with its high service quality. Hence, this interaction between the vendor and client would be extremely important in making the client feel satisfied with the relationship quality. In summary, though service quality is very important, it would truly have an impact on the relationship quality only if the "client orientation & promotion effectiveness" in promoting the positives are good. The "client orientation & promotion effectiveness" of the vendor would reflect the vendor's ability to effectively socialize with the client, communicate its virtues, and make the client realize the value that it gains through its association with the vendor.

Distance Barriers Due To Outsourcing and the Client Orientation & Promotion Effectiveness

The client orientation & promotion effectiveness of the vendor, in terms of socializing with the client, communicating the virtues of its services, and ultimately making the client realize the value it can gain from the relationship is extremely important. However, the very nature of outsourcing, which involves high transaction costs in the exchanges across organizational borders, causes barriers to the client orientation & promotion effectiveness. The barriers and transaction costs can potentially get amplified with offshore-outsourcing. Though a large number of difficulties are associated with outsourcing (for eg. cultural differences between organizations and nations, language differences, and loss of control), many of the difficulties are due to the problems created by geographical distance and differing time-zones between the client and vendor premises.

Of course, client orientation & promotion would be the most effective when there are in-person, face-to-face meetings or discussions. However, this is not always possible when the work is outsourced to the vendor in a different building, city or country. To overcome this problem many vendors adopt the "global delivery model" whereby they perform the bulk of the outsourced work at their own premises, but also prefer having a small team at the client site to enhance their client orientation & promotion effectiveness through in-person face-to-face discussions with the client [12]. At the same time, a large amount of interactions between the client and vendor still occur across organizational and geographical boundaries, with the aid of various Internet technologies and tools. For example, advances in the Internet technologies such as emailing, instant messaging, voice-over-IP, online video conferencing have reduced the impact of the barriers that arise due to geographical distance. Moreover, virtual face-to-face meetings can be arranged through video conferencing, though it is may not be as effective as in-person face-to-face meetings. Hence, the effectiveness of a vendor's client specific capabilities would vary depending on whether it is domestic-outsourcing or offshore outsourcing, or in other words, the barriers due the distance between the vendor and the client; and these barriers to the effectiveness of a vendor's client specific capabilities can be overcome to a great extent by usage of Internet technologies and tools.

Project Management Effectiveness

Effective project management is a key to ensure that the service needed by the client is efficiently developed, tested and maintained. Project management capabilities involves the planning, execution, monitoring, and controlling of a project by the optimum use of tangible resources (time, finances, personnel, infrastructure, documented knowledge, etc) and intangible resources (tacit knowledge, tacit management skills, etc) to achieve the desired quality within the budgetary and schedule constraints. Hence, effective project management involves effective knowledge management and effective quality assurance and control, in addition to effective management of costs, personnel distribution, and intelligent use of various tools & technologies.

It has been observed that the technical, managerial and hence project management capabilities of offshore vendors have greatly improved in recent times [10]. For e.g., over 150 software development and maintenance firms in India are reported to have attained the prestigious level-4 or level-5 of the Software Engineering Institute's 'Capability Maturity Model' (SEI-CMM) ([17], p.90). A vendor with a higher CMM rating will be better at delivering software development from offshore, since its processes are of the higher quality and its IT personnel are educated about the

best quality processes [28]. In addition to skills of the personnel, various IT tools are available that allow project management to be carried out in a more effective manner. For example, knowledge management tools allow easy documentation and sharing of knowledge, defect reporting and tracking tools enable effective quality control, and numerous tools (such as Microsoft Project) that allow the development, monitoring, and analysis of the project schedule and resources. Ethiraj et al, [20] found strong support for their hypothesis that "higher levels of project management capabilities will lead to higher levels of project performance", and they suggested that the following three aspects are particularly important: software design and building capabilities, effort estimation and management capabilities, and schedule estimation and management capabilities.

Though project management capabilities are surely important, what is more important in an outsourcing context is how effectively the vendor handles its relationship with the client and translates it into high service quality. For example, though a client might have excellent project management capabilities with the highest CMM ratings, if the relationship with the client is filled with distrust and conflict its "project management effectiveness" would be poor simply because of lack of cooperation & mutual understanding in the relationship. Hence, "project management effectiveness" can be gauged from the following two aspects: (i) *Software design and building effectiveness*: How effective is the vendor in understating the client's requirements? Is the vendor effectively able to come up with designs or architecture that addressed the client's requirements? Does the vendor's programming justify the design/architecture and hence satisfy the client's needs? How effective is the vendor in utilizing the latest tools and technologies at various stages of the software development and maintenance life-cycle? (ii) *Effort and Schedule Management effectiveness*: Is the effort estimation realistic enough provide the desired service to the client within the desired schedule, scope, and budget? Is the vendor able to effectively arrange for the appropriate people with necessary skill sets to do justice to the estimated effort? Is the vendor able to effectively negotiate with the client any required changes in effort, schedule, scope or budget during the project life-cycle, and are the negotiations cooperative and free of conflicts? How effective is the vendor in utilizing the latest tools and technologies for better estimation and management of effort and schedule? It is important to realize that both the software design and building effectiveness and effort and the schedule management effectiveness would be severely impacted if the outsourcing relationship is poor (with high levels of distrust, conflicts, & miscommunication), and all this would ultimately effect the service quality of the vendor.

Effect of Relationship Quality on Project Management Effectiveness

Relationship quality is measured in terms of trust, commitment, culture, interdependence, and communication. High relationship quality between the client and the vendor can help in the effective management of outsourced projects, while poor relationship quality can hamper the effective management of outsourced projects. In a high quality relationship, it is expected that the vendor makes beneficial decisions for the client, provides assistance when needed, and is always sincere. These actions build *trust* between the vendor and client and add to the effectiveness of project management. Additionally, successful execution of a project requires high *commitment* from the vendor towards performing the pre-specified agreements and keeping promises. The effectiveness of project management can be negatively affected by any differences in organizational *culture*. Hence, by making efforts to align their respective corporate cultures, attempting to understand each other's business rules and practices, and arrive at mutually acceptable processes for problem solving, decision making, and communication the project management effectiveness can improve. It is also very important that the *communication* is timely, accurate, complete and credible. Finally, any *interdependence* between the client and vendor, in terms of activities that require mutual participation and the management of core information technologies must be sorted out for effective project management. Alternatively, poor relationship quality can result due to frequent conflicts and non-cooperation (due to breakdown in trust, commitment, culture, interdependence, and communication); and this poor relationship quality can hamper the vendor's project management effectiveness.

Effect of Project Management Effectiveness on Service Quality

Effective project management would ensure that the *tangibles* such as up-to-date hardware and software are available and that the physical facilities and personnel involved create and maintain a positive image of the vendor. Furthermore, by using effective project management and ensuring that sincere, dependable, punctual, and error-free service is provided the vendor would enhance its *reliability*. *Responsiveness* to the users' needs in terms of providing timely, prompt, forthcoming, and confident service would be enhanced by effective project management. Effective project management by the vendor would also lead to greater *assurance* that involves sharing its knowledge effectively, being courteous, arranging convenient operation hours, and making the clients feel comfortable. Finally, effective project management would lead to the vendor keeping the specific interests of the users in mind and giving the users personal and convenient attention, and thereby showing *empathy* to the its clients and users of the service. Hence, to a great extent, effective project management by the vendor can lead to high perception of service quality, while poor project management can lead to poor perception of service quality.

Task-Technology-Structure Fit

As discussed earlier, Internet technologies and various collaboration tools have enhanced the ability of individuals to collaborate effectively across organizational and national boundaries. The literature on global virtual teams (Powell, Piccoli & Ives, 2004) have given considerable attention into the various aspects like the design of global virtual teams, structuring of interactions, cultural differences, technical expertise of members, training, relationship building, cohesion, trust, communication, coordination, and finally the fit between the tasks to be executed and the usage of various Internet and collaboration technologies in the respective business context. A lot of these aspects have been already captured in the earlier discussed constructs of service quality, relationship quality, project management effectiveness, and the client orientation and promotion effectiveness. However, it is extremely important to consider the one more additional construct that provides a strong foundation for such global collaborations, and that is the 'task-technology-structure fit' (Powell, Piccoli & Ives, 2004). The "task-technology-structure

fit" construct attempts to measure the *fit* between the following three interrelated facets (Powell, Piccoli & Ives, 2004; [32]; [44]; [45]; [54]):

- *Task:* To what extent does the task demand face-to-face meetings? To what extent would remote communication through various Internet technologies hamper the execution of the task? What is the urgency of the task? How much is the need for documentation? How much time is spent on ambiguous tasks, brainstorming discussions, or conflict resolution that are best suited for face-to-face communication or phone calls? How much time is spent on routine work or structured tasks that are doable over the Internet through emailing, instant messaging, or other collaboration tools?
- *Technology:* What are the various Internet technologies and collaboration tools at the disposal of the virtual teams? Are the individual team members comfortable and motivated to use the various Internet technologies and tools?
- *Structure:* Has the design of the team and work allocation been fine tuned for more effective cross-border or cross-organizational collaboration? Are the personnel distributed appropriately such that face-to-face meetings can be arranged between representatives of some teams or organizations if needed, while the majority of the other members work and interact virtually?

Hence, in this era where Internet technologies and various collaboration tools are being increasing adopted as teams across the world work together, the "task-technology-structure fit" is an important & central consideration that can affect the project management effectiveness, and the client orientation and promotion effectiveness of a vendor, all of which in turn can have a strong bearing on the service quality, relationship quality, and ultimately the user satisfaction.

CONCEPTUAL MODEL — ADDRESSING THE SERVICE AND RELATIONSHIP QUALITY CAUSALITIES

In continuance with our theoretical development, we propose a conceptual model (see figure 3). The "task-technology-structure fit" is a central construct that evaluates the goodness of the fit between the various aspects of the tasks to be performed, the Internet technologies and collaboration tools adopted, and the inter-organizational and intra-organizational team structures and personnel distribution for executing the tasks or the project. A vendor that is well oriented with the needs of the client, and wants to promote the quality of its service to impress the client and hence build a better relationship would want to make sure that the "task-technology-structure fit" is appropriate. It is only with a good "task-technology-structure fit" that a vendor would be able to continually stay in tune with the needs of the client, continually interact with the client , manage its projects more effectively, and continually promote its service quality to build a better relationship in the challenging environment of global collaboration.

Proposition 1: The task-technology-structure fit will have a positive causal affect on project management effectiveness.

Proposition 2: The task-technology-structure fit will have a positive causal affect on client orientation and promotion effectiveness.

Good service quality would translate to an actual growth in relationship quality only when the interaction is effective in making the client realize 'how good the service quality actually is', and how the service quality from the vendor is adding value in their relationship:

- When the service quality is good, highly effective client orientation & promotion would help in conveying the same, and hence improve the relationship quality.
- Even when the service quality is good, ineffective client orientation & promotion will lower the possibility of the client gaining a positive perception of the relationship.
- When the service quality is poor, ineffective client orientation & promotion would only lead to the further deterioration of the relationship quality.
- Even when the service quality is poor, highly effective client orientation & promotion can prevent the poor service quality from degrading the relationship quality

Hence, we propose the following:

Proposition 3: The positive causal effect of service quality on relationship quality would be positively moderated by the client orientation & promotion effectiveness.

High relationship quality would translate to high service quality only through effective project management. On the other hand, poor relationship quality (displayed through frequent conflicts and non-cooperation) would lead to ineffective project management that would ultimately hamper service quality of the vendor. We therefore propose the following:

Proposition 4: The positive causal effect of relationship quality on service quality would be mediated by the project management capabilities.

FUTURE RESEARCH

In this paper, we investigated the interrelations between service quality and relationship quality. Specifically, we proposed that improvements in IT service quality lead to higher quality relationships between IT vendors and their clients, provided the 'client orientation & promotion' towards promoting the value of the service in the outsourcing relationship is high. Moreover, we proposed that any decline in relationship quality would hamper the project management capabilities of the vendor and would hence hamper its service quality. We also highlighted the central role of the "task-technology-structure fit", and how internet technologies and collaboration tools are playing an important role in enhancing global collaborative work.

We suggest that longitudinal studies should be conducted to validate the conceptual model presented in this paper. The basic model studying the interrelationships between service quality, relationship quality, and user satisfaction has already been found to be significant. The next step would be to investigate and validate the dynamics in the causal structure in between service quality

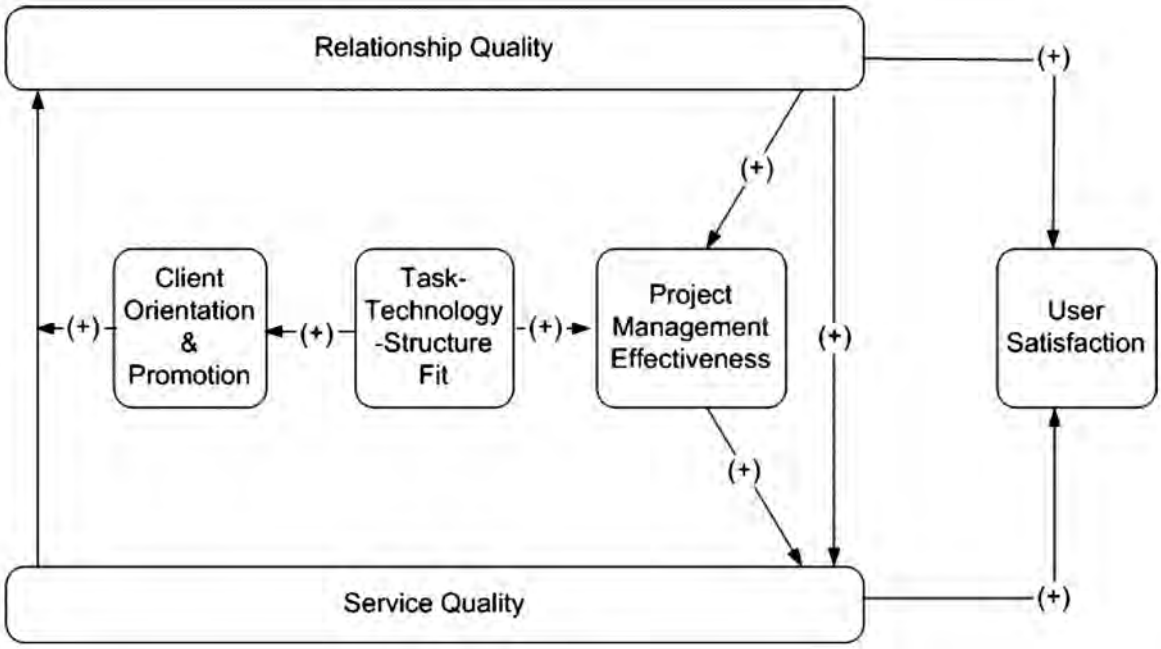


Figure 3: Conceptual Model — Understanding Casualties in Service & Relationship Quality

and relationship quality, by incorporating the task-technology-structure fit concept and the also the role of client orientation & promotion effectiveness and project management effectiveness as a moderator and mediator, respectively.

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